



## The Roles of Insurance on Economic Growth in Malaysia: An ARDL Approach

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### ABSTRACT

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Malaysia's economic growth has been rising steadily over the years and one of the main contributors is the insurance sector. The literature has recorded mixed findings on the relationship between insurance and economic growth. This paper examines the relationship between the insurance sector and economic growth in Malaysia over an extended period of 1990-2021. This paper uses three proxies for the insurance sector i.e. life insurance premiums, nonlife insurance premiums, and total insurance premiums. The Autoregressive-Distributed Lag (ARDL) and Error Correction Model (ECM) approaches are employed to achieve the objective. While controlling for foreign direct investment, export, and import, this paper found that there is a positive long-run relationship between non-life insurance premiums and economic growth. Conversely, a negative short-run relationship is observed between life insurance premiums and economic growth. The total insurance premium has a negative short-run relationship with economic growth yet is insignificant for the long-run. The non-life insurance sector has a larger contribution compared to life insurance on Malaysia's economic growth as the market depends more on capital formation and investments, particularly in infrastructure, real estate, and capital markets. The insurance sector provides financial expansion in terms of payment for protection which results in an economic boost.

## 1. Introduction

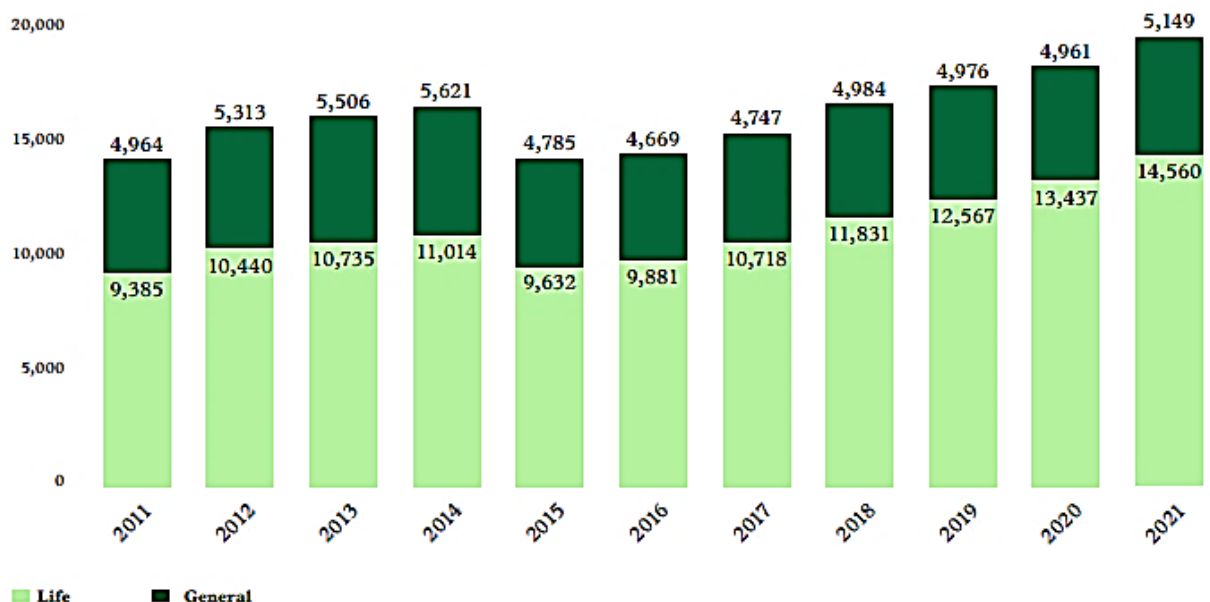
Insurance is a social contract that governs the distribution of risk among multiple stakeholders. Victor, [1] argues that insurance is essential for all individuals as it serves as a mechanism to assist those in need and safeguard individuals or property against potential future perils that might or might not materialize through the reduction of risk through risk sharing with a third party. Indeed, Fashagba, [2] views the insurance industry as a highly industrialized sector that affords greater security to the general populace and the larger community. Insurance plays a pivotal role in facilitating substantial economic expansion hence its economic ramifications should not be

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undervalued. Ul-Din *et al.*, [3] cited from Swiss Re statistics that Insurance expenditures comprise 6.23% of the worldwide gross domestic product. Specifically, insurance expenditures range from 2% to 4% in developing countries, compared to 8% to 11% in industrialized nations. According to Fashagba, [2], the expansion of contemporary insurance has had far-reaching consequences that extend beyond the overall economy. In addition to acting as financial intermediaries, insurance companies also provide indemnification and risk transfer to ordinary people and society as a whole. According to Njegomir and Stojic, [4] insurance also protects entrepreneurs from dangers associated with international commercial business enterprises, hence facilitating economic expansion through increasing trade. Insurance increases the efficacy of capital allocation, liquidity, and total capital stock availability. Fashagba, [2] mentioned that insurance premiums constitute a significant segment of the capital market that may be difficult for an individual to provide.

The insurance premiums paid by all insured individuals consequently contribute substantially to the overall revenues of the stock market. The importance of insurance cannot be exaggerated, considering the capital market's pivotal role in the economy. Non-banking insurance also plays a crucial role in providing supplementary funds to finance economic activities that contribute to the intended expansion. According to data derived from the Swiss Re Institute and presented in Figure 1, direct premiums for life and general insurance as well as takaful are on the rise in Malaysia as reported by Faber Consulting AG, [5]. Based on this report, the aggregate insurance premium contributions experienced a compound annual growth rate (CAGR) of 3.2% between 2011 and 2021, surpassing the GDP growth rate of 2.1%. This demonstrates that the insurance sector has an important role in expanding the GDP. According to Masud *et al.*, [6], the insurance industry has significantly contributed to the economic development of Malaysia for the last few decades and plays a significant role in developing a sustainable business organization through its products and services. Furthermore, Malaysia is among the nations with a high population. There is a direct correlation between population density and demand for goods and services. This will contribute to a heightened demand for insurance, which in turn boosts economic development.



**Fig. 1.** Life and general insurance direct premiums and takaful contributions written, 2011-2021 (USD million)

Source: Faber Consulting AG, based on the Swiss Re Institute

Due to its importance in helping grow the economy, many empirical studies [1-3,7-15] examined the relationship between the insurance industry and economic growth. Nonetheless, only a few studies were recorded for Malaysia such as the study by Ching *et al.*, [7], Chau, [11], and Ul-Din *et al.*, [3]. The findings of those studies are also mixed, causing ambiguity in the relationship between insurance and economic growth. The examination by Ching *et al.*, [11] demonstrated that economic growth is positively affected by insurance and this is supported by the study of Lee, [8], Ilhan and T. Bahadir, [9], Verma and Bal, [12], Pradhan *et al.*, [13], Musurmanovich, [15], and many others. However, their findings are based on different country settings such as different levels of income, as well as different proxies to represent the insurance industry such as life insurance premiums, non-life insurance premiums, premium density, net written premium, and others. Due to the differences in country settings and proxies used, some other studies [2,10,16-18] also recorded conflicting results.

Based on the discussions, this study therefore intends to examine the effect of the insurance industry on the economic growth in Malaysia. Being an emerging country, Malaysia has more room for change and improvement to be studied. Three proxies are used for the insurance industry *i.e.* life insurance premiums, non-life insurance premiums, and total insurance premiums to examine the impact of life and non-life insurance separately. The study extends the period ranging from the year 1990 to the year 2021 to capture the latest interaction between the insurance industry and economic growth. In addition to that, this study examines the short-run and the long-run relationship between the insurance industry and economic growth. The study controls for foreign direct investment, import, as well as export. The results of this study will provide some insight into the roles of the insurance industry in economic growth. It will shed light on which insurance sector the policymaker should provide incentives for promoting economic expansion, or the insurance sector that needs help with publicity or capital injection to thrive more.

## **2. Literature Review**

### *2.1 Insurance and Economic Growth*

The Organisation for Economic Co-operation Development (OECD) defines gross domestic product (GDP) as the value-added created by a country's output of goods and services over a given time. Hence, it maintains track of both the money generated by such production and the overall amount spent on final goods and services (less imports). Based on past research [9,10], GDP growth is used to indicate the response variable in the analysis of the relationship between insurance and economic growth. In a study on the challenges, prospects, and importance of insurance on economic development in Bangladesh, Ali, [19] found that economic development needs the insurance industry to increase growth since insurance contributes significantly to the social and economic progress of both developed and emerging countries. This is in line with the study by Ching *et al.*, [7] which demonstrated that there is a correlation between life insurance total assets and economic development in the long term.

Among studies that found insurance to have a positive relationship with economic development are Lee, [8], and Ilhan and T. Bahadir, [9] on OECD countries, Verma and Bala, [12] and Victor, [1] on Nigeria, Hussein and Shabbir, [14] on Oman, and Pradhan *et al.*, [13] on G-20 countries. These studies concluded that the insurance sector is a crucial component of financial sector investment in addressing the need for savings by bringing investors together and providing appropriate funding capability, hence contributing to economic growth by converting savings to investments in the insurance business. On the other hand, similar studies for Malaysia reached contradicting findings. While Chau *et al.*, [11] found that insurance has a significant and positive relationship with

economic growth, Ul-Din *et al.*, [3] found otherwise. The contradicting findings are also proven by Musurmanovich, [15]. The findings indicate that insurance significantly contributes to economic development, particularly in developed nations including the United States, Great Britain, Japan, Germany, France, and South Korea. Conversely, nations characterized by a low GDP per capita exhibit constrained insurance penetration, thereby rendering its influence on economic development negligible. Based on the discussion above, it can be concluded that developing countries have more room and flexibility for improvement and expansion.

Some studies separated the insurance sector into life and non-life insurance, hence resulting in mixed findings. For example, Verma and Bala, [12] discovered that life insurance has a major influence on the development of the economy in India. Yet, Kjoveski, [10] discovered a negative correlation between life insurance and Macedonia's economic expansion. Lee *et al.*, [16] also found that the relationship between life insurance and economic growth is negative in regimes with significantly unhealthy institutional settings when they used political, economic, and legal environments to measure the soundness of institutional environments. The two studies are supported by the study by Fashagba, [2] which also concluded that life insurance is negatively correlated with economic growth. On the contrary, Ul-Din *et al.*, [3] found a significant positive correlation between life insurance and economic expansion in the long term. The study also found that life insurance is significantly and positively correlated with economic development in India, Pakistan, and the United Kingdom in the short run. However, life insurance has a negative correlation in the short run with economic development for the US, China, and Malaysia. The study of Haiss and Kjell, [20] also found that life insurance has a positive impact on the GDP growth in EU-15 countries which are Switzerland, Norway, and Iceland. Verma and Bala, [12] focused on total life insurance premiums and total life insurance investment, which strengthens this finding. They discovered that life insurance is positively connected and has an important influence on India's economic growth especially because India has a large insurable population.

Concerning the use of the non-life insurance sector as a proxy, the study by Fashagba, [2] found that non-life insurance is insignificant to economic growth in Nigeria. Pan and Chiwei, [17] investigated the cross-regional association between economic development and insurance growth in China and found that in the non-life insurance business, the demand following pattern is only substantial in regions with high-income levels. However, the study contradicted the study by Arena, [18] who discovered that non-life insurance has a statistically significant positive influence on economic development in both high-income and low-income countries and concluded that growth in developing countries depends on the development of insurance services.

According to Chau *et al.*, [11], the non-life insurance premium has a positive and significant relationship with the development of the economy in the long term. They summarized that the government must take aggressive steps to improve the efficacy and efficiency of the insurance industry and it must encourage individuals and business owners to use insurance as a powerful tool to reduce their exposure to operational and financial risks. The study by Ul-Din *et al.*, [3] also discovered that non-life insurance is positively and strongly connected with long-term economic expansion in the United States, the United Kingdom, China, India, Malaysia, and Pakistan. However, in the short term, non-life insurance is negatively and significantly correlated with economic growth in the United States, the United Kingdom, China, India, Malaysia, and Pakistan.

Another angle of study by Arena, [18] investigated the causal relationship between insurance market activity focusing on life and non-life insurance and economic growth since there have been raised questions on the relationship between the overall impact of insurance and economic growth. The study concluded that high-income countries drove life insurance to have a positive relationship with economic growth. Ching *et al.*, [7] reported that there is a cointegration between total assets

of life insurance and the development of the economy in the long term. Malaysia's real GDP has a positive influence on the total assets of the Malaysian life insurance market. Therefore, the study concluded that the life insurance sector and economic expansion complement each other since not only life insurance sector contribute to economic growth but the development of the economy is also needed for the growth of the life insurance sector.

## 2.2 Controls

### 2.2.1 Foreign direct investment

Aziz and Azmi, [21] discovered that foreign direct investment has a positive and significant correlation with economic development. Har *et al.*, [22] examined the relationship between FDI and Malaysian economic development from a theoretical standpoint. Consequently, it was ascertained that foreign direct investment has a substantial and favorable impact on the progress of the Malaysian economy. They concluded that the growth rate increases by 0.046072% for every 1% increase in FDI. According to Mohammad and Zulkornain, [23], an indirect correlation exists between foreign direct investment and Malaysia's economic growth.

### 2.2.2 Imports

Romli *et al.*, [24] investigated the impact of export, import, and population on economic development in Malaysia. The study found that there is a positively significant correlation between imports and economic development at 5% over 62 years from 1960 until 2021. Noor, [25] supported this finding as they also discovered a connection between imports and economic development. They observed a short-run correlation between imports and GDP. Kogid *et al.*, [26] concluded in their study that there is a bilateral relationship between imports and economic growth in Malaysia. According to the study, imports played a significant role in driving economic growth in Malaysia, particularly in the short run. They determined that imports had a substantial impact on economic growth, vice versa.

### 2.2.3 Exports

According to Hashim and Mansur, [27], export has vital roles towards Malaysian economic growth. They found that economic growth and export had a bidirectional relationship in the long run. Economic growth significantly affected the export in the Malaysian market and vice versa. Therefore, they suggested the policyholder generate important strategies to promote exports to drive economic growth. This result is supported by Abdullah *et al.*, [28] as they found that economic growth and export had a bidirectional relationship for the Malaysian market. Hence, export growth can stimulate economic growth and vice versa. Apart from that, Etale *et al.*, [29] also concluded that export has a significant influence on economic growth and that Malaysian policymakers should pursue and promote more export opportunities.

## 3. Data and Methodology

### 3.1 Data

For the purpose of this study, secondary data is used which includes annual data from year 1990-2021. Based on the literature review, GDP growth is used as the proxy for the dependent variable. Three measures are used to proxy for the insurance industry; non-life insurance

premiums, life insurance premiums, and total insurance. All the data are obtained from the World Bank's Database and are summarized in Table 1.

**Table 1**  
 Summary of variables

Variables	Proxy	
Dependent	Economic Growth	GDP growth
Independent	Life Insurance Premiums	Life insurance premium volume to GDP
	Non-life Insurance Premiums	Non-life insurance premium volume to GDP
	Total Insurance Premiums	Total insurance premium volume to GDP
Control	Imports	Imports of goods and services (annual % growth)
	Foreign Direct Investment	Foreign direct investment, net inflows to GDP (%)
	Export	Exports of goods and services (annual % growth)

Table 2 shows the summary of descriptive analysis for this study. NIP has a lower mean and median compared to LIP. Besides that, the standard error for NIP is also lower compared to LIP. The smaller value of standard error will be more representative of the population. The difference in sum value between the LIP and NIP is 32.4675 which are quite high. The sample variance and range for LIP are higher compared to NIP, which shows that the data for LIP is more dispersed than NIP data.

**Table 2**  
 Descriptive analysis

	<i>GDP</i>	<i>NIP</i>	<i>LIP</i>	<i>TIP</i>	<i>IMP</i>	<i>FDI</i>	<i>EXP</i>
Mean	0.0535	1.4214	2.4359	3.8574	0.0737	0.0403	0.8959
Standard Error	0.0071	0.0365	0.0947	0.0806	0.0197	0.0034	0.0327
Median	0.0569	1.3894	2.7152	3.9902	0.0611	0.0377	0.8804
Sample Variance	0.0016	0.0426	0.2869	0.2079	0.0124	0.0004	0.0343
Range	0.1736	0.8168	1.8697	1.8874	0.4504	0.0870	0.5971
Minimum	-0.0736	1.0303	1.2340	2.6958	-0.1875	0.0006	0.6159
Maximum	0.1000	1.8471	3.1037	4.5832	0.2629	0.0876	1.2131
Sum	1.7141	45.4844	77.9519	123.4363	2.3577	1.2896	28.6678

### 3.2 The Model

The relationship between insurance and economic growth can be explained using the following model:

$$GDP_t = \alpha_0 + \beta_1 LIP_t + \beta_2 NLIP_t + \beta_3 TIP_t + \beta_4 IMP_t + \beta_5 EXP_t + \beta_6 FDI_t + \varepsilon_t \quad (1)$$

Where,

- GDP* = Economic growth
- LIP* = Life Insurance Premium
- NLIP* = Non-life Insurance Premium
- TIP* = Total Insurance Premium
- IMP* = Imports
- EXP* = Exports
- FDI* = Foreign Direct Investment

### 3.3 Unit Root Test

The series is stationary if the null hypothesis of a unit root is rejected. Table 3 shows the result for the stationary of the variables. GDP, NIP, IMP, and FDI are stationary at level order while LIP, TIP, and EXP are stationary at 1st difference level. GDP, NIP, IMP, and FDI have p-values of 0.0119, 0.0018, 0.0365, and 0.0468 respectively. Hence, the null hypothesis is rejected at level order and the variables are considered as stationary. In the meantime, LIP, TIP, and EXP have p-values of 0.0000, 0.0108, and 0.0321 respectively at 1st difference. Therefore, the null hypothesis is rejected at first difference order and the variables are stationary. According to Nkoro and Uko (2016), only when all variables are I(0) is basic regression (OLS) possible. Since the stationary of data is not at level I(0), the basic time series regression analysis cannot be conducted. However, the data is stationary at level I(0) and I(1) which is one of the conditions in the Autoregressive Distributed Lag (ARDL) method. As a result, ARDL regression analysis is conducted for this study to achieve both objectives.

**Table 3**  
 Unit Root Test

Variables	LEVEL	1 <sup>st</sup> DIFFERENCE	2 <sup>nd</sup> DIFFERENCE
GDP	0.0119	-	-
NIP	0.0018	-	-
LIP	0.7607	0.0000	-
TIP	0.4957	0.0108	-
IMP	0.0365	-	-
FDI	0.0468	-	-
EXP	0.6588	0.0321	-

### 3.4 Autoregressive Distributed Lag (ARDL) Bounds Test

To achieve the first and second objectives, the Autoregressive-Distributed Lag model is used. According to Nkoro and Uko (2016), if there is a mixture of variables in your unit root test, such as I(0) and I(1), the ARDL model is the appropriate test. It will display both the long-run and short-run relationships. The ARDL technique is used to achieve the objective of identifying the correlation between the observed variable and explanatory variables.

ARDL model:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \Delta GDP_{t-i} + \sum_{i=0}^{q_1} \alpha_2 \Delta LIP_{t-i} + \sum_{i=0}^{q_2} \alpha_3 \Delta NLIP_{t-i} + \sum_{i=0}^{q_3} \alpha_4 \Delta TIP_{t-i} + \sum_{i=0}^{q_4} \alpha_5 \Delta IMP_{t-i} + \sum_{i=0}^{q_5} \alpha_6 \Delta EXP_{t-i} + \sum_{i=0}^{q_6} \alpha_7 \Delta FDI_{t-i} + \beta_1 GDP_{t-i} + \beta_2 LIP_{t-i} + \beta_3 NLIP_{t-i} + \beta_4 TIP_{t-i} + \beta_5 IMP_{t-i} + \beta_6 EXP_{t-i} + \beta_7 FDI_{t-i} + \varepsilon_t \quad (2)$$

where;

- $p, q_1, q_2, q_3, q_4, q_5$  = optimum lag orders
- $\varepsilon_t$  = vector of error terms
- $\Delta$  = the first difference
- $i$  = 1,2,3,4,5,6 is the coefficients of the short run
- $GDP$  = Economic growth
- $LIP$  = Life Insurance Premium

*NLIP* = Non-life Insurance Premium  
*TIP* = Total Insurance Premium  
*IMP* = Imports  
*EXP* = Exports  
*FDI* = Foreign Direct Investment

The hypothesis is as follows:

$H_0 : \beta_i = 0$  (Cointegration and long-term correlation does not exist)

$H_1 : \beta_1 \neq 0$  (Cointegration and long-term correlation does exist)

When the variables have a cointegration connection, the Error Correction Model (ECM) can be estimated using the equilibrium residuals. The long run and short run model of the ARDL and ECM equations are estimated using the standard OLS. The ECM equation is as follows:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \Delta GDP_{t-i} + \sum_{i=0}^{q_1} \alpha_2 \Delta LIP_{t-i} + \sum_{i=0}^{q_2} \alpha_3 \Delta NLIP_{t-i} + \sum_{i=0}^{q_3} \alpha_4 \Delta TIP_{t-i} + \sum_{i=0}^{q_4} \alpha_5 \Delta IMP_{t-i} + \sum_{i=0}^{q_5} \alpha_6 \Delta EXP_{t-i} + \sum_{i=0}^{q_6} \alpha_7 \Delta FDI_{t-i} + \phi ECT_{t-1} + \varepsilon_t \quad (3)$$

$\phi$ , is the coefficient of error correction term (ECT), which indicates the adjustment speed of the short run equilibrium to return to its long run equilibrium. The series can be adjusted to its equilibrium if the ECT value is less than zero and significant.

### 3.5 Diagnostic Checking

In order to ensure the regression analysis is unbiased, a diagnostic check is performed for autocorrelation, heteroscedasticity, and multicollinearity problem. These tests will help identify and examine the efficiency and consistency of estimator results from the regression analysis. Table 4 simplified the null hypothesis for each autocorrelation and heteroscedasticity tests.

**Table 4**  
 Null Hypothesis of Diagnostic Tests

Test	Null Hypothesis
Autocorrelation	There is no serial correlation of any order
Heteroscedasticity	Homoscedasticity is present

In addition, the correlation among independent variables is undesirable. Therefore, it is needed for Variance inflation factors (VIF) test to be applied in order to identify the multicollinearity issue between these independent variables. According to Daoud [30], if the VIF value is 1, there is no correlation between the independent variables. A VIF range 5 to 10 indicates moderate correlation while VIF larger than 5 indicates high correlation Hence, the VIF need to be less than 5 to have robust and unbiased model.

## 4. Result and Discussion

Table 5 shows the bound test between the independent variables and dependent variable. This verifies the existence of the long-run relationship between the dependent and independent variables at required level of significance. Since the value of F-statistic for both models is higher than the value for the upper bound  $I(0)$  at 5% significance level, the null hypothesis of no



cointegration is rejected. This indicates that there is a cointegration and long run relationship between the dependent and independent variables and the error correction model can be estimated.

**Table 5**  
 Bound Tests

Model Specification	F-statistic	Critical Value		Conclusion
		Lower Bound I(0) (5%)	Upper Bound I(1) (5%)	
NIP & LIP	42.7284	2.39	3.38	Cointegration
TIP	5.1530	2.56	3.49	Cointegration

Based on the Akaike info criterion (AIC), ARDL (1,1,0,2,2) model is the best-lagged model for both model specification which illustrate the long-run and short-run relationship to fulfil the first and second objective of this research. Table 6 summarises the autoregressive distributed lag for the first model, which uses the independent variables of non-life insurance premium and life insurance premium for insurance sector's proxy. Non-life insurance premium is statistically significant and has positive relationship with economic growth in the long-run, but is insignificant in the short-run. Life insurance on the other hand is insignificant in long-run, but is significant and negatively related to economic growth in the short run. These results supported the findings by Haiss and Kjell, [20], Njegomir and Stojic, [4], Chau *et al.*, [13], and Ul-Din *et al.*, [3]. The error correction term (ECT) represents the rate at which the short-run equilibrium is adjusted back to the long-run equilibrium. The table shows ECT value of less than zero and significant, indicating that the series can change to its equilibrium. For this model specification, almost 99% of the discrepancy between the short-run and long-run is corrected within a year. Apart from that, it can be seen that export has significant relationship with economic growth in the short run and import has significant relationship in the long run. An increase of 1% in non-life insurance premium will increase 0.08% of Malaysia's economic growth in long run. In the meantime, an increase of 1% in life insurance premium will reduce economic growth by 0.053% in the short-run. Ul-Din *et al.*, [3] explained in his research that the correlation between the non-life insurance and economic expansion is more significant in developing country compared to developed country. This may be due to a number of factors, including scarcity, expense or mistrust of alternative risk hedging institutions.

**Table 6**  
 ARDL (1,1,0,2,2) for Model with Non-Life and Life Insurance Premium

Long run		Short run	
Variable	Coefficient	Variable	Coefficient
NIP	0.0811***	D(NIP)	-0.0185
LIP	-0.0114	D(LIP)	-0.0526***
IMP	0.2784***	D(LIP(-1))	-0.0279*
FDI	0.2064	D(EXP)	-0.3532***
EXP	-0.0293	CointEq(-1)	-0.9859***

\*\*\*indicates 1% significance, \*\* indicates 5% significance, \* indicates 10% significance

Life insurance played a critical part in propelling economic expansion in developed countries, whereas non-life insurance had a greater influence in emerging countries. Chau *et al.*, [11] argues that this is probably due to different economic structures of developed and emerging countries, and hence the sources of growth differ. Developed countries rely significantly on the services industry and are shifting towards a knowledge-based economy. On the other hand, the economic expansion of developing countries is dependent on capital formation and a manufacturing-based

economic structure. Apart from that, Ul-Din *et al.*, [3] argued that life insurance is more significant in the developed country since they have higher gross domestic product and economic security. Insurance spending will depend on the GDP per capita. The higher the GDP per capita, the higher the insurance demands of the country.

Table 7 shows the summary of autoregressive distributed lag for the second model which uses total insurance premium to proxy the insurance sector. Total insurance premium is insignificant for the long-run, but is significant and has negative relationship with economic growth in the short run. This result supported the findings by Ul Din *et al.*, [3] and Victor, [1]. For this model specification, the ECT value is also negative and significant. Almost 67% of the discrepancy between the short-run and long-run is corrected within a year. In addition, import and export have significant effect towards the economic growth in Malaysia in the short-run, but only import is significant in the long-run. An increase of 1% in total insurance premium will reduce economic growth by 0.027% in the short run. In addition, it can be seen that the result of total insurance premium has the same result as life insurance premium in which they have negative and significant relationship in the short run. This can be explained by the results from the descriptive analysis. Most of the values for life insurance premium are higher compared to non-life insurance. The significance results of life insurance premium on economic growth is more dominant than that of the non-life insurance premium, hence causing the total insurance premium to have result that is similar to the life insurance premium.

Victor, [1] stated that building an effective insurance industry in the country will significantly improve economic growth. Besides, Ilhan and T. Bahadir, [9] emphasized that the insurance industry is an important component of financial sector investment in addressing the need for savings by bringing together investors and providing suitable funding capability. It can be seen that the total insurance premium is significant in the short run compared to the long run since life insurance premium has more contribution as part of insurance industry towards economic growth compared to non-life insurance premium. Dawd and Benlagha, [31] found in their research that as insurance development improves, so does economic growth. However, when insurance development exceeds the turning point, the influence of insurance on growth becomes negative, implying that further insurance development will not result in enhanced economic growth.

**Table 7**  
 ARDL (1,1,0,2,2) for Model with Total Insurance Premium

Long run		Short run	
Variable	Coefficient	Variable	Coefficient
TIP	0.010010	D(TIP)	-0.02717**
IMP	0.416565***	D(IMP)	0.27715***
FDI	0.830217	D(IMP(-1))	-0.06723***
EXP	-0.003666	D(EXP)	-0.25476***
		D(EXP(-1))	0.12387**
		CointEq(-1)	-0.66559***

\*\*\* indicates 1% significance, \*\* indicates 5% significance, \* indicates 10% significance

Table 8 shows the result of diagnostic checking for autocorrelation test, heteroscedasticity test and multicollinearity test. The p-value for both autocorrelation and heteroscedasticity test are greater than 0.05, for both models. This indicates that both models have no serial correlation problem and are homoscedastic. All VIF values for both models are between 1 to less than 3 indicating no multicorrelation or very low correlation between the variables. Therefore, there is no multicollinearity problem for both models. The models are dependable to be used for analysis.

**Table 8**  
 Diagnostic Checking

Model Specification	p-value (Autocorrelation test)	p-value (Heteroscedasticity test)	VIF (Multicollinearity test)
NIP & LIP	0.9683	0.9828	All VIF values between 1.70 to 2.69
TIP	0.7789	0.6345	All VIF values between 1.19 to 2.27

## 5. Conclusions

The purpose of this study is to investigate the relationship of insurance sector on economic growth for Malaysia's market from year 1990 until 2021. The research has fulfilled all the objectives of this study which are to examine the relationship between the insurance industry and economic growth for Malaysia's market and to identify the correlation between the insurance industry with economic growth in the short-run and the long-run. As a result, non-life insurance has a significant and positive relationship on economic growth in the long run while life insurance has a significant and negative relationship with Malaysia's economic growth in the short-run. In the meantime, the total insurance premium has a significant and negative relationship with economic expansion of Malaysia's market in the short run. These results are aligned with the past research by Victor, [1], Chau *et al.*, [11], and Ul-Din *et al.*, [3]. This shows that Malaysia's market has more significant relationship with non-life insurance since Malaysia's market depends more on capital formation and a manufacturing-based economic structure to increase the economy development. Policymaker should focus on providing more incentive for the non-life insurance sector to thrive more as it will continue to give a boost for Malaysia's economy in the short-term, and moving towards becoming a developed and high income nation. At the same time, the life insurance sector will benefits more publicity to help them uplift the sector and join hands with the non-life insurance industry to further advanced the economy.

The focus of this research is on identifying and analysing the significance of insurance industry as a whole on economic growth. The insurance industry contributes to Malaysia's economic growth through investment. Insurance corporations make significant investments in the Malaysian economy, particularly in infrastructure, real estate, and capital markets, supplying a critical source of finance for the country's development (Ace Power Group, 2023). It is hoped that this research would help the government and policymaker to approve of the important roles of insurance industry towards economic development and urge to continue their support to grow the insurance industry in order to rapidly improve the country's economy.

Apart from that the government as well as the private sectors can play their roles to encourage the community to buy insurance for protection against risk and uncertainty and at the same time help boom the economy. The country's large population and developing middle class create a growing needs for financial protection products, are the primary drivers of Malaysia's insurance and takaful industry's growth. Insurance is paid to protect someone or something against anticipated future threats that may or may not arise. Financial growth will be impacted as the demand for insurance increases. As a result, economic growth will accelerate due to financial expansion. It is suggested for the future study to take into consideration the economic shock to the insurance industry such as the latest Covid-19 pandemic to provide insights and recommendation for mitigating the inverse impact of the shocks.

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