Australian Journal of Basic and Applied Sciences, 7(10): 538-546, 2013
ISSN 1991-8178

Economic Development Cointegration and Malaysian Life and General Insurance Consumption

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Abstract: Insurance sector had grown tremendously in most developing economy, which reflected in insurance penetration and density rate among this developing economy. The objective of this study is to ascertain the short term and long term relationship between life and general insurance consumption with economic development measured by gross domestic product (GDP). The study use capital stock, total employment, life and general insurance premium as an independent variable against GDP. This study analyzed the co-integration, Granger causality and Co-integration Rank Tests with error reducing methods of Vector Error Correction method (VECM). The results conclude that total employment and life insurance premium had a positive impact and significant relationship in short term economic development, while lag of GDP, capital stock, total employment, and general insurance premium exhibit a positive and significant relationship in long term economic development in the Malaysian insurance market.

Key words: Life Insurance Premium, General Insurance Premium, Economic Development (GDP), Co-integration, Vector Error Correction, Granger Causality.

INTRODUCTION

Insurance policy is a complicated agreement between insurance company (insurer) and policyholders. The agreement stipulates specific terms and conditions obligating the insurer to compensate insured under certain contingent events. The relationship of insurance activities and economic development had attracted tremendous attention lately, and empirical studies had successfully established the long term relationship between insurance sector and economic development (Catalan *et. al*., 2000), (Ward and Zurbruegg, 2000), (Boon, 2005), (Adam *et. al*., 2008), (Avram *et. al*, 2010) and (Feyen *et. al*., 2011).

Most previous studied conclude that insurance sector contributed to economic development in the form of "supply-leading" (Webb *et. al*., 2002), (Boon, 2005) and (Han *et al*., 2010). However, other researchers had different findings. Kugler and Ofoghi (2005) found bi-directional causality between insurance sector growth and economic development. In other words, insurance sector growth influenced economic development and vice versa. The influence of insurance development on economy had been highlighted since first conference of UNCTAD in 1964. The conference acknowledged the importance of a sound national insurance and reinsurance market in promoting economic growth. In 2005 United Nation Conference on Trade and Development (UNCTAD) economic conference, insurance sector was acknowledged as one of the pillars of financial services sector. Insurance sector along with the banking and securities sectors play a key role in economic development. Given its dual role as an infrastructural and commercial service, the sector directly and indirectly affects the activities of individuals and businesses. Well-functioning insurance sector contributes to economic development by allowing country's capital to be allocated to more efficient and most viable investment (Kugler and Ofoghi, 2005).

The importance of the insurance toward economic development is also reflected in the growing share of insurance premium (life and general insurance premium), insurance assets/funds in relation to Gross Domestic Product, as well as total financial assets (Table 1). Two commonly used indicators to gauge the importance of insurance sector to the country economy are insurance penetration and density. Insurance penetration is the ratio of total premium divided by GDP, and it indicates the importance of insurance activity in overall economy (Figure 1). Insurance density or "premium per capita" measures the amount average individual spends in insurance services within the country (Figure 2), and it is normally calculated in US dollar (in real term after deducted inflation) (Ma and Pope, 2008).

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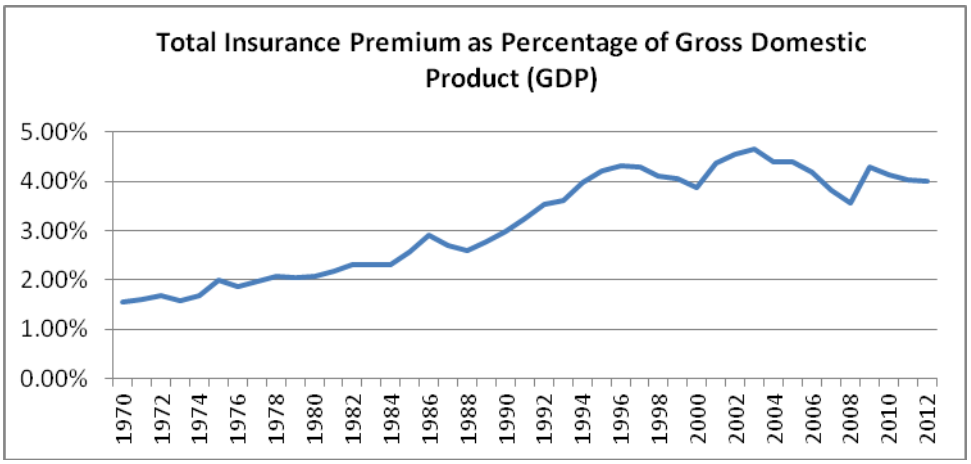
Table 1: Total Insurance Fund and Total Insurance Fund as Percentage of Gross National Income (GNI) in Malaysia from 1970 to 2012

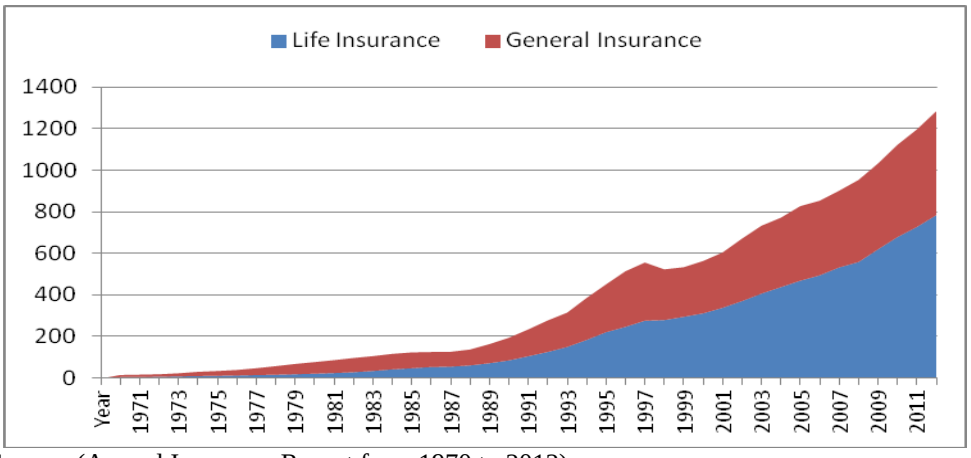
	1970	1980	1990	2000	2010	2012
Total Insurance Fund (RM, million)	437.3	2,265.5	9,498.1	50,597.9	166,191.2	195,625.8
General (RM, million)	115.5	818.8	2,400.9	13,791.0	24,732.9	167,330.3
Life (RM, million)	321.8	1,446.7	7,097.2	36,806.9	141,458.3	195,625.8
Total Insurance Fund as % of GNI	4	4	8	15	22	22
Total Insurance Asset as % of Total Financial System Asset	3.8	3.4	2.9	4.0	5.1	5.5

Source: (Annual Insurance Report from 1970 to 2012)



Source: (Annual Insurance Report from 1970 to 2012)

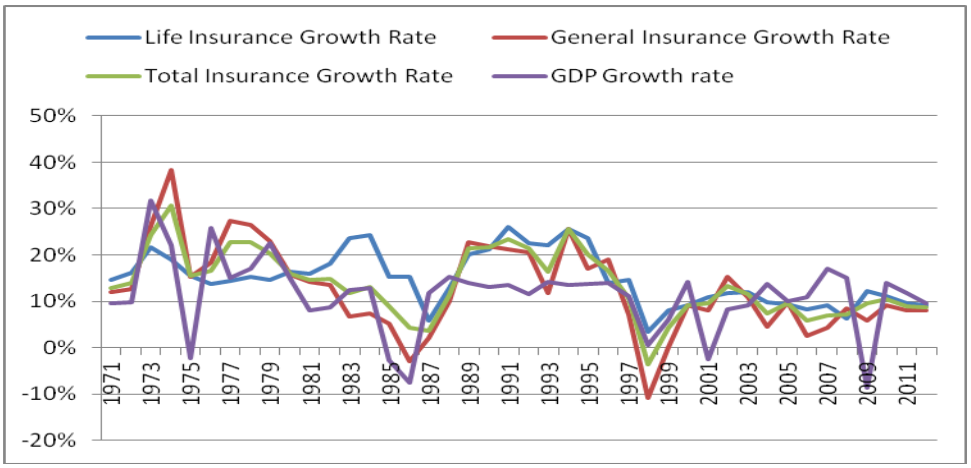
Fig. 1: Insurance Penetration from 1970 to 2012 in Malaysia



Source: (Annual Insurance Report from 1970 to 2012)

Fig. 2: Insurance Density from 1970 to 2012 in Malaysia

The insurance data shows that the trend of insurance consumption (insurance penetration) generally follows an "S-Curve". The insurance sector experiences lower levels development in less developed economy, and growth rate accelerates as economy expanded. Afterward, insurance sector experiences slower growth again as the market matures. In short, development of insurance market varied according to the state of enabling environment, and closely related to other macroeconomic factors such as GDP (Figure 3). Therefore, the nexus between economic development and insurance is country specific and dependent on a number of national circumstances. Other factors include legal and political environment determinant which affects the pace of insurance activities and development (USAID, 2006).



Source: (Annual Insurance Report from 1970 to 2012)

Fig. 3: Life, General and Total Insurance Growth in Malaysia from 1970 to 2012

Literature Review:

The major function of insurance from the perspective of insured is risk transfer. Without existence of insurance market reduced the welfare for those willing to pay to transfer risks and those found it profitable to accept risk at certain prices. Insurance services effectively reduce adverse impact by mitigating volatility and uncertainty and smoothing the entire economic cycle in aggregate and micro economic level. Insurance functionality as risk transfer and indemnification had stimulated the business activity by enhancing trade, transportation and capital lending (Regan and Hur, 2007). Insurance increased private consumption by relieving the fear of risk adverse individual in car purchase or real estate investment. Insurance services support growth in productivity and innovation and without proper protection might deter possible efficiency improvement, development of new products and services and the additional profits achieved by the compensation of extra business ventures (Zurbruegg, 2000).

Insurance increase the possibilities of their client to increase income and economic efficiency due to more aggressive approach toward venturing into new technology and products. In turn, the business might incur slight expenditure in form of premium payment. Overall, insurance contributes to long term growth in business thus benefiting the economy through better technology. It would lead to higher productivity, resulting from successfully fostering entrepreneurial attitudes, encouraging investment, innovation, market dynamism and competition (Han *et. al.*, 2010).

The insurance function enabled risk transfer and indemnification and reducing the dependence on precautionary savings held by companies or household. It also enables them to channel their saving into more productive usage. This effect of substitution between saving and investment depended on how the premiums were financed. Insurance premiums might be financed through the transfer from saving to insurance payment, thus insurance acted as competitor for banking intermediary. In contrast, the premiums could be financed through additional flow of income, therefore no substitution affect. In these scenarios, the insurance services could result in an increased consumption of households and might increase market competition and efficiency (Zou and Adams, 2006) and (Adams *et al.*, 2009).

The phenomenon of "saving substitution effect" of insurance sector is most obvious for life insurance sector. Within the market for intermediate saving, life insurance companies gained ground and reduced the market share of the banking sector (Van den Berghe, 1999) and (Allen & Santomero, 1999). This is evident from the premium growth in Europe region, which during 1990' the life insurance premium increased nearly two fold, and hence, strengthened the insurance company's role in financial intermediation. Insurance intermediation increased market competition which enabled customers to access diverse investment portfolio and reduce the average risk the economy faced. This reduced the need to save for emergency and decreased domestic saving. Moreover, it enabled the company and households to channel their saving toward higher risk investment that might help to create more innovative products and services that would contribute to economic growth in the long run, (Boon, 2005), (Curak, *et.al.*, 2009) and (Feyen *et.al.*, 2011).

The insurance company as an institutional investor had become increasingly important. The total investment by insurance companies from Europe had grown by 1/3 from 1992 to 2002. Whereby, investment by life insurance companies almost increased by 100% over the same period. Insurance companies as an important institutional investor constantly participated in enhanced good corporate governance practices and improved the capital market efficiency (Catalan *et. al.*, 2000). Insurers as active participants in corporate governance reduced risk of malpractice of management, operating and financial risk (Hoyt and Khang, 2000). The contribution of

insurance sector toward economic development lies on its investment on capital market (domestic and international), prevention of moral and physical hazard, and provide risk assessment (Ward and Zurbruegg, 2000).

Catalan, Impavido and Musalem (2000) found that there is positive relationship between market development and long term contractual savings. The market capitalization and total funds from insurance companies are closely related, and the finance-growth literature attributed the effective roles of insurance companies as major institution investor on stock and bond markets. Insurance sector playing crucial role in financial deepening, improves financial market effectiveness and efficiency, and capital market mobilization. Moreover, insurance sector exerted downward pressure on lending rate via competition with banking sector, and provided institution of scale toward oversight mechanism. Overall, the insurance sector created healthy competition among financial institution lead to lower transaction costs, higher return in capital investment, and ultimately improved the contribution of financial sector toward real economic development (Bosworth and Triplett, 2004).

As a major institutional investor, insurance sector increases the investment volume in equity, bond and real estate market. Total investment by insurance sector to GDP growth is a major avenue of insurance-growth-nexus. Insurance companies via capital market indirectly provide capital for various types of investment and heightened demand for the financial market instruments. By adding depth and liquidity in capital market, they improve the overall performance of capital markets. As capital market improves in liquidity, it eased private sector and other institutional investors to pursue wider investment portfolios, and channel certain portions of investment in high-risk, but high-productivity projects. Meanwhile, this intensifies the pressure on the economy to reduce resources wastage, fuel economic growth by guiding the flow of funds to high productivity and capital intensive projects (Arena, 2006).

The insurance company's investment activities have a significant impact on the capital markets and overall economy. In particular, it promotes market development by deepening and widening capital market and transfer knowledge of accurate risk assessment. In addition, to accurately assess the impact of contractual saving to market capitalization, total insurance assets may be figured to estimate the quality of capital managed and provided by insurances in the endogenous growth model (Kok *et. al*., 2010).

Insurance company provides professional risk identification, assessment and consultation to public and private sectors. Many commercial insurance contracts involved substantial amount of premiums, and associated with high risk exposure required to conduct adequate risk assessment. Risk assessment is integral part of overall underwriting process. Insurers are normally provided professional advices to insure in several ways to improve risk as identified by risk assessment. Besides, insurers support many loss-control programs, typically, fire prevention, occupation and health and safety, theft prevention, road safety campaign and others. These reduced both direct and indirect losses to business and individual. Without insurance services, individual or firm trying to self-insure may not have the necessary specialized knowledge to reduce these losses (Liedtke, 2007). .

Kugler and Ofoghi (2005) evaluated the long term relationship in insurance market and economic development in UK from 1996 to 2003. Disaggregated data for life insurance and general insurance were used. Disaggregated data for life insurance included, annuities, individual pension and other pension for life sectors, whilst for general insurance included personal and business insurance. Net premium was used as a measurement for the market size. The results showed positive long term relationship in insurance market size and economic growth for all components at 5% level of significance. But, in term of causality, only 7 out of 9 components showed insurance industry caused GDP growth in short and long term which excluded liability and marine, aviation and transport industry. The findings also revealed economic growth Granger caused insurance growth but not vice versa reflecting demand following of insurance sector in UK.

Arena (2006) examined the relationship between economic growth and insurance activity for industrialized and developing countries from 1976 to 2004. The studied covered developed and developing countries. Average rate of real capita GDP growth was used as proxy of economic growth, and hypothesized as a factor of life insurance (ratio of life premium to GDP), general insurance (ratio of general insurance to GDP), human capital investment (school enrolment), inflation rate, trade (average growth in trade ratio), government consumption, private credit and stock market development. The study applied generalized method of moments (GMM) to analyse the dynamic models of panel data in the study. The findings concluded positive relationship between insurance and economic growth, and existed causality relationship from insurance activity to economic growth.

Han *et. al.* (2010) investigated the relationship of life and general insurance sector and economic development in 77 countries. The study applied the Generalized Moment method (GMM) dynamic panel estimation on the data. The results showed general insurance was more significant for economic development than life insurance, especially in developing countries. Ching *et. al*., (2010) studied the life insurance sector in Malaysia. The Johansen co-integration and Granger causality method was used to investigate long term and causality relationship among the variables. The results showed that the life insurance and economic development measured by Gross Domestic Product (GDP) existed unidirectional causality running from GDP to life insurance sector.

Avram *et. al*. (2010) examined the insurance sector among 93 countries. The study used insurance density and penetration to represented insurance sector development. Ordinary Least Square (OLS) and Generalized Moment Method (GMM) panel estimation method was applied to the data. The results showed that insurance density and economic development was "supply leading", but not for insurance penetration. Chen *et.al*., (2011) investigated the relationship between life insurance market, stock market and economic development in 60 countries. The study applied the GMM dynamic panel estimation on the data. The results showed that there was strong impact of the development of the life insurance market on economic growth. However, stock market and life insurance market were substitute rather than complements.

Feyen *et. al.* (2011) studied the important factors affecting the general insurance consumption in 90 developed and developing countries. Panel data analysis and random effect method were used to analyze the data. The results showed GDP per capita income was the most important driver for general insurance consumption, and other factors, such as institutional structure and market structure variables were another important factors influencing general insurance consumption. The results also concluded that predominance of Muslim in the population adversely affected the insurance sector.

Methodology:

The single equation econometric model develops to examine the role of general and life insurance premium in economic development. The gross domestic product (GDP) hypothesized as a function of capital stock (CA), total employment (LA), life insurance premium (LI) and general insurance premium (GI), and the study is used the yearly data from 1970 to 2012.

$$GDP_t = f\,(CA_{t-1,}\, LA_{t-1,}\, LI_{t-1,}\, GI_{t-1,}\, T,\, e_t) \quad (1)$$

where,

GDP	= Gross Domestic Product, (Current Ringgit Malaysia (RM) billion)
CA	= Capital Stock, (Current Ringgit Malaysia (RM) billion)
LA	= Total Employment, (million)
LI	= Life Insurance Premium, (Current Ringgit Malaysia (RM) billion)
GI	= General Insurance Premium, (Current Ringgit Malaysia (RM) billion)
T	= Time Trend, (Yearly data from 1970 to 2012)
e_t	= Error Term

Table 2: Results of Augmented Dickey-Fuller (ADF) and Phillip –Perron (P/P) unit root tests.

Variables	Level		1st Level		2nd Level	
	ADF	P/P	ADF	P/P	ADF	P/P
GDP	5.086 (1.000)	17.587 (1.000)	-4.500 (0.000)***	-4.576 (0.000)***	-10.598 (0.000)***	-28.120 (0.000)***
CA	1.178 (0.997)	1.960 (0.999)	-6.296 (0.000)***	-6.297 (0.000)***	-11.297 (0.000)***	-20.139 (0.000)***
LA	1.721 (0.999)	2.162 (0.999)	-6.832 (0.000)***	-6.953 (0.000)***	-9.889 (0.000)***	-10.704 (0.000)***
LI	17.464 (1.000)	14.120 (1.000)	-0.148 (0.936)	0.279 (0.974)	-8.394 (0.000)***	-8.508 (0.000)***
GI	5.672 (1.000)	4.832 (1.000)	-2.619 (0.097)*	-2.629 (0.095)*	-7.892 (0.000)***	-9.760 (0.000)***

Note: ***: Statistically significantly at 0.01 level; **: Statistically significantly at 0.05 level; *: Statistically significantly at 0.10 level. ADF: Augmented Dickey-Fuller test statistic; P/P: Phillip-Perron Test statistic.

A unit roots test is vital in observing the stationary of time series data. According to Gujarat (2003), Enders (2002), Pindyck and Rubinfeld (1998) most of the time series variables were non stationary, with non-constant mean and variance (unit root). A series was stationary given that it's mean and auto-covariance do not depended on time. Any series that were non-stationary can leaded to spurious regression result. Box and Jenkins (1970) suggested that integrated time series should be transformed into stationary by differencing before used modelization. Therefore, removing unit roots was pre-requirement upon regression analysis. The results of stationary test (Augmented Dickey-Fuller and Phillip–Perron test) showed that all variables were not stationary in level term. In first difference GDP, CA and LA were stationary at 0.01 level, GI stationary at 0.10 levels, and LI was not stationary. All variables reported stationary in second difference (Table 2). The hypotheses being tested are: H0: The data is not stationary, it contains unit root) and H1: The data is stationary, it contains no unit root.

The vector autoregressive (VAR) model is a general framework used to describe the dynamic interrelationship among stationary variables. If the time series are not stationary then the VAR framework needs to be modified to allow consistent estimation of the relationships among the series. According to Engle and Granger (1986) a linear combination of two or more non stationary series might be stationary. If such a

stationary linear existed, the non-stationary time series is said to be co-integrated. The Vector Error Correction method (VECM) model is just a special case of the VAR for variables that are stationary in their differences, and the variables are co-integrated (Gilbert, 1986; Henry and Ericsson, 2001). The VECM model has co-integration equation specified in such a way so that it restricts the long-term behavior of the endogenous variables to converge to their co-integrating relationship while allowing for short-term adjustment dynamics. The co-integration equation is known as the Error Correction Model (ECM) since the deviation from long-term equilibrium is corrected steadily through a series of partial short-term adjustments. Therefore, ECM will be non-zero and each variable adjusts to partially restore the equilibrium relation. The coefficient α_1 measures the speed of adjustment of the *i-th* endogenous variable towards the equilibrium.

Thus, the VECM equations model of GDP is as follow:

$$\Delta GDP_t = \alpha_1 + \beta_{11}\Delta CA_{t-1} + \beta_{12}\Delta LA_{t-1} + \beta_{13}\Delta LI_{t-1} + \beta_{14}\Delta GI_{t-1} + \beta_{15}\Delta GDP_{t-1} + e_t \quad (2)$$

Co-integration is a statistical concept within the regression theory framework that explains the long run equilibrium in economic theories. Indeed, the finding of many macro time series contain a unit root has spurred the development of the theory of non-stationary time series analysis. Engle and Granger (1987) pointed out that a linear combination of two or more non-stationary series may be stationary. If such a stationary linear combination exists, the non-stationary time series are said to be co-integrated. The stationary linear combination is called the co-integrating equation and may be interpreted as a long-run equilibrium relationship among the variables.

Co-integrated variables are generally unstable in their levels, but exhibit mean-reverting "spreads" (generalized by the co-integrating relation) that force the variables to move around common stochastic trends. As mentioned by Davidson, Hendry, Srba and Yeo (1978), the models that imposed the “long run" condition should not affect the series to drift arbitrarily far from each other. Previously, statisticians tended to use linear regression to examine macroeconomic variables that appeared to be non-stationary, and without applied statistical inference to examine the stationary of data could lead to spurious results (Engle, Robert, F., and Granger, C.W.J., 1987). Granger (1986) explained that non- stationary variables might suggest statistically significant regression (R^2>0.95, DW<1.5) mainly due to a long term trend of the variables (Granger and Newbold, 1974).

The VAR-based co-integration test developed by Johansen (1991, 1995) is to determine co-integration relation of non-stationary series. According to Granger’s representation theorem if the coefficient matrix II has reduced rank $r< k$, then there exist k x r matrices α and β each with rank r such that $II = \alpha\beta'$ and $\beta' y_t$ is I(0). R is the number of co-integration relations (the co-integration rank) and each column of β is the co-integration vector. The α are the adjustment parameters in VECM model, and Johansen’s method is to estimate the II matrix from an unrestricted VAR and to test the restrictions implied by the reduced rank of II. Therefore, the co-integration equation of GDP is as follows:

$$\beta_{10}\Delta GDP_{t-1} + \beta_{11}\Delta CA_{t-1} + \beta_{12}\Delta LA_{t-1} + \beta_{13}\Delta LI_{t-1} + \beta_{14}\Delta GI_{t-1} = 0 \quad (3)$$

The Granger (1969) approach to causality is a statistical concept to assess how much of the current y can be explained by past values of y and then adding values of x can improve the explanation, and y is said to be Granger-caused by x if x helps in the prediction of y, or equivalently if the coefficients on the lagged x’s are statistically significant. In time series data, current events (y) occurred prior to past events (x), and then it’s possible that y is caused by x, but not vice versa. Nonetheless, two-way causation (bidirectional) is frequently occurred between the variables (y Granger caused x, and also x Granger caused y). The Granger causality mathematical formulation is based on linear regression modeling of stochastic process (Granger, 1969). Moreover, Sims (1972) approaches that, Granger causality relationship is expressed in two pairs of regression equations by simply twisting independent (X) and dependent (Y) variables as follows:

$$X_t = \alpha_1 X_{t1} + \alpha_2 X_{t2} + \ldots + \alpha_p X_{tp} + \beta_1 Y_{t1} + \beta_2 Y_{t2} + \ldots + \beta_p Y_{tp} + u_{1,t} \quad (4)$$
$$Y_t = \beta_1 Y_{t1} + \beta_2 Y_{t2} + \ldots + \beta_p Y_{tp} + \alpha_1 X_{t1} + \alpha_2 X_{t2} + \ldots + \alpha_p X_{tp} + u_{2,t} \quad (5)$$
$$X_t = \alpha_1 X_{t1} + \alpha_2 X_{t2} + \ldots + \alpha_p X_{tp} + u_{1,t} \quad (6)$$
$$Y_t = \beta_1 Y_{t1} + \beta_2 Y_{t2} + \ldots + \beta_p Y_{tp} + u_{2,t} \quad (7)$$

Therefore, the GDP model will be co-integrated and long term relationship and showed any of direction in two pairs of regression equations by simply twisting independent (X) and dependent (Y) variables if any or all of β11, …, β15 in equation 2 are statistically significant (p-value < 0.05) Khin *et. al*. (2012).

RESULTS AND DISCUSSION

Engle and Granger (1987) pointed out that a linear combination of two or more non stationary series might be stationary. If such a stationary linear existed, the non-stationary time series were said to be co-integration. The stationary linear combination was called the co-integration equation and might be interpreted as long run relationship among the variables. Two types of Unrestricted Co-integration Rank Test were conducted, namely Trace Test and Maximum Eigenvalue Test. The results of co-integration Rank Test showed that co-integration existed among the variables (Table 3).

Table 3: Unrestricted Co-integration Rank Test (Trace and Maximum Eigenvalue) Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.594	87.153	37.048	30.439	0.000***
At most 1*	0.436	50.104	23.480	24.159	0.003***
At most 2*	0.375	26.623	19.270	17.797	0.024**
At most 3	0.163	7.353	7.330	11.224	0.291
At most 4	0.000	0.022	0.022	4.129	0.901

Trace test indicates 3 co-integrating eqn(s) at the 0.05 level

The VECM reported in the single equation model of GDP (equation 8), the explanatory variables of capital stock (CA), total employment (LA), Life (LI), life premium (LI), and past year GDP accounted for about 27 percent of the variation in the Gross Domestic Product (GDP). Estimation also revealed that in short term, the explanatory variables, namely total employment (LA) and Life premium (LI) were the most important explanatory variables with statistical significant at the 0.05 level. However, in the equation 8, GDP model for life and general insurance premium only can be explained about 27 percent in the short term. Therefore, we tested again it with cointegration test and Granger causality for long term relationship.

VECM equation of Gross Domestic Product (GDP) Model:

$$\Delta GDP_t = 0.010 + 0.017\Delta CA_{t-1} + 0.093\Delta LA_{t-1} + 0.593\Delta LI_{t-1} + 0.036_4\Delta GI_{t-1} + 0.140\Delta GDP_{t-1} + 0.044$$

T statistic [0.078] [2.294]** [2.837]** [0.200] [0.628] [0.001] (8)

R-squared = 0.271 Adj. R-squared = 0.1430

Co-integration equation of Gross Domestic product (GDP) Model:

$$-0.132\Delta GDP_{t-1} + 0.386\Delta CA_{t-1} + 0.054\Delta LA_{t-1} + 0.003\Delta LI_{t-1} + 0.108GI_{t-1} = 0 \quad (9)$$

T Statistic [-2.912]** [3.371]** [2.582]** [0.110] [2.211]**

The results from co-integration equation (9), the lag of GDP, capital stock, total employment, and general insurance premium exhibited a positive and significant relationship in long term economic development in the Malaysian insurance market. Therefore, the results from VECM equation and co-integration showed that insurance sector playing important role in facilitate economic development in short and long term. The results supported previous studies of Feyen, (2011), Han *et. al*. (2010), Ćurak, Lončar and Poposki (2009), Haiss and Sumegi (2008), Kugler and Ofoghi (2005) that insurance sector existed a positive and long term impact on economic development measured by gross domestic product.

Furthermore, a study of international cross-country insurance data from last 42 years revealed that insurance consumption is not only strongly correlated with GDP, but it significantly outpaced worldwide economic growth. According to Hussels *et al*. (2005) and Arena (2006) both general and life insurance exerted positive and long term effect on economic growth. Life insurance had a pivotal role in driving the economic growth in developed countries, whilst general insurance sector had more significant impact in developing countries. The possible explanation is that developed and developing countries have different economic structure, and source of growth vary accordingly. Developed countries highly relied on services industry and more toward knowledge base economy. On the other hand, developing countries economic growth depended on capital formation, and manufacturing based economic structure (Li *et al*., 2007).

Nonetheless, there are two different views on the nexus of insurance and economic development. Among others, Webb *et. al*. (2002), Boon (2005) and Han *et. al* (2010) argued that insurance sector contributed to economic development in the form of "supply-leading", but Kugler and Ofoghi (2005) found bidirectional relationship between insurance and economic development. Notwithstanding, most studies had proved that life insurance affected economic development mainly in medium and high income countries, via offering wider choices of protection and investment. Meanwhile, general insurance drove economic growth in both developed and developing countries through facilitate capital formation and other forms of infrastructure development (Wong and Khin, 2013).

The result of Granger causality test in Table 4 reported that capital stock (CA) had unidirectional causality relationship with gross domestic product (GDP) running from GDP to CA at 0.10 significant level. Meanwhile, total employment (LA) and GDP exist bidirectional causality relationship at 0.05 and 0.01 significant level. Moreover, Ward and Zurbruegg (2000) examined the short and long term dynamic relationships between economic and insurance growth in nine OECD countries from 1961 to 1996. The author applied Johansen Co-integration and Granger Causality test in the study. The real GDP was used as dependent variable and as proxy to measure the economic growth, and total real premiums as independent variable to measure insurance growth. Other variable, included private saving, government budget, government expenditure and dependency ratios were included to control the potential influence both on insurance and GDP in order to improve the explanatory power of the regression. The results from the studied failed to establish the link between economic development and insurance activity. The results from the study indicated that the nexus between economy development and insurance were country specific and influenced by others national circumstances. The author said that the weaknesses of the study might due to limited observations, and sample bias might occur as a result of insufficient periods.

Table 4: Result of Granger Causality Test

Granger Causality Direction	F- Statistic	Probability
CA → GDP	0.666	0.419
GDP → CA	3.032	0.089*
LA → GDP	4.564	0.039**
GDP → LA	14.810	0.000***
LI → GDP	1.982	0.167
GDP → Li	0.365	0.548
GI → GDP	0.136	0.713
GDP → GI	0.661	0.421

Conclusion:

This study aim to ascertain the important role of insurance sector in facilitates the economic development in short and long term, measured by Gross Domestic Product. The results showed that life insurance and total employment have a significant positive impact in short term economic development. In long term capital stock, total employment and general insurance showed significant and positive impact. The studied also indicated capital stock and gross domestic product existed unidirectional causality relationship, which gross domestic product Granger caused capital stock, and total employment and gross domestic product showed bidirectional causality relationship.

Therefore, government needs to take proactive measure to enhance the effectiveness and efficiency of insurance sector, and encourages individual and entrepreneur better utilize insurance policy as an effective risk diversification mechanism for financial and operation risks. Higher tax incentive in the form of tax rebate, mandatory group personal accident and health insurance for manufacturing sector, consolidated insurance sector to enhance operational efficiency, product and process innovation by insurer, and high degree of professionalism in agency force will definitely benefits insurance sector and overall economic development in short and long term.

REFERENCES

Arena, M., 2006. Does insurance market activity promote economic growth? World Bank Policy Research Working Paper, No. 4098, World Bank, Washington. D.C.

Adams, M.J., L.F. Andersson, Andersson and M. Lindmark, 2009. Commercial banking, insurance and economic growth in Sweden between 1830 to 1998. Accounting, Business and Financial History, 19(1): 21-38.

Avram, K., Y. Nguyen and M. Skully, 2010. Insurance and economic growth: A cross country examination. Monash University, Dept. of Accounting and Finance, Working Paper.

Bosworth, B.P. and J.E. Triplett, 2004. Services productivity in the United States: sources of economic growth. Washington, D.C.: Brookings Institution Press.

Boon, T.K., 2005. Do commercial banks, stock market and insurance market promote economic growth: An analysis of the Singapore Economy. Nanyang Technological University.

Catalan, M., G. Impavido and A.R. Musalem, 2000. Contractual savings or stocks market development: Which leads? Journal of Applied Social Science Studies, 120(3): 445-87.

Curak, M., S. Loncar and K. Poposki, 2009. Insurance sector development and economic growth in transition countries. International Research Journal of Finance and Economics, 34: 29-41.

Chen, P.F., C.C. Lee and C.F. Lee, 2011. How does development of the life insurance market affect economic growth? Some international evidence. Journal of International Development, 24(7): 865-893.

Davidson, J.E.H., D.F. Hendry, F. Srba and S. Yeo, 1978. The Economic Journal, 88(352): 661-692.

Feyen, E., R. Rocha and R. Lester, 2011. What drives the development of the insurance sector: An empirical analysis based on a panel of developed and developing countries. Washington, D.C.: The World Bank.

Granger, C.W.J., 1969. Investigating causal relations by econometric models and cross spectral methods. Econometrica, 37: 24-36.

Granger, C.W.J. and P. Newbold, 1974. Spurious regressions in econometrics. Journal of Econometrics, 2(2): 111-120.

Gilbert, C.L., 1986 . Professor Hendry's Econometric Methodology. Oxford Bull Economic Statistic, 48: 283-307.

Granger, C.W.J., 1986. Developments in the study of co-integrated economic variables. Oxford Bulletin of Economic and Statistic, 37: 24-36.

Gujarat, D., 2002. Basic Econometric, 4th edition, New York: McGraw-Hill.

Hoyt, R.E. and H. Khang, 2000. On the demand for corporate property insurance, Journal of Risk and Insurance, 67(1): 91-107.

Hendry, F.D. and N.R. Ericsson, 2001. Understand econometric forecast. MIT Press, Cambridge.

Hussels, S., D. Ward and R. Zurbruegg, 2005. Stimulating the demand for insurance. Risk Management and Insurance Review, 8(2): 257-278.

Haiss, P. and K. Sümegi, 2008. The relationship between insurance and economic growth in Europe: A theoretical and empirical analysis. Empirica, 35(4): 405-431.

Han, L.Y., D.H. Li, F. Moshiran and Y.H. Tian, 2010. Insurance Development and Economic Growth. Geneva, 35: 183-189.

Kugler, M., and R. Ofoghi, 2005. Does insurance promote economic growth: Evidence from UK. Working Paper (May 2005), Division of Economics, University of Southampton, UK

Khin, A.A., M. Zainalabidin and A.A.H. Amna, 2012. The Impact of the Changes of the World Crude Oil Prices on the Natural Rubber Industry in Malaysia. WASJ-2012-2507, World Applied Sciences Journal indexed (WASJ), ISSN 1818-4952, 20(5): 730-737.

Liedtke, P.M., 2007. What's insurance to a modern economy. Geneva Papers on Risk and Insurance, 32(2), 211-221.

Li, D., F. Moshirian, P. Nguyen and T. Wee, 2007. The demand for life insurance in OECD countries. Journal of Risk and Insurance, 74(2): 637-652.

Ma, Y.L., and N. Pope, 2008. Foreign share, insurance density, and penetration: An analysis of the interna tional life insurance market. Risk Management and Insurance Review, 11(2): 327-347.

Pindyck and Rubinfeld, 1998. Econometric Models and Econometric Forecasts, 4th Edition, New York: McGraw-Hill.

Regan, L. and Y. Hur, 2007. On the corporate demand for insurance: The case of Korean Non Financial Firms, Journal of Risk and Insurance, 74(4): 829-850.

Sims, G., 1972. "Money, Income and Causality". American Economic Review, 62: 540-552.

UNCTAD, 2005a. Trade and Development Aspects of Insurance Services and Regulatory Frameworks, DITC/TNCD/2005/17, Geneva: United Nations.

USAID, 2006. Assessment on How Strengthening the Insurance Industry in Developing Countries Contributes to Economic Development, United States Agency, Reports available at www.iifdc.org/pubs/Insurance%20Assessment%20Report.pdf

Van den Berghe, L.A.A., 1999. Convergence in the financial services industry, published in Insurance And Private Pensions Compendium For Emerging Economies, Book 1, Part 1:5a, Insurance and Private Pensions Unit, OECD, 2001: 173-285.

Ward, D., and R. Zurbruegg, 2000. Does insurance promote economic growth: Evidence from OECD countries. Journal of Risk and Insurance, 67(4): 489-506.

Webb, I., M.F. Grace and H. Skipper, 2002. The effect of banking and insurance on the growth of capital and output. Georgia State University, Center for Risk Management and Insurance, Working, pp: 02-1.

Wong, H.C. and A.A. Khin, 2013. General Insurance Consumption Model for Economic Development in Malaysia. Australia Journal of Basic and Applied Science, 7(6): 486-492.

Zou, H. and M.B. Adams, 2006. The corporate purchase of property insurance: Chinese evidence. Journal of Financial Intermediation, 15(2): 156-196.