INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN ECONOMICS & MANAGEMENT SCIENCES

OPEN ACCESS JOURNAL

Vol 11, Issue 3, (2022) E-ISSN: 2226-3624

The Nexus between Macroeconomic Variables and Demand for Life Insurance in Malaysia

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To Link this Article: http://dx.doi.org/10.6007/IJAREMS/v11-i3/15329 DOI:10.6007/IJAREMS/v11-i3/15329

Published Online: 26 September 2022

Abstract

The insurance industry's growth has an all-encompassing impact on the economic state of a nation. In the recent era of COVID-19 pandemic, insurance companies experienced a slowdown in the premiums particularly in the life sector. Premium volumes worldwide declined as consumers chose to reduce discretionary expenditure on life insurance policies. Life insurance is one of the ways to provide income protection for the dependents or beneficiaries upon the passing of an insured person, total permanent disability, or maturity of the policy contract. This study therefore takes stock of the recent events in examining the nexus between macroeconomic variables and life insurance demand in Malaysia. The ordinary least square (OLS) methodology is employed using 34 years data spanning from 1988 until 2021. The findings from this study revealed that apart from household savings and the stock market, inflation, income, and unemployment are significant factors in determining the life insurance demand. These empirical findings are expected to contribute to enriching the existing literature and to create awareness of the benefits that life insurance may offer in potential risks transfer to the insurer. From the macroeconomic perspective, the findings may assist policymakers in developing pre-emptive measures to protect life insurance businesses from the negative repercussions of lower market confidence following an economic downturn. An insight into the long-run relationship between the macroeconomic variables and life insurance demand using cointegration techniques is suggested for future researchers.

Keywords: Macroeconomics Variables, Demand, Life Insurance, COVID-19, Malaysia.

Introduction

Like other economic sectors, the insurance services industry was not spared from dealing with the direct and indirect consequences of COVID-19, whether at personal, national, regional, or global level. Insurance companies worldwide experienced marked slowdown in the premiums. Premium volumes in the life sector particularly recorded a declining trend following customers' decision in cutting back their discretionary expenditure on life insurance policies (OECD, 2022). The development of the insurance industry is therefore said to have an

all-encompassing impact on the economic growth of a nation. History has shown that the insurance industry thrives in parallel with economic conditions and hence the life insurance services sector has been in cognizant of the many different economic situations. Life insurance is one of the ways to provide income protection to the dependents or beneficiaries after the insured person dies, experiences total permanent disability, or upon maturity of the policy's contract. It is meant to replace the lost income and to pay expenses incurred for the survival of oneself or their dependent family members. According to BNM (2022), the Malaysian economy contracted the most by 4.5 percent in the third quarter of 2021 (2Q 2021: 15.9%, 1Q 2021: -0.5%) during the COVID-19 pandemic period in 2021. This was because of the renewed demand and supply shocks arising from strict containment measures under the National Recovery Plan (NRP). Out of the four phases of the NRP, Phase 1 contained the tightest COVID-19 lockdown rules which replaced the Full Movement Control Order (FMCO) that was originally announced on 28 May 2021 (BNM, 2021). These events had pressured the economy and created a great degree of uncertainties in its economic recovery. In examining the relevance of macroeconomic variables towards life insurance in Malaysia, this study undertakes an empirical quantitative setting using 34 years span of data between 1988 and 2021. Life insurance related data are gathered from reports by Life Insurance Association of Malaysia (LIAM). Meanwhile, the macroeconomic variables' data are sourced from Bank Negara Malaysia (BNM), Department of Statistics Malaysia (DOSM), International Monetary Fund (IMF) and the World Bank. This study is expected to contribute to the existing literature by showing that household savings, stock market, inflation, income, and unemployment are significant factors in determining the life insurance demand. From the macroeconomic perspective, the empirical findings may assist policymakers in developing pre-emptive measures to protect the life insurance businesses from negative repercussions of lower market confidence following an economic downturn. The findings from this study are also expected to create awareness of the benefits that life insurance may offer in partially transferring risks to the insurer. It is therefore hoped to encourage more people to own life insurance policy in pursuit of improving their living standards.

Literature Review

Demand for Life Insurance

The demand for life insurance is influenced by various factors and most prominently are the economic factors. The list of economic factors is long hence researchers has embarked on studying various aspects of life insurance by employing the different sets of economic data and research methods available. While life insurance provides financial and social security to protect the surviving family members, it also functions as a risk transfer mechanism (Fadun, 2013; Surminski, 2013). Hence, life insurance is one of the best tools to protect one's family and loved ones from financial difficulties in the event of death or permanent disability of the breadwinner.

When life insurance demand is what matters, most research works are specifically focusing on the identification of factors that influence the life insurance consumption. In this vein, Mathew and Sivaraman (2017) conducted a study examining the cointegration relationship between macroeconomic variables and life insurance demand in India. Besides inflation, real interest rate and income, the financial sector development and level of social security expenditure were added to its list of independent variables. While all variables were exhibiting significant relationship, the latter was found to be statistically insignificant.

Similarly, Noor et al (2020) investigated on income, savings, inflation, and stock index with respect to the demand for life insurance using Engel Granger and Johansen cointegration analysis. Based on the Malaysian data from 1988 until 2017, they have found that all variables except inflation exhibited significant relationship with demand for life insurance. Other studies from the past investigating similar concerns include Ward and Zurbruegg, 2002; Hwang and Gao, 2003; Hwang and Greenport, 2005. A consistent observation based on these previous studies shows that premium expenditure is treated as the proxy for life insurance demand. Hence this study will adopt the same treatment for premium of life insurance per capita in the case of Malaysia.

More recently however, Masud et al (2021); Nasir et al (2021) decided to consider factors other than macroeconomic variables to study life insurance demand. Employing primary data from survey questionnaires, they have found that awareness, social norms (SN), perceived behavioral control, trust and consumer knowledge are the key underlying variables that can influence positive attitudes towards life insurance purchases and demand (Masud et al., 2021). Meanwhile, Nasir et al (2021) focused on these same factors excluding trust under the Theory of Planned Behaviour. These research exercises provide a fresh perspective in examining life insurance demand from another angle which certainly enriches the literature.

In the early 2000s, Beck and Webb (2002) found very low life insurance consumption levels in most developing countries. According to the World Bank (2019), premiums as a percentage of gross domestic product (GDP) in the developed countries are recorded to be higher than in the developing countries. Developed economies like Singapore (5.9%), Hong Kong (6.18%) and Japan (6.23%) have higher level of premium expenditures as compared to developing country like Malaysia, recording a meagre 2.8% of GDP only. These findings continued to prevail in recent years where Malaysia exhibited very low insurance penetration rate of only 4.8% with extremely low underwritings, as compared to the developed economies (Masud et. al., 2021).

Income

Income is another macroeconomic variable that predicts life insurance demand (Mathew and Sivaraman, 2017). With higher income, an individual may experience greater affordability that can ultimately lead to a higher demand for life insurance products (Browne and Kim, 1993; Hammond et al., 1967; Dash, 2018). Shower and Shotick (1994) found that there exists a positive relationship between income and life insurance consumption by employing a Tobit analysis. Based on the analysis, income and spending on life insurance premiums exhibited a significant positive relationship. As income increases, an individual tends to purchase life insurance as income protection for their loved ones. Similarly, Sibel and Mustafa (2009) focused on the factors of consumption for life insurance across 31 European countries. The results show that income is one of the most important determinants that predicts the consumption of life insurance. In the same vein, Gandolfi and Miners (1996); Razak et al (2014) found that income is the most important factor in demand for life insurance. More recently, Emamgholipour et al (2017) highlighted that purchasing power influences the demand for life insurance. For the purposes of this study, income is measured using GDP per capita following (Curak and Gaspic, 2011).

Savings

The relationship between the savings rate and the demand for life insurance has been studied by (Haeden and Lee, 1974; Beck and Webb, 2003). They suggested that if the effective return within a policy compares favorably with the return of other savings instruments, life insurance would look more attractive to the prospective savers. Savings instruments are the alternative to competing life insurance products. The demand for life insurance could increase if savings and life insurance products were sold (Sen, 2008). The impact of savings on life insurance demand has been studied in the past (Headen and Lee, 1974; Chang, 1995; Beck and Webb, 2003; Savvides, 2006; Sen and Madheswaran, 2007; Sen, 2008; Redzuan et al., 2009; Ibiwoye et al. 2010). Evidence from the literature suggests that the savings rate has a negative impact on life insurance demand (Beck and Webb, 2003; Savvides, 2006; Redzuan et al., 2009). Consumers prefer to consider alternative savings if the effective return of an insurance policy is less than savings (Redzuan et al., 2009). There is a wealth replacement impact suggesting that higher private savings displace life insurance and the higher the savings that a person has, the less motive would be to buy life insurance to finance these financial funds to achieve a targeted level of wealth for retirement or for bequeaths (Savvides, 2006). This study, therefore, considers savings as one of the determinants that affect life insurance consumption as suggested by the more recent study of (Mathew and Sivaram, 2017).

Inflation

Inflation is one of the important factors because customers are sensitive to the change in inflation, which could lead to a reduction in the consumption of insurance products (Babbel, 1981). Researchers have found evidence regarding the impact of inflation on life insurance demand. For example, Li et al (2007) stated in their research finding that a negative relationship with the demand for these insurance products results leads to their less desirability and attractiveness. Insurance products are used as long-term financial and monetary savings tools and if uncertainty exists about these benefits, the demand for insurance is reduced (Beck and Webb, 2003; Outreville, 1996). Besides that, Hwang and Gao (2003) have found that higher inflation did not adversely affect the demand for insurance in China as opposed to it their study findings. Inflation is also an important factor in the policy of insurance pricing as it is related to the supply decision. Under varied conditions, a study by Redzuan et al (2014) found a significant negative relationship between inflation with insurance demand. The findings of Browne and Kim (1993); Outreville (1996); and more recently Emamgholipour et al (2017) revealed that inflation has a significant negative relationship with life insurance demand. High inflation tends to make life insurance purchases less attractive due to increased living costs.

Stocks

The past studies by (Headen and Lee, 1974; Cargill and Troxill, 1979) found stocks to be negatively significant relative to the demand for life insurance. The relationship between stock performance and demand for life insurance were thoroughly examined (Arena, 2006; Chui and Kwok, 2008; Lin and Grace, 2007; Lim and Haberman, 2004). In one of the studies mentioned, the stock market was not statistically significantly correlated with the demand for life insurance, even though the demand for life insurance was directly correlated with the stock market's performance over the period under study (Lim and Haberman, 2004). On the other hand, some studies found stock level to be positively related to the demand for life

insurance. It explains that individuals will gain benefits from rising stock prices and hence will be more likely to invest or buy more life insurance (Arena, 2006).

Unemployment

According to Bhatia and Jain (2018), there are numerous factors that promote the expansion of insurance industry. Their research exercise that was conducted using Indian data showed unemployment and inflation are the two macroeconomic variables that exhibited negative relationship with the growth in demand for life insurance. A negative relationship was also found in several other studies (Sliwinski et al., 2013; Liebenberg et al., 2012). Similarly, a study on demand insurance employing data from 1983 to 1989 by Liebenberg et al (2012) has confirmed these findings. This study also found that households tend to give up on their whole life insurance policies due to unemployment or other significant life events such as the death of a spouse, divorce, and retirement. Since there is a limited literature in the past *vis-à-vis* unemployment to life insurance demand, this study therefore seeks to include unemployment as one of its macroeconomic variables.

Methodology

This study estimates the following model with ordinary least squares (OLS) to examine the relationship between saving, stock, inflation, income, and unemployment towards the demand for life insurance in Malaysia. In this study, the data was acquired for 34 years the period from 1988-2021. We present the description of variables and source of data in the following Table 1.

Table 1
Data Description and Source

Variable	**Description**	**Source of Data**
LIP	Demand (Premium) of Life Insurance per capita (RM)	Insurance Annual Report, published by Life Insurance Association of Malaysia (LIAM)
SAV	Savings rate (%)	International Financial Statistics (IFS), published by International Monetary Fund (IMF)
STOCK	Stocks index (KLCI)	Datastream by Thomson Reuters
INF	Inflation rate, CPI (annual, %)	Department of Statistics Malaysia (DOSM)
GDP	Income (Gross Domestic Product) per capita (RM)	Department of Statistics Reports, published by the Economic Planning Unit (EPU)
UN	Unemployment rate (annual, %)	The World Bank

Regression Model

The Ordinary Least Square (OLS) estimation procedure was employed to test the relationships between the demand for life insurance in Malaysia (LIP). LIP is treated as the dependent variable with household savings per capita (SAV), stocks (STOCK), income per capita (GDP), and unemployment (UN) as the independent variables. Since some of the data are in different measurements, this study estimated the model using a log-log regression model. At this juncture, selected variables are log transformed to present the model as a percentage change in X that affects the percentage change in Y.

The regression model is expressed as a log-log equation as follows

$\text{Log (Y)} = \alpha + \beta 1 \log X_1 + \beta 2 \log X_2 + \beta 3 \log X_3 + \beta 4 \log X_4 + \beta 5 \log X_5 + \hat{e}$

$\text{Log (LIP)} = \beta 0 - \beta 1 \text{ (SAV)} + \beta 2 \log(\text{STOCK}) - \beta 3 \text{ (INF)} + \beta 4 \log(\text{GDP}) - \beta 5 \text{ (UN)} + \hat{e}$

LIP	: Premium expenditures of new and in-force premium (Demand)
SAV	: Rate of return of savings accounts offered by a commercial bank
STOCK	: Kuala Lumpur Composite Index (KLCI)
INF	: Average Consumer Price Index (Inflation rate)
GDP	: Gross Domestic Product per capita (Income)
UN	: Unemployment rate
ê	: Random error term

β0 is an intercept and the partial regression coefficients β1, β2, β3, β4, and β5 are the unknown parameters.

Results and Discussions

Table 2

Philips-Perron (PP) Test

Variable	**PP *t*-stat at level**	**PP *t*-stat at 1st difference**	**PP *t*-stat at 2nd difference**
LIP	-5.884950, Reject H_0	n.a.	n.a.
STOCK	-3.567765, Reject H_0	n.a.	n.a.
SAV	-1.891324, Fail to reject H_0	-4.905440, Reject H_0	n.a.
INF	-4.819314, Reject H_0	n.a.	n.a.
GDP	-2.031034, Fail to reject H_0	-5.974356, Reject H_0	n.a.
UN	-4.895438, Reject H_0	n.a.	n.a.

* n.a. Not available

The time series data that have been gathered for each variable are first screened for its stationarity property. This first diagnostic step is crucial to detect if data are non-stationary

which will result in spurious regression. According to Koop (2005), data that contain unit roots will lead to the Ordinary Least Squares (OLS) estimation producing spurious regression problems. In this study, the Phillips-Perron (PP) test was used to examine the data's stationarity using EViews software. The findings obtained from the PP test are presented in Table 2. All the variables reject the null hypothesis (H_0) at level difference with exception of two variables, namely gross domestic product (GDP) and savings (SAV) where these two are rejected at the 1st level. Therefore, all variables under study are stationary and fulfill the assumption for a unit root test. It explains that the time series data that shift in time does not cause a change in the shape of the distribution.

Table 3
Variance Inflation Factor (VIF)

Variables	**VIF**
STOCK	1.2292
SAV	1.1286
INF	1.5004
GDP	1.4190
UN	1.3745

In the following diagnostic step, this study aims to detect multicollinearity existence before selecting variables into its regression model. Its presence is a problem because it may undermine the statistical significance of an independent variable. Multicollinearity is the state in which there is a strong correlation between the independent variables (Ndurukia et al., 2017). Mugenda and Mugenda (2003) also pointed out that multicollinearity exists when independent variables are highly correlated with one another in a multiple regression equation. Consequently, the statistical inferences tend to become less reliable, difficult to interpret and an overfitting problem may arise. A good OLS regression model fitting will require the independent variable to be free from multicollinearity problems. In this study, the variance inflation factor (VIF) is calculated using the EViews software. Multicollinearity is present for variables with VIF value greater than 5. The results that have been obtained suggest that all VIF values are less than 5, hence they are deemed to be clear from any multicollinearity issues.

Table 4
Multiple Regression Analysis

Dependent Variable: Demand (Premium) for Life Insurance (LIP)	**Standardized Coefficient (β)**	***t*-value**	**Significance Level (*p*)**
Independent Variables:			
Savings (SAV)	-0.169335	-1.214117	0.2356
Stock (STOCK)	0.002317	0.012899	0.9898
Inflation (INF)	-0.110241	-3.059839	0.0051**
Gross Domestic Product (GDP)	1.005317	16.17484	0.0000**
Unemployment (UN)	-0.331500	1.828425	0.0003**
F value		102.27504	
R-square		0.951833	
Adjusted R-square		0.942566	

* p < 0.05, significant at 95% confidence level; and
** p < 0.01, significant at 99% confidence level.

The empirical results of multiple regression analysis on macroeconomic variables toward demand for life insurance in Malaysia have shown that inflation (INF), income (GDP), and unemployment (UN) are statistically significant in explaining the demand for life insurance. However, this is with an exception for the other two macroeconomic variables namely household savings (SAV) and stock (STOCK). This is supported by the calculated R-square is 0.951833 which represents that 95.1833% of the variation was explained by the selected independent variables. Meanwhile the other 4.8167% is explained by other factors.

The estimation results also confirm a significant negative correlation between inflation (INF) and the demand for life insurance with a *p*-value of 0.0051 (*p*-value < 0.05). This is supported by Feyen et al (2011); Sherif and Shaairi (2013) who found that inflation has a significant negative relationship with demand for life insurance. The result of this study also confirms that unemployment (UN) is in line with the macroeconomic theory. It is proven to exhibit significantly negative relationship with life insurance demand where the *p*-value is 0.0003 (*p*-value < 0.05). This indicates that unemployment leads to lower consumption of life insurance during the period of analysis under study.

Meanwhile, gross domestic product (GDP) representing income level was found to have a significant positive relationship with life insurance demand as confirmed by the *p*-value of 0.0000 (*p*-value < 0.05). This study therefore strongly suggests that the demand for life insurance depends on income levels in Malaysia. In the same vein, the findings in Segodi and Sibindi (2022) stated that higher level of income may lead to higher insurance penetration or consumption.

On the other hand, it has been found that savings (SAV) and stock index (STOCK) are displaying insignificant *p*-values of greater than 0.05 significance level, respectively. This is consistent with previous studies showing insignificant findings for stock exchange (Lim and Haberman, 2004; Noor et al., 2020). Both studies found insignificant relationship between stock and the demand for life insurance. Meanwhile, in the case of savings variable, the results from Remli et al (2020) indicated that the savings rate does not determine the demand for life insurance

irrespective of the time frame. However, savings may have an influence on family takaful demand in the short run.

Conclusion

This study has found that the relationship between all variables and life insurance demand is in line with the macroeconomic theory. Income, as proxied by GDP per capita, is the most significant among independent variables under study. It exhibits a positive relationship that explains higher individual income that encourages purchases of life insurance. Similarly, in the case of inflation (INF) and unemployment (UN), both are found to be statistically significant and exhibit strong positive relationships. On the other hand, savings (SAV) and stock index (STOCK) are statistically insignificant in explaining the demand for life insurance in Malaysia. This is due to the estimation findings with respect to the stationarity property of the selected variables that are obtained from this study. Savings products are an alternative to life insurance policies that make them more competitive against one another. Consumers, therefore, tend to choose savings as an alternative in the event insurance policy provides a lower effective rate of return. For future research, this study suggests performing further analysis to see the long-run effects on selected independent variables. In conclusion, the results imply that income is a solid macroeconomic variable component to determine the demand for life insurance.

Acknowledgment

This study was funded by the Faculty of Business and Management (FBM) International Research Grant DDF under the 2020/2022 Research Fund entitled ''The Relationship between Macroeconomic Variables and the Demand for Life Insurance in Malaysia".

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