IMPACT OF SOCIOECONOMIC AND INSTITUTIONAL VARIABLES ON LIFE INSURANCE DEMAND IN SRI LANKA

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Abstract

We take motivation from low life insurance penetration and low density in Sri Lanka to investigates the impact of selected socioeconomic and institutional factors on the life insurance demand. This study characterizes Sri Lankan life insurance market and compares it to emerging markets in the region and construct a multiple regression log-linear model to examine the effects of selected socioeconomic and institutional variables on demand for life insurance consumption by analysing the annual data from 1996 to 2018. The study findings show that economic and institutional factors play a crucial role in determining the life insurance demand in Sri Lanka. Personal income and development of the insurance market show a higher positive impact on life insurance demand. However, life expectancy and old dependency stimulate life insurance demand among the socioeconomic variables, while Urbanization and education do not seem to influence life insurance consumption in Sri Lanka. Also, institutional variables such as regulatory quality positively impact while income inequality and financial development negatively impact life insurance consumption. The negative impact of financial development confirms low trust and low awareness about insurance products among the people. The findings provide practical policy implications for the development of life insurance markets in Sri Lanka.

Keywords: Emerging Insurance Market, Sri Lanka, Insurance density, Insurance Penetration, Socioeconomic Variables, Insurance Market

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1. INTRODUCTION

Sri Lanka is an island lying southeast of India with a total population of 22.2 million in 2018 and is a multi-cultural and multi-ethnic identity middle-income country (Mundi, 2018). Sri Lanka has enjoyed a higher level of economic growth after defeating the long-standing terrorism problem in 2009. On average, the annual real GDP growth rate was 5.88 percent during the last decade and doubled the GDP of the country (USD40bn to USD80Bn) (CBSL, 2017). By ending the civil war, north and east provinces of the country opened to the national economy and provided a new market for all the industries of the country. Whereas people's attitude on risk, especially terrorism peril, changed after 2009. The increase in the level of income associated with this economic development has generally led to the growing demand for economic security for individuals and households.

As Sri Lanka moves forward being recognized as a middle-income country, with a corresponding increase in GDP, it is imperative that the insurance sector, one of the pillars of the country's financial sector, rises to meet the challenges of the future. Insurance penetration and Insurance density are the most significant universally accepted parameters that are being used to measure the performance and development of the insurance sector. "Insurance Penetration" is the contribution of the life insurance sector to the economy and is measured as the ratio of life insurance premium to the size of the economy (Gross Domestic Product). "Insurance Density" represents per capita spending on life insurance which is expressed in real international dollars and defined as the ratio of life insurance premium volume to the country's total population. However, life insurance penetration and density are low in Sri Lanka compared with other emerging markets in the region. According to IRCSL (2018), the life insurance penetration in Sri Lanka is stagnated around 1% during the last decade.

There is substantial evidence that uninsured risk hinders human development (Swiss-Re, 2018b). At the individual, household, or small and medial level enterprise, risks and shocks have different short and long term consequences. Also, after a substantial financial burden, uninsured risks may drag households back into poverty and influence human development, such as health and education accomplishment (Dercon, 2006). Recent empirical studies have shown that poverty alleviation may be more effective using insurance mechanisms than traditional social protection policies like cash transfer (Sarah A. Janzen, 2013). Hence, governments and regulators need to make suitable policy decisions to improve the insurance sector's performance. Empirical studies of insurance sector evidence that the level of insurance demand of an economy determined by number of factors, including economic, legal, political, and social factors (Beck et al., 2003; Browne & Kim, 1993; Donghui Li, 2007; Dragos, 2014; Esho, Kirievsky, Ward, & Zurbruegg, 2004; Liebenberg, Carson, & Dumm, 2012; Mark J. Browne, JaeWook Chung, & Frees, 2000; Naradda Gamage, Lin, & Haq, 2016; Stephanie Hussels, 2005). Most of the research on the demand for insurance

has focused on cross-country studies or well-established markets in developed countries. Because of the variation in cross-country insurance consumption, the literature has argued that factors determining the demand for insurance are complex and varied from one country to another. However, little literature focused on the demand for insurance in one country, especially in a country with unique economic, social structure, and traditional values. Also, the development of the life insurance market measured with penetration does not make consistent with the country's income growth trends. This offers a motivating incentive to examine some key determinants affecting the demand for insurance in Sri Lanka. Hence, this paper aims to empirically examine the factors affecting the demand for life insurance in Sri Lanka and make suitable policy recommendations to improve life insurance penetration.

The rest of the paper is structured; Section two provides an overview of the Sri Lankan Economy, Society, and development of the Insurance industry. Section three reviews empirical studies on the determinants of life insurance. Section four focuses on the data and methodology employed in the paper. Finally, section five discusses the study's findings, while Section 6 concludes the research and makes policy recommendations.

2. BACKGROUND OF SRI LANKA'S ECONOMY, SOCIETY, AND INSURANCE INDUSTRY

Theoretical and empirical studies of economics supported the view that the development of financial services, especially banking and insurance, have great potential for spreading positive externalities for the commercial sector of the economy (Peter Kennedy, 2003; Mankiw, 2009). This view supports the argument that a well-functioning financial industry improves productivity and economic growth by improving the efficiency of capital allocation, saving, and capital formation. Consistent with these explanations, the economic role of insurance studied by J. F. Outreville, xe, and ois (1996) and Ward and Zurbruegg (2002), suggested that the insurance industry generates positive externalities through risk transfer, financial intermediation, and employment. In addition to the economic role, insurance contributes to the well-being of societies in terms of human development by improving people's choices and opportunities and leading to greater well-being.

Sri Lanka is experiencing changes in social and demographic structures with an ageing population, declining contribution of agricultural sectors, the falling size of the family, and the increasing migration of rural residents to cities. The transition in the socioeconomic and demographic patterns indicates that tradition and convention are loosening, which is likely to have both a direct and an indirect impact on people's attitudes towards risk and insurance. While an increasing level of consumers' awareness, expansion of the middle-income class of the society, and limitation of government-supported welfare benefits are encouraging motives for life insurance marketers to look for growth in the future.

Similarly, Sri Lankan society, the educated young generation postponed their marriage until they completed their higher education and find a job. The delay in marriage and its contribution towards a reduction in the level of fertility has affected the size of individual families and population growth (Silva, 2000). Also, traditionally society expects when children grow up, they will be looking after their parents at the time of disability or illness and provide economic support for their old age. However, because of late marriage, their child may still be involved in higher education when their parent is retiring. Further, after completing higher education, most young people settled in major cities or urban areas to engage in their jobs. Therefore, they are no longer be able to rely on the mutual support of their families and now need to search for an extended source of financial independence.

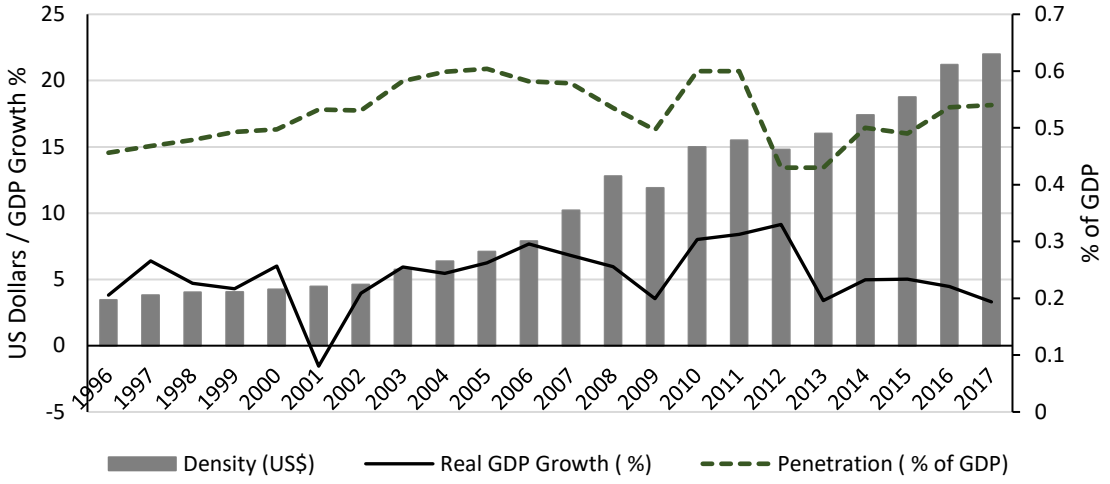

Figure 2: Development of the Life Insurance Industry and GDP Growth Rate

Source: Author constructed based on Annual data

Figure 2 shows the development of the life insurance market in Sri Lanka from 1996 to 2017. As shown in the figure, the development of life insurance measured with penetration fluctuates over the period and is not consistent with growth trends of income. According to the insurance regulatory commission of Sri Lanka, the country has not positively moved the penetration level during the last decade and remains stagnant at around 1% (IRCSL, 2018). However, life insurance penetration has recorded remarkable growth until 2012 after the end of a long-standing civil war in 2009. More specifically, the growth rate of premium in 2010 was recorded at 22.2 percent, while it was -1.07 percent in 2009. However, this rate deteriorated in 2012, reaching real growth at -0.9 percent. However, it began to recover in 2015 with a real growth rate of 17.5 percent.

According to (Swiss-Re, 2018a) Sri Lanka is considered as an emerging insurance market in South Asia. The study analyzes the positioning of the Sri Lanka life insurance market in its international context by comparing its development to its Asian counterparts. In comparison with other countries in Asia, Sri

Lankan's insurance penetration is at a low level of 1.21% (2016) (life 0.54 %, General 0.67%) (IBSL, 2016). Although Sri Lanka is a middle-income country, insurance penetration lags behind other developed and developing countries in the Asian region. The penetration of Some countries in the region like India (3.5%), Japan (9.5%), South Korea (12.1%), and Singapore (7.5%) (Swiss-Re, 2018b). Whereas, the insurance density of Sri Lanka is also at a shallow level of US$40 in 2016-2017(IBSL, 2016), compared to the world average of US$638 (Swiss-Re, 2018b).

3. LITERATURE REVIEW

The literature is well-off with empirical studies of factors affecting the demand for life insurance in developed and developing countries. Mostly, the investigations into life insurance demand have followed two main directions. Based on a microeconomic perspective, the first uses survey or microdata on individuals to empirically test the hypotheses and theoretical conclusions (Goldsmith & Art, 1983; Huber, 2011; Lewis, 1989; Lin, Bruhn, & William, 2018). Based on a macroeconomic perspective, the second direction uses aggregate cross-sectional, panel, or single-country data to analyze the determinants (Alhassan & Biekpe, 2016; Cheng Yuan & Jiang, 2015; Dale B. Truett & Truett, 1990; Donghui Li, 2007). Since this study is related to the second framework, the empirical review is restricted to macroeconomic studies.

Beenstock, Dickinson, and Ki-Ia.Iuria (1986) found that income, life expectancy, and dependency ratio have a positive correlation while social security negatively impacts life insurance demand using ten (10) industrialized countries from 1970 to1981. Also, Dale B. Truett and Truett (1990) further examine the drivers of life insurance demand by comparing the United States and Mexico. The authors identify income level, education, and age as the significant determinants of life insurance demand. Browne and Kim (1993) examined the effect of dependency ratio, education, social security, personal income, expected inflation rate, and religion on demand for life insurance using a sample of 45 countries. Also, F. Outreville (1996) employed cross-sectional data on 45 developing countries to analyze the effect of higher education, health condition, market competition, agricultural status, and financial development on life insurance consumption. They find that personal income, financial market development, and market competition significantly improve life insurance consumption. Enz (2000) analyzed emerging and developing countries to identify the changing relationship between income and insurance consumption. This study revealed the so-called S-curve relationship between per-capita income and insurance penetration, where the income elasticity of insurance demand for developed countries is lower than that of emerging countries. Also, Ward and Zurbruegg (2002) validate the existence of the S-curve relationship between income elasticity of demand for life insurance in a comparative study on a sample of 37 Asian and OECD countries from 1987 to 1998. Using the data of 68 countries from 1961 to 2000, Beck et al. (2003) found that economic growth, population structure, legal and political system significantly related to the demand for life insurance.

Donghui Li (2007) also undertook a comprehensive study examining the determinants of life insurance consumption in 30 OECD countries. The study's finding provided consistent evidence supporting the positive effect of income, dependency ratio, financial development, level of education, and insurance market competition on life insurance demand while inflation, real interest rate, life expectancy, and social security expenses decrease the consumption of life insurance.

Similarly, Feyen, Lester, and Rocha (2011) conclude that the effect of income, population size and density, demographic structure, financial development, religion, income distribution, pension expenditure and state ownership of insurance as a significant determinant of life insurance consumption using a sample of 90 developed and developing countries. Elango (2011) examined the determinants of life insurance demand on emerging economies from 1998 to 2008. The findings conclude that demographic factors explain a greater variance relative to economic and institutional factors while economic factors explain the greatest among of variance in terms of insurance growth rates. Using a sample of 17 emerging economies from Asia and Europe throughout ten(10) years, Dragos (2014) examined the effect of Urbanization, income and distribution, and education level on demand for insurance. The study results found Urbanization and income as significantly influence while the level of education non-significant on life insurance consumption. Cheng Yuan and Jiang (2015), conducted an empirical analysis for the determinant of insurance using the provisional data in China. Results showed that level of education, children dependency ratio, development of social security pension, and old dependency ratio mainly affect the life insurance demand. The study by Alhassan and Biekpe (2016) discussed the determinants of life insurance consumption in Africa using a dataset of 31 African countries from 1996 to 2010 and found a positive impact of financial development, health expenditure and institutional quality while income, inflation, dependency ration, and life expectancy negatively impact upon the life insurance consumption in Africa. The author further concludes that demographic factors better explain life insurance consumption than financial factors.

4. METHODOLOGY AND DATA

Variables and Hypothesis

This section motivates the variables employed in the regression models and explains how they affect life insurance consumption. It provides the background of the present study and helps explain the findings comparing the existing body of knowledge.

Dependent Variables

This study uses life insurance density as a proxy for measuring life insurance consumption in Sri Lanka. Density represents per capita spending on life insurance expressed in real international dollars, defined as the ratio of life insurance premium volume to the country's total population. Since peoples in developed

countries tend to buy more coverage with higher face value, we expect life insurance density to be more income elastic than life insurance penetration. This variable is used by Donghui Li (2007), Beck et al. (2003), Ward and Zurbruegg (2002), Alhassan and Biekpe (2016), among others.

Independent Variables

Penetration: Life insurance penetration indicates the development of the insurance market in Sri Lanka. The variable is measured as the ratio of life insurance premium to the Gross Domestic Products (GDP) and shows the insurance sector's contribution to the national economy. A situation where lack of competition and costly regulation might increase the insurance coverage price without an actual increase in the consumption level of insurance because the premium is a product of price and quantity. The activities and promotion of the insurance industry contribute to stimulating people to buy life insurance products (F. Outreville, 1996). Here, we use life insurance penetration as a proxy of life insurance development (Alhassan & Biekpe, 2016; Beck et al., 2003; Cheng Yuan & Jiang, 2015; Donghui Li, 2007)

Hypothesis 1: The development of the insurance market promotes the demand for insurance in Sri Lanka.

Income: existing empirical studies highlight a significant and positive correlation between the level of income and life insurance consumption (Alhassan & Biekpe, 2016; Beck et al., 2003; Browne & Kim, 1993; Donghui Li, 2007; F. Outreville, 1996; Ward & Zurbruegg, 2002; Mouna. Zerriaa, Amiri, Noubbigh, & .Naoui, 2017). They explain the positive relationship on the arguments that, first, life insurance becomes more affordable when income is increased. Second, a higher level of income caused more willingness to protect the living standards of their dependents in the case of insured premature death. However, the income elasticity of demand varies across countries depending on the level of income with higher elasticity for emerging economies compared to the developed market (Enz, 2000). In this study, following F. Outreville (1996), Kim (1993), Donghui Li (2007), Alhassan and Biekpe (2016), Mouna. Zerriaa et al. (2017), following the previous studies, present study use GDP per capita expressed in US dollars to measure the income level.

Hypothesis 2: Income level positively affect life insurance consumption in Sri Lanka

Urbanization: Urbanization is an indicator of gradual transformation from an agricultural base to industrialized economies with the argument that a higher level of Urbanization improves the development of the insurance market (Neumann, 1969; F. Outreville, 1996). This argument is supported with Beck et al. (2003), claiming that a higher share of the urban population is generally associated with less reliance on informal insurance agreements, leading to higher demand for formal insurance. Sri Lanka society is characterized by mutual support in the form of a moral or social obligation, which reassures individuals regarding their financial security in the case of premature death or inability. However, the transition in the

socioeconomic and demographic patterns of Sri Lanka society indicates that tradition and convention are loosening, which is likely to have both a direct and an indirect impact on people's attitude towards risk and insurance. After completing higher education, most young people settled in major cities or urban areas to engage in their jobs. Therefore, they no longer are able to rely on the mutual support of their families and now need to search for an extended source of financial independence. Following Beck et al. (2003), we use the share of the urban population to the total population as a proxy for this variable.

Hypothesis 3: The level of Urbanization is positively related to life insurance consumption in Sri Lanka.

Inflation: following variable used in the study is the inflation rate. Higher interest rates commonly reflect the macroeconomic instability of a country. On the other hand, higher inflation erodes the value of life insurance products making them less desirable (Babbel, 1981). As life insurance serves as a long-run investment product, a rise in inflation discourages people's willingness to save through life insurance. In contrast, high inflation has a deteriorating effect on people's purchasing power. Hence, they are less likely to buy saving instruments like life insurance. The adverse impact of inflation on insurance demand has been widely documented in the existing literature (Alhassan & Biekpe, 2016; Beck et al., 2003; Browne & Kim, 1993; F. Outreville, 1996). Therefore, the researcher measures inflation using the GDP deflator as a proxy variable (Alhassan & Biekpe, 2016).

Hypothesis 4: Inflation negatively affects life insurance demand in Sri Lanka.

Dependency: the dependency ratio is traditionally assumed to positively affect life insurance demand because income earners buy life insurance primarily to protect their dependents against premature death. According to Beck et al. (2003), breaking the dependency ratio between young and old dependency ratios is significant. However, Browne and Kim (1993) and Donghui Li (2007) find a positive and significant effect only for the old dependency ratio, while Beck et al. (2003) do not see substantial consequences for the young dependency ratio. The mixed results reflect a relationship not consistent across both developed and developing countries and different compositions of the business lines of the insurance business (Beck et al., 2003). Sri Lanka is the fastest aging country in South Asia, and the development of pension and social security systems to meet the needs of older people is very poor (Perera, Siriwardana, & Mounter, 2017). Hence, a higher ratio of old dependents to the working population is assumed to increase the demand for the savings and annuity components and decrease the mortality risk component of life insurance (Beck et al., 2003). Therefore, we expect a positive effect of old dependency (People older than 64 years) on life insurance consumption in Sri Lanka. Therefore, the researcher uses the old dependency ratio defined as the ratio of old dependents (people older than 64 years) to the working-age population (people between 15-64 years) as the proxy of this variable.

Hypothesis 5: Old Dependency has a positive effect on life insurance consumption in Sri Lanka.

Financial Development: The financial system of Sri Lanka has recorded substantial improvement during the past three decades (Lanka, 2014). According to Donghui Li (2007) development of the financial system is associated with the securitization of cash flows enabling people to secure their income through the ownership of financial assets. Therefore, countries with a higher level of financial system development are expected to have more life insurance sales. Also, it may help insurance companies to invest more efficiently and offer a better price for their consumers. Beck et al. (2003) argue that an advanced banking system of a country facilitates the development of other financial services like insurance. When financial institutions provide credit facilities for individuals and people in business, they must purchase a life insurance policy to serve as security in case it becomes impossible to settle them either through incapacitation or death. Following the empirical studies Donghui Li (2007), Elango (2011), Alhassan and Biekpe (2016), and Mouna Zerriaa and Noubbigh (2016), the researcher measure the proxy of financial development using the ratio of broad money supply (M2) to Gross Domestic Product (GDP).

Hypothesis 6: Development of the Financial system positively influences life insurance consumption in Sri Lanka.

Education**:** the researcher employ the level of education as a proxy for financial literacy and expect it to affect the demand for life insurance in several ways positively. First, according to Dale B. Truett and Truett (1990), a higher level of education stimulates a stronger desire to protect their dependents and safeguard their standard of living. Also, the level of education determines the individual's ability to understand the benefits of risk management and savings, leading to more demand for life insurance. According to Browne and Kim (1993) and Hwang and Gao (2003), a higher level of education increase a person's degree of risk aversion and awareness of the importance of insurance. Whereas the demand for insurance is generally found to increase with risk aversion (Bommier & Le Grand, 2014). Also, Friedman (1957) argues that permanent income is determined by the present value of non-human wealth and the return on human capital in the form of future income resulting from education.

Moreover, a recent empirical study revealed that financial literacy does not necessarily translate to insurance literacy, and more specialized education can improve insurance literacy (Lin et al., 2018). However, following the most previous empirical studies Dale B. Truett and Truett (1990), F. Outreville (1996), Donghui Li (2007), Alhassan and Biekpe (2016), Mouna. Zerriaa et al. (2017), the researcher employ tertiary education gross enrolment rate as a proxy for educational attainment.

Hypothesis 7: Education level positively impacts life insurance demand in Sri Lanka.

***Regulatory Quality*:** The worldwide governance indicators (WGI) (Project, 2018) of the world bank reports aggregate and individual governance indicators of different countries using six dimensions (Voice of Accountability, Political Stability, and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption). We employ the level of Regulatory Quality indicator of WGI as a proxy for the regulatory quality variable, which reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Hypothesis 8: Regulatory Quality positively impacts the demand for life insurance in Sri Lanka.

***Life Expectancy*:** Previous studies include life expectancy in their models to reflect the actuarially fair price of life insurance (Beenstock et al., 1986; Donghui Li, 2007; F. Outreville, 1996; Mouna Zerriaa & Noubbigh, 2016). Also, mostly age is a crucial determinant of the calculation of life insurance premiums. Accordingly, longer life expectancy decreases life insurance premium and lead to stimulating consumption. Hence, the literature suggests that life expectancy positively influences life insurance consumption (F. Outreville, 1996). According to life cycle theory, life expectancy positively influenced the demand and justified the argument that longer life expectancy leads to increased longevity risk. Therefore, the need for life insurance is increased as it can be used as a retirement provision to enjoy longer life spans. During the last three decades, the life expectancy of Sri Lankans has recorded a significant increase. Therefore, the researcher uses average life expectancy at birth as a proxy of this variable (Browne & Kim, 1993; Donghui Li, 2007; F. Outreville, 1996), and the hypothesis follows.

Hypothesis 09: Life expectancy is positively related to life insurance demand in Sri Lanka

Gini Coefficient: The economic theory estimates that insurance demand is smaller when the Gini coefficient is higher. This expectation is based on the technical justification that the insurance products' operation is based on the law of large numbers and risk pooling, so the population size is vital: a larger population indicates a fairer premium and growth in the aggregate insurance demand. Therefore, it is not only the level and the size of wealth that are important, but also the wealth distribution within a country (Dragos, 2014). This supports the view that an equal income distribution with a large middle class might cause a higher demand for life insurance. Accordingly, a large middle class in a developing country may result in fewer individuals purchasing life insurance than a less distribution with a large or wealthier upper class (Beck et al., 2003). This indicates that the aggregate demand for insurance should be smaller when the wealth inequality within a country (Nakata & Sawada, 2007). Here, following the previous studies, the researcher uses the Gini Coefficient as a proxy for measuring income distribution (Beck et al., 2003; Beenstock et al., 1986). The Gini index measures the extent to which the distribution of income and

measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line.

Hypothesis 10: Income distribution negatively influence life insurance demand in Sri Lanka

5. EMPIRICAL MODEL

We constructed the following multiple regression log-linear model to examine the effects of potential variables on demand for life insurance consumption in Sri Lanka. The literature evidence that the most common specification in the studies of the determinants of life insurance demand is the log-linear form and used by F. Outreville (1996), Ward and Zurbruegg (2002), T. Beck (2003), Browne and Kim (1993), and Alhassan and Biekpe (2016) among others. Log-linear form creates the linearity in the data and provides estimations of the coefficients on the independent variables that can be interpreted as elasticity. Also, the use of logarithmic transformation allows us to estimate the elasticities of life insurance demand. Furthermore, logarithmic transformation mitigates skewness, makes variances more stable, and may help correct normality and heteroscedasticity and gives better estimations.

In this study, we employ logarithmic transformation only for variables of level value, and variables expressed on rate are not transformed since they are already in a preferred form as a measure of change. Hence, the variables life insurance density, income, and life expectancy transformed into their natural logarithm values.

$$LnDEN_t = \beta_0 + \beta_1 PEN_t + \beta_2 InINC_t + \beta_3 URB_t + \beta_4 FDV_t + \beta_5 EDU_t + \beta_6 GINI_t + \beta_7 LEXP_t + \beta_8 DEP_t + \beta_9 INF_t + \beta_{10} REG_t + \varepsilon_t$$

Where ln denotes the natural logarithm, the subscript t refers to the years, DEN indicates life insurance density, PEN is life insurance penetration, INC is the income per capita measured in US dollar, URB is Urban Population, FDV is Financial Development, EDU is education, GINI is the Gini coefficient of the country, LEXP is life expectancy at birth, DEP is the old dependency ratio, REG is regulation quality, and ε_{it} is the error term.

6. DATA

The empirical analysis was carried out using annual data published from 1996 to 2018. The period was chosen based on data availability for the main variables of the study. In this study, we use life insurance density to measure life insurance consumption in Sri Lanka. Table 1 explains the definitions and data source of variables used in the model.

Table 01: Data definition and sources

Variable	Description	Sources
Dependent Variables		
Life Insurance Density	Life Insurance Premium / Total Population	SRSP
Independent Variables		
Life Insurance Penetration	Life Insurance Premium / GDP	SRSP
Income	Real GDP per capita in US dollar	WB
Urbanization	Percentage of Urban Population	WB
Financial Development	The ratio of the board definition of money M2 to GDP	WB
Education	Tertiary Education / Gross Enrolment	WB
Life Expectancy	Average Life Expectancy at birth	WB
Dependency	People older than 64 years to the working-age population(those ages 15-64)	WB
Gini Coefficient	The area between the Lorenz curve and a hypothetical line of absolute equality expressed as a percentage of the maximum area under the line.	WB
Inflation	GDP deflator	WB
Regulation Quality	Country Value of "Regulatory Quality" indicator of The Worldwide Governance Indicators (WGI)	WGI

Note: SRSP = Swiss-Re Sigma Publications, WB = World Bank, WGI = World Governance Indicator

7. RESULTS AND DISCUSSION

Table 2 displays summary statistics for the regression variables. Life insurance consumption in Sri Lanka remains very low at 0.5254% of gross domestic product with a minimum of 0.43% to0.6039% maximum value. Similarly, the average per capita insurance consumption is US$ 10.51, with a minimum of US$3.46 and a maximum of US$22. The average income per capita is US$ 2,507.785, with a higher variation represented by the standard deviation of 777.8516 within a minimum and maximum range of 1,514.602 and 3,842.296, respectively. This suggests a satisfactory increase in household income during the last two decades in Sri Lanka. Also, the average value of per capita life insurance consumption (DEN) and per capita income (GDP) reflects that life insurance consumption has a tiny fraction (0.42%) of average income (10.5154/2507.785). The variable old dependency ratio averaged 10.99%, while inflation, urban population, secondary education enrolment, Gini coefficient, and life expectancy averaged 8.96%, 18.31%, 94.06%, 38.99%, and 73.25 years, respectively. Table 02 also shows large dispersion for financial development, indicating significant growth of the financial system of Sri Lanka during the period.

Table 2: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Life Insurance Density	10.5154	6.2103	3.459	22
Life Insurance Penetration	0.5254	0.0558	0.43	0.6039
Income	2507.785	777.8516	1514.602	3842.296
Financial Development	41.8448	6.7050	32.6085	59.6785
Life Expectancy	73.2553	2.1127	69.267	76.9
Dependency	10.9962	1.8817	9.2787	15.2743
Gini Coefficients	38.9962	1.4680	36	41
Regulation Quality	-0.2466	0.1106	-0.4514	-0.0565
Education	13.5288	4.3579	6	19.7967
Urbanization	18.3084	0.0778	18.196	18.442
Inflation	8.9652	4.9181	0.6490	22.7992

Table 03 presents the correlation matrix of the variables used in the model, according to Peter. Kennedy (1998), if the correlation coefficient among the independent variables is above 0.7, there is a risk of existing multicollinearity. The correlation matrix shows that some of the potential determinants of life insurance are highly correlated with each other. The high correlations among the independent variables increase the risk of multicollinearity, leading to spurious results. According to the literature, Ward and Zurbruegg (2002) and Hwang and Greenford (2005) address this problem by excluding the variables while Sliwinski Adam (2012) occupy the factor analysis. In this study, the researcher suggests using stepwise regression to deal with this problem by retaining the best set of independent variables in the regression model (Gujarati, 2003). Accordingly, use a backward hierarchical selection procedure that involves adding all the independent variables in the specification and then rejecting the variables one at a time. In this method, the decision to drop a variable is said by its contribution to the explained sum of squares. For adding or removing the variables to the model, the researcher selects a threshold p-value of 0.1

Table 3 Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11
Life DEN	1.0000										
Life PEN	0.0958	1.0000									
INCOME	0.9850*	0.0055	1.0000								
FDV	0.6113**	-0.0502	0.6971**	1.0000							
LEXP	0.9133**	0.3347	0.8974**	0.5908**	1.0000						
DEP	0.8780**	-0.1074	0.9256**	0.8850**	0.7704**	1.0000					
GINI	0.1056*	0.3782	0.1832	0.4262*	0.4060*	0.2147	1.0000				
REGULA	-0.7738**	-0.3233	-0.7501**	-0.4663*	-0.7624**	-0.6542**	-0.0850	1.0000			
EDU	0.9596**	0.0211	0.9671**	0.5541**	0.9094**	0.8243**	0.2173	-0.7110**	1.0000		
URB	-0.7590**	-0.1289	-0.7251**	-0.0972	-0.7402**	-0.4323*	-0.1065	0.5497**	-0.8552**	1.0000	
INF	-0.1355	0.3231	-0.2445	-0.5801**	-0.0689	-0.3861	-0.1989	0.1132	-0.1733	-0.0118	1.0000

***** and ****** respectively represent statistical significance at 5% and 1% levels

Where Life DEN denotes life insurance density, Life PEN is life insurance penetration, INCOME is income per capita measured in US dollar, FDV is Financial Development, LEXP is life expectancy at birth, DEP is old dependency ratio, GINI is the Gini coefficient of Sri Lanka, REGULA is the regulation quality, EDU is secondary education enrolment rate, URB is Urban Population, and INF is the inflation rate.

Table 3 shows the results of stepwise regression for the determinants of life insurance demand in Sri Lanka. The findings show that income significantly and positively influences life insurance density. The results are consistent with the findings of Beck et al. (2003), F. Outreville (1996), Donghui Li (2007), and Mouna. Zerriaa et al. (2017). This result indicates that, when income increases, life insurance becomes more affordable. Also, the income elasticity coefficient is 1.670, suggesting life insurance demand in emerging Sri Lanka is income elastic. More specifically, as aggregate per capita income increases by 1 percent, life insurance demand rises 1.67 percent. The finding is supported by the previous single and cross-country studies on the determinants of life insurance demand. For example, Hwang and Gao (2003) find the income elasticity of China range between 1.903 and 2.036. Dale B. Truett and Truett (1990) find that income elasticity is between 0.77 and 3.87 for the United States and Mexico. Kjosevski (2012) found an income elasticity of 11.56 for Central and South-Eastern Europe (CSEE). Mouna Zerriaa and Noubbigh (2016) find that income elasticity is 0.6207 in the Middle East and North Africa (MENA) region, and Donghui Li (2007) for a sample of 30 OECD countries range between 0.63 and 1.28.

Table 3: Estimation results of the backward stepwise regression

Variable	**Coefficient**	**Standard-error**	**p-value**
Life Insurance Penetration	1.262***	0.205	0.000
Income	1.670***	0.143	0.000
Financial Development	-0.012***	0.004	0.012
Life Expectancy	4.432***	0.974	0.000
Dependency	0.060***	0.027	0.042
Gini Coefficient	-0.062***	0.008	0.000
Regulation Quality	0.341***	0.114	0.010
Constant	-28.161***	3.314	0.000
R^2		0.9976	
F test (p-value)		F(7,14) = 1259.34 (0.000)	
Durbin-Watson Test		(8,22) = 2.498	
Breusch-Godfrey LM test F-test(p-value)		2.453 (0.1173)	
Observations		22	
P = 0.778 >= 0.1000	Removing the variable Territory education		
P = 0.905 >= 0.1000	Removing the variable urbanization		
P = 0.708 >= 0.1000	Removing the variable inflation		

(*), (**) and (***) respectively represent statistical significance at the 10, 5, and 1% levels.

The development of the life insurance market significantly impacts the demand for life insurance consumption in Sri Lanka. Furthermore, with the qualitative and quantitative improvement of insurance supply in recent years, products and services continue to improve, thereby stimulating the demand for life insurance in Sri Lanka.

Contrary to our expectations, financial development exhibited a significant and negative relationship with life insurance consumption in Sri Lanka. The negative effect implies that as the capital market and banking system's development increases, life insurance consumption decreases. This relationship is robust across all estimations. The negative impact could be explained by insurance being seen as a low-trust financial product by the people in Sri Lanka. Also, people's trust in the insurance industry compared with banking system is low, and the low awareness about insurance may indirectly cause a negative relationship. Therefore, policymakers and marketing managers of the insurance companies should focus on developing bancassurance (selling insurance products through the banking system), which allows tapping into the extensive customer base of banks and getting their trust for insurance while increasing awareness among a broader population. Many European countries have already shown success with bancassurance as a

dominant distribution channel of life insurance. For example, according to Swiss-Re (2006), the contribution of the bancassurance channel to the life insurance markets in Spain, France, and Italy is 72 percent, 64 percent, and 59 percent, respectively.

In line with expectations, life expectancy at birth has a positive and significant effect on the demand for life insurance density. This indicates that improving life expectancy (reducing mortality rate) leads to an increase in life insurance consumption in Sri Lanka. More specifically, an increase in life expectancy by one year leads to an increase of 4.432 percent of life insurance density. The study results are in line with the findings of Donghui Li (2007), F. Outreville (1996), and Beck et al. (2003). Moreover, the result confirmed life cycle theory and justified the argument that longer life expectancy leads to increased longevity risk. Therefore, the demand for life insurance is increased as it can be used as a retirement provision to enjoy longer life spans. Furthermore, during the last three decades, the development of the health care system and living standards caused an increase in the average life expectancy to a level of a developed country. Therefore, increasing peoples' awareness about the ability and benefits of using insurance as a saving or pension product might increase the demand for insurance in Sri Lanka.

In line with our expectation, the finding shows that the old dependency ratio significantly and positively affects life insurance density in Sri Lanka. These results are in line with the findings of Beck et al. (2003). Furthermore, the coefficient size indicates that a 10% increase in the share of the old population to the working population increases the life insurance density by 6%. This result suggests that demand for saving and annuity products in insurance is lower than the growth rate of old dependency. Therefore, increasing awareness and trust in saving and annuity components of life insurance products can increase the demand in Sri Lanka.

As the researcher expected, the income distribution significantly and positively influences aggregate life insurance demand in Sri Lanka. This significant relationship with density suggests that life insurance is seen as a product for higher-income persons. The results are in line with the findings of Dragos, Mare, and Dragos (2019). Generally, middle-class peoples have the highest interest in life insurance products because they can afford them. In Sri Lanka, a small share of middle-income households, meaning a higher degree of income inequality. Therefore, this study results suggest that economic reform and policy decisions increase middle-class households' income positively impact the development of life insurance in Sri Lanka.

In line with expectation, regulation quality also exhibited a significant and positive relationship with life insurance consumption and confirmed prior studies' findings (Beck et al., 2003; Dragos et al., 2019). The results confirm the view that strengthening the government institutions to formulate and implement sound policies and regulations that permit and promote private sector development can enhance the growth of the life insurance market in Sri Lanka.

The results of the empirical analysis show that inflation does not seem to impact life insurance consumption in Sri Lanka. The stepwise regression procedure eliminated this variable. Also, Urbanization does not appear to influence life insurance demand in Sri Lanka. The stepwise process also eliminated this variable. Study results support the findings of F. Outreville (1996) for developing countries. The non-significance of Urbanization may be due to a small variation in the urban population in Sri Lanka. The total urban population stagnated around 18% of the total population during the last two decades. This could be explained by the view that Sri Lanka is a small island and the main cities are not far from villages. Development of road systems and other infrastructure facilities enable people to access city centers from their villages to do their jobs and commercial activities. Similarly, the tertiary education variable was also eliminated by the stepwise procedure.

8. CONCLUSIONS

The researcher take motivation from low life insurance penetration and low density in Sri Lanka to investigates the impact of selected socioeconomic and institutional factors on the life insurance demand. This study characterizes Sri Lankan life insurance market and compares it to emerging markets in the region and construct a multiple regression log-linear model to examine the effects of selected socioeconomic and institutional variables on demand for life insurance consumption by analysing the annual data from 1996 to 2018.

Over the past three decades, the reform of economic activities has made significant changes in the Sri Lankan peoples' economic, human developments, and living standards. Such changes affect people's attitudes towards risk and insurance. Therefore, the researcher examines the impact of selected socioeconomic, demographic, and financial variables significantly involving life insurance consumption in Sri Lanka during this study. The study results evidence that demographic and institutional variables play a crucial role in driving life insurance consumption in Sri Lanka.

The findings show a significant and positive influence of income on life insurance density. The empirical results exhibit that life insurance demand in Sri Lanka is income elastic since an increase in income leads to a higher percentage increase in demand. More specifically, an increase of aggregate per capita income by 1 percent, life insurance demand rises by 1.67 percent. Furthermore, the development of the insurance market also significantly and positively influences life insurance consumption. This finding confirms that the insurance supply's qualitative and quantitative improvement stimulates the demand for life insurance in Sri Lanka. Also, we find evidence of the negative impact of financial development on life insurance demand. The negative impact of financial development confirms low trust and low awareness about insurance products among the people. Based on this finding, we make the policy recommendation of

strengthening the relationship between banking and insurance industries (bancassurance). This may help to expand trust and awareness of life insurance to a large population in Sri Lanka.

Moreover, the study results show life expectancy is also significantly and positively related to life insurance demand, supporting the life-cycle hypothesis. In addition, old dependency was found to be a positive contributor to life insurance demand. Hence, as a policy implication, insurers should intensify awareness and trust in saving, and annuity components of life insurance products can increase the demand for life insurance in Sri Lanka. Furthermore, the finding shows that income distribution significantly and negatively influences aggregate life insurance demand in Sri Lanka. Therefore, the results suggest that economic reforms and policy decisions increase middle-class households' income positively impact the development of life insurance in Sri Lanka. Finally, regulation quality also exhibited a significant and positive relationship with life insurance consumption. Based on this finding, the researcher recommends strengthening the government institutions to formulate and implement sound policies and regulations that permit and promote private sector development to enhance the growth of the life insurance market in Sri Lanka.

Further research of this study could be examined non-linear econometric modeling to explore the likely non-linear effect of income on life insurance demand. Further, this analysis could also be replicated for the non-life insurance market in Sri Lanka.

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