An Analysis of Life Insurance Demand Determinants for Selected Asian Economies and India

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Abstract

During the post-1990 period, services sector in most of the Asian economies witnessed growth fuelled by substantial changes in the financial sector of these economies. The insurance industry, in most of the Asian economies, ASEAN and SAARC economies in particular, was publicly owned and remained isolated from participation of either domestic private insurers or foreign insurers or participation of both. But, regulatory reforms and policy changes in the ASEAN economies during the post-financial crisis period and the process of economic liberalization in some of the SAARC countries and China led to phenomenal changes in the growth pattern of the insurance industry in these economies. This study is divided into two parts: the first part is focused on four SAARC countries, two countries from Greater China Region and six ASEAN countries for the 11-year period (1994-2004) to understand economic and other socio-political variables, which may play a significant role in explaining the life insurance consumption pattern in these economies. Secondly, an independent exercise is undertaken to re-assess whether or not the variables best explaining life insurance consumption pattern for twelve selected Asian economies in the panel are significant for India for the period 1965 to 2004. Some variables were strongly capable of determining life insurance demand in both the analytical exercises. However, we also observed contradictions to earlier studies.

Acknowledgements

1. Introduction

The growth of the services sector in the Asian economies has led to substantial changes in the financial sector. The aftermath of Asian Financial Crisis, affecting the ASEAN economies in particular, saw these economies resorting to more regulatory measures to enhance delivery of products with minimal risks and failures. The countries surrounding the ASEAN economies also went through a phase of economic-restructuring, the most notable event being the impact of China's accession to WTO[1]. The insurance industry in most of the Asian economies were both publicly owned and operated. The Government monopoly kept this segment of the financial market isolated from domestic private or foreign participation. Barring a few exceptions[2], the insurance market, on an average, remained underdeveloped in terms of insurance density and penetration. Regulatory changes since mid eighties for opening up of these markets to private and foreign insurers have been luring global heavyweight insurers to enter these economies. As more suppliers enter these markets, the issue is to re-examine the factors that probably elevate demand for insurance products. This study on four SAARC countries, two countries from Greater China Region and six ASEAN countries, deals with this particular issue. After reviewing existing theoretical as well as empirical literature, we list out a set of variables explaining insurance consumption and categorize them as economic, demographic, legal and socio-political variables. Following this, some of these variables were used to understand whether or not they explain insurance consumption in the twelve selected Asian economies. Next, we use a time series

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[1]   Refer Chen and Shih (2004).
[2]   The Japanese insurance industry is highly developed.

framework to assess how many such significant variables can explain insurance consumption, and hence, demand for India.

The paper is organized as follows. The paper begins with the theoretical as well as empirical review of literature on demand for insurance. Based on the review, we identify the broad researchable issues. The methodological section is divided into parts explaining briefly the selection of twelve Asian economies and India followed by choice of dependent and independent variables and different sources from where we have collected information on such variables. Next, we specify the two separate econometric methodologies that are applied in this paper. The results of the empirical exercises and interpretations are presented followed by the section summarising the important observations and draw conclusions.

2. Review of Literature

2.1 Theoretical Studies

The main purpose of this study is to re-assess the validity of arguments emerging from the existing theoretical and empirical research works that there are a few variables which can significantly explain the current and future demand pattern for life insurance products. To strengthen the researchable issues for the study, we will briefly discuss selected theoretical studies which had identified indicators motivating life insurance demand and consumption.

Studies on life insurance consumption dates back to Heubner (1942) who postulated that human life value has certain qualitative aspects that give rise to its economic value. But his idea was normative in nature as it suggested 'how much' of life insurance was to be purchased and not 'what' was to be purchased. However, There were no guidelines regarding the kind of life policies to be selected depending upon the consumers capacity and the amount of risk to be 'insured' in the product.

Economic value judgments are made on both the normative as well as positive issues. Subsequent studies by Yaari (1965), Mossin (1968), Hakansson (1969), Fisher (1973), Borch (1977) Pissarides (1980) Campbell (1980) Karni and Zilcha (1985 and 1986), Lewis (1989), Bernheim (1991) and others gradually incorporated these positive issues. Their studies assimilated developments in the field of risk and uncertainty following contributions from von Neumann and Morgenstern (1947), Arrow (1953), Debreu (1953), to mention a few. The economics of insurance demand became more focused on evaluating the amount of risk to be shared/distributed between the insured and the insurer rather than the questions and methods for evaluation of life or property values at risk. This was mostly due to association of risk(s) with individual life or property that called for an economic valuation of the cost of providing insurance.

Life insurance is considered to be a form of saving, competing with other forms of saving (like bank deposits, securities, and other contractual savings) in the market. However, the theory of life insurance demand was developed through the life-cycle hypothesis of consumption. In the macroeconomic literature, Keynesian consumption hypothesis, permanent income hypothesis together with the life cycle models explains individual consumption patterns in relation to income, price and interest

levels. For example, as developed by Borch (1990), consider a person with income and consumption represented by a continuous function of time; $y(t)$ and $c(t)$ respectively; his net saving (positive or negative) over the time interval 0 to t (t being the time of retirement) is given by the difference between income and utility maximising consumption; given interest rates for each interval. Income rates become more rapid as the person approaches t, *ceteris paribus,* increases savings.

$$s(t) = e^{\delta t} \int_0^t e^{-\delta t} \{y(s) - c(s)\} ds \qquad (1)$$

where, δ is the rate of interest.

Every person wishes to consume as much as possible, but fail to do so. Constraints such as debt, premature death and failure to leave any bequest might severely affect his savings.

Considering the uncertainties associated with the time of death, equation (1) can be extended to show that an individual can enhance his life time utility via purchase of a life insurance policy (*pure endowment insurance*) and can leave a bequest sum as a portion of his income for dependents (Yaari, 1965). Borch (1990) proposed sufficient conditions and showed that saving through life insurance takes place at a higher rate of interest than conventional saving[3] and therefore, escalation in interest rates will have minimal impact on life insurance demand as in this case, consumption is for maximising utility.

The role of insurance in equation (1) has been predominantly to smoothen out consumption over time, make bequests, and repay debts or to ensure a constant income stream after retirement. The ongoing discussion also reveals that individuals' current income and future anticipated consumption expenditure plays a crucial role in determining the amount of insurance to be purchased[4]. The importance of rate of interest or an 'impatience' factor reflecting future preference patterns is also worth considering. This is because preferences over different consumption pattern vary from person to person and there are 'qualitative' factors which affects such preferences (Borch, 1990).

Simple models of insurance demand were proposed by Pratt (1964), Mossin (1968) and Smith (1968) considering a risk averse decision maker endowed with an initial wealth level. The results indicate that demand for life insurance varies inversely with the amount of wealth an individual possesses. Hakansson (1969) examined bequest motive in considerable detail using a discrete-time model of demand for financial assets in general and life insurance purchase in particular. Pissarides (1980) extended Yaari's work to prove that life insurance was theoretically capable of absorbing all fluctuations in lifetime income. Karni and Zilcha (1985) developed a methodology towards measuring individuals' risk perceptions (risk averse or otherwise) and how such perceptions affect insurance demand. An important observation made by Mossin (1968) was regarding insurance coverage as an inferior good. However, Hoy and Robson (1981) presented a theoretical explanation and later Briys et

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[3] Please refer Borch (1990) Chapter 4 for details.

[4] We have abstained from any discussion regarding the form in which insurance is purchased

al. (1989) generalised the results showing insurance to be a 'Giffen' good. Lewis (1989) using a theoretical model concluded that the number of dependents also influences the demand for life insurance.

The conventional utilitarian theories have been adopted to determine optimal insurance consumption where individuals' preferences over different consumption patterns are considered. Although expected utility theory dominated the analysis of decision making under risk, a number of studies have found that individuals (consumers) identical in all respects, might differ in their attitudes towards purchasing insurance. It is assumed in economic theory that marginal utility of money is diminishing and it is via maximising expected utility that individuals choose among financial investment alternatives in the light of uncertainty[5]. Given these two assumptions, we can infer whether or not an individual is risk averse and will demand for insurance.

The 'prospect theory' propounded by Kahneman and Tversky (1979) argued that individuals make decision with respect to a status quo reference point and gains via purchase of insurance are considered very little against losses with respect to the reference point. The development of many more models during early nineties tried to describe individual behaviour and the effects of 'framing' on decision making (Machina, 1982 and 1987).

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[5]   The Bernoulli's solution to the St. Petersburg paradox states that it is expected utility and not expected monetary value that serves as the rational guide to decision making (Sennetti, 1976).

In short, the theoretical review yields variables like income, rate of interest, current consumption and accumulated savings in wealth form as variables influencing insurance consumption. Demographic and social variables were also incorporated in theoretical models and their potential impact on an individual's life insurance consumption decision was investigated. Life insurance consumption increases with the breadwinner's probability of death, the present level of family's consumption and the degree of risk aversion. However, there is no concrete evidence as to how many such non-economic or additional economic variables can play a role in theoretical models. In the next section, we explore selected empirical studies to highlight those variables which were significant in affecting insurance demand.

2.2 Empirical Studies

This section presents a review of empirical studies on determinants of life insurance. Most of these studies has focused on both the demand side factors and the supply side factors.

Fortune (1973) analysed the empirical implications of expected utility hypothesis of choice under uncertainty for demand for life insurance and concluded that demand depends on income, non-human wealth and the rate of discount. Headen and Lee (1974) studied the effects of short run financial market behaviour and consumer expectations on purchase of ordinary life insurance and developed structural determinants of life insurance demand. They considered three different sets of variables: first, variables stimulating demand as a result of insurer efforts (e.g.

industry advertising expenditure, size of the sales force, new products and policies, etc.); second, variables affecting household saving decision (e.g. disposable, permanent and transitory income, expenditure expectation, number of births, marriages, etc.) and thirdly, variables determining ability to pay and size of potential markets (e.g. net savings by households, financial assets, and consumer expectation regarding future economic condition). They concluded that life insurance demand is inelastic and positively affected by change in consumer sentiments; interest rates play a role in both short and long run.

Using an international dataset (12 countries over a period of 12 years), Beenstock et al. (1988) found that marginal propensity to insure[6] differs from country to country and premium vary directly with real rates of interest. The study tried to examine the relationship between property liability insurance premium and income. Truett et al. (1990) discuss the growth pattern of life insurance consumption in Mexico and United States in a comparative setting, during the period 1964 to 1984. They assumed that at an abstract level, demand depends upon the *price* of insurance, income level of individual, availability of substitutes and other individual and environment specific characteristics. Further, they experimented with demographic variables like age of the insured and size of population within the age group 25 to 64 and also considered education level of the population under study to examine its bearing on insurance consumption decision. Their results show the existence of higher income inelasticity of demand for life insurance in Mexico at low income levels. Age, level of

education and income were significant factors affecting the demand for life insurance in both the countries.

Starting with a brief review of Lewis's theoretical study and an assumption that inhabitants of a country are homogeneous relative to those of other countries, the study by Browne et al. (1993) expanded the discussion on life insurance demand by adding some variables namely, average life expectancy and enrolment ratio at third level of education. The study considering 45 countries for two separate time periods (1980 and 1987) concluded that income and social security expenditures are significant determinants of insurance demand. But, inflation was found to have a negative correlation. Dependency ratio, education and life expectancy were not significant but incorporation of religion[7], a dummy variable showed that Muslim countries have significant negative affinity towards life insurance.

Based on a cross-sectional analysis of 45 developing countries, Outreville (1996) analysed the demand for life insurance for the period 1986. The study considered variables like agricultural status of the country in terms of percentage of agricultural labour force in total labour force; health status of the country in terms of amenities like percentage of population with access to safe drinking water; percentage of labour force with higher education and the level of financial development. Some of

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6   Marginal propensity to insure is defined as increase in insurance spending when income rises by 1US $

7   "Religion can provide weights into individuals … and life insurance consumption is less in predominantly Islamic countries" studies by Douglas et al. (1982), Henderson et al. (1987), Zelizer (1979) and Warsaw (1986): cited in Browne et al (1993) page 621.

the variables already discussed above were also considered. Two dummy variables were used to reflect competition in the domestic market and foreign insurer participation. The results show that personal disposable income and level of financial development significantly relates to insurance development. Since the political philosophy regarding market openness varies from country to country, market structure dummy appeared to be significant.

Taking into account the expansion of the service sector, Browne et al. (2000), tried to explain the differences in property liability insurance consumption across countries. The analysis focused on the OECD countries and concluded that in general, insurance purchase is influenced by various economic and demographic conditions. A separate study based on nine OECD countries examined the short run and long run relationships exhibited between economic growth and growth in the insurance industry. This study by Ward et al. (2000) is a co-integration analysis using annual real GDP data and total real premiums for the period 1961 to 1996. Results indicate that country specific factors[8] influence the causal relationship between economic growth and insurance market development.

Allowing income elasticity to vary as GDP grows for an economy, Enz (2000) proposed the *S*-curve relation between per-capita income and insurance penetration. Using this one factor model one can generate

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[8]   Country specific factors referred to here are attitudes towards risk and risk management, regulatory factors, legal environment, other modes or availability of financial intermediation, etc.

long run forecast for life insurance demand. Observing the outlier countries or countries distant from the S-curve plot, it is possible to identify structural factors like insurance environment, taxation structures, etc. resulting in such deviations. Therefore, this study too provides meaningful explanations for variables which can explain insurance consumption.

There are two exhaustive studies on the determinants of life insurance demand, one taking into consideration only the Asian countries and the other based on 68 economies. The first study by Ward et al. (2002) and the second by Beck et al. (2003) revolve around the issues of finding the causes behind variations in life insurance consumption across countries. Both the studies briefly highlighted the difficulties in explaining the low per-capita consumption of insurance in Asian countries with higher savings rate, a sound capital market in some of them, large and growing population, with low provision for pensions or other social security. Except Japan, most of the Asian countries have low insurance density and penetration figures.

The two main services provided by life insurance: income replacement for premature death and long-term saving instruments were the starting point for the study by Beck et al. (2003). They considered three demographic variables (young dependency ratio, old dependency ratio and life expectancy), higher levels of education and greater urbanization as independent factors in explaining insurance demand. Economic indices like Gini index and human development index were new additions along with institutional variables reflecting political stability, access to legal benefits and an index of institutional development. The

analysis for the time period 1961 to 2000 shows that countries with developed banking system, high income and lower inflation had higher life insurance consumption. The association of insurance demand with demographic characteristics was statistically weak. But, older the population, higher tends to be the insurance consumption. Insurance as a luxury good was not reflected through its association with income distribution.

In contrast, the study by Ward et al (2002) is indicative of the fact that improved civil rights and political stability leads to an increase in the consumption of life insurance both in the Asian and OECD regions. Following Laporta et al (1997, 1998, and 2000) works relating to supportive aspect of legal environment for finance, they too considered the same legal variables in determining insurance demand. Analyzing the data from 1987 through 1998 for OECD and Asian countries, they observed that income elasticity between developed economies and emerging economies are consistent with "*S*-curve" insurance growth findings by Enz (2000).

3. Issues and Questions

The major issue to start with would be to re-examine the significant variables that can best fit as determinants of life insurance demand. Recently, there are a number of studies on single economies: Hwang and Gao (2003) focused on the Chinese economy; Lim and Haberman (2004) considered Malaysia; and Hwang and Greenford (2005) again on Mainland China, Hong Kong and Taiwan. Lenten and Rulli (2006) explored the time series properties of the demand for life insurance in Australia using a novel statistical procedure that allows unobservable components to be extracted.

Zietz (2003) and Hussels et al. (2005) have reviewed the efforts of researchers to explain consumer behaviour concerning the purchase of life insurance for almost 50 years. These reviews suggest that the bulk of empirical exercises found a positive association between increase in savings behaviour, financial services industry and demand for life insurance. Taking this forward, our first issue is to see whether or not per capita gross domestic savings and financial depth influence life insurance consumption. GDP and Per-capita GDP are often highly correlated with the proxy variables measuring insurance demand: Insurance density and penetration. We therefore ignore these two variables and assume that as income grows, it will add to insurance demand via rise in the savings component i.e., GDS.

The demographic factors such as dependency ratios, life expectancy and adult literate population are considered and, in line with earlier studies, we expect these to be significant in explaining life insurance demand. It is expected that young dependency ratio will be negatively related and the rest three demographic variables are expected to have a positive relation. We have assumed first that consumer price index (CPI) will be the best proxy for inflation although we have considered log difference of CPI as an alternative measure for inflation. Lastly we have the real interest rate, which in our case, is the deposit interest rate minus inflation. In Table 1, we present our identified 'potential' determinants of life insurance consumption with the expected signs for the cross-sectional analysis.

As already mentioned, this study has two analytical parts and hence when it comes to researchable issues we are actually trying to

examine the same set of researchable issues using two separate methodologies. First, we try to infer which variables can significantly explain insurance consumption in 12 selected Asian economies. Second, we use separate data set and cross check whether variables significantly determining insurance consumption in panel are turning out to be significant in the Indian case or not. Differences in results are possible since some of the variables used in the panel and time series analysis are either different or are considered for a much longer time period. But, considering the 'universality' of some variables, we hypothesise that the importance of such variables like income, etc. (in terms of expected sign) in explaining insurance demand will hold true under different frameworks.

For the time series analysis on India, we have included variables GDP per-capita, total dependency ratio, crude death rate and urban population growth rate which are supposed to positively stimulate growth but our price variable is expected to be inversely related.

4. Methodology

Determinants for 12 Asian Economies: The study focuses on 12 selected economies - 4 from the 7 SAARC[9] countries (India, Bangladesh, Pakistan and Sri Lanka); 2 from the Greater China region (China and Hong Kong) and 6 from the ASEAN[10] (Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) group. These 12 nations, apart from being the most promising emerging and growing economies, they are

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[9]   South Asia Association for Regional Cooperation; the rest 3 countries are Maldives, Nepal and Bhutan

[10]   The Association of Southeast Asian Nations and the other members are Brunei Darussalam, Cambodia, Laos and Myanmar.

also struggling to overcome poverty. Except Hong Kong and Singapore, most of the countries have less than USD 5000 GDP per capita. Six of the selected economies in our sample have GDP per capita of less than USD 1000. One of the hurdles in empirical exercises pertaining to developing economies is either limited or non availability of proper macro-economic data. The availability of data was one key motivating factor behind selection of economies.

The overall spending on insurance and related products in these economies is very low when compared to the OECD economies. With population growth rate above or near 1 percent and a comparatively low level of insurance consumption – measured by per capita premium, there ia an indication of the existing economies of scope and the potential for growth. Although, some of these economies were gripped by the Asian Financial Crisis, the issue is to create stronger infrastructure for financial services and thereby boost the underdeveloped insurance market.

These economies display immense diversity in ethnicity, culture and religion. The legal system too varies, though most of them following the European legal system due to their colonial influence. Following the General Agreement on Trade and Services (GATS), most of these economies agreed to open up their financial sector in general and insurance in particular, to either domestic private companies or foreign companies or both. Table 5 shows that most of these countries were dominated by a large number of insurers but their insolvencies called for nationalization. It was in the beginning of 90s that regulatory changes were initiated and implemented which once again opened the insurance

industry but with more cushions in terms of regulation and supervision. The 11-year period considered for this study from 1994 to 2004, witnessed important regulatory changes. During this period, in most of the economies expansion of life segment of the insurance market gained a particular momentum. This helped to rejuvenate insurance density. The only exception from this increasing trend was Pakistan, where actually density has dropped.

Determinants for India: We examine the determinants explaining the demand for insurance in general and life in particular for the period starting 1965 to 2004. A number of changes have taken place during this selected time horizon. In 1956, the life segment was nationalized: We witnessed a war and a famine which had adversely affected the economy; in the late eighties, the process of liberalisation was initiated with the financial sector reforms in 1991; and lastly 1999 marked the re-opening of the insurance market and establishment of IRDA. The dependent variables considered are insurance penetration, insurance density and net premiums.

Data Source: The panel for 12 selected Asian countries studied for 11 years starting from 1994 to 2004 is constructed using annual aggregate data from different secondary sources. The Insurance premium figures are collected from various issues of *Sigma*, a publication from Swiss Re. The Economic as well as demographic variables used are collected from the *International Financial Statistics* (IFS) *2006* and the *World Development Indicators* (WDI) *2006*. The explanatory variables in the model are the economic and demographic variables (refer *Appendix*: 1). The time series

analysis uses insurance business data available for the period 1965 to 2004 from the Life Insurance Corporation of India and Insurance Regulatory and Development Authority's Annual Reports. Data on economic and demographic variables are collected from *WDI 2006*, available in local currency units at current prices. All the economic variables are transformed to constant 2000 prices.

5. Research Design
Determinants for 12 Asian Economies

We construct two separate panel data regression models. The models are different since life insurance demand is represented by two different dependent variables: Insurance penetration and insurance density. We use panel data because of its advantages in obtaining greater sources of variations which allow far more efficient estimation of the parameters and ability to control for individual (cross-section) heterogeneity. The estimation procedure can identify and estimate effects which are difficult to determine via pure cross sections or pure time series data[11].

The specifications of the models to be estimated are as under:

$$\log(PEN)_{it} = \alpha_i + \beta_1 \log(GDSPC)_{it} + \beta_2 \log(FIND)_{it}$$
$$+ \beta_3 URB_{it} + \beta_4 \log(YDR)_{it} + \beta_5 \log(ODR)_{it} + \beta_6 \log(ADL)_{it}$$
$$+ \beta_7 \log(LEXR)_{it} + \beta_8 RIR_{it} + \beta_9 (1/CPI)_{it} + \varepsilon_{it} \qquad (2)$$

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[11] For complete discussion on Panel Data models please refer to Baltagi (2005) and Hsiao (2003).

$$\log(DEN)_{it} = \gamma_i + \delta_1 \log(GDSPC)_{it} + \delta_2 \log(FIND)_{it}$$
$$+ \delta_3 URB_{it} + \delta_4 \log(YDR)_{it} + \delta_5 \log(ODR)_{it} + \delta_6 \log(ADL)_{it}$$
$$+ \delta_7 \log(LEXR)_{it} + \delta_8 RIR_{it} + \delta_9 \log(1/CPI)_{it} + v_{it} \qquad (3)$$

Where, PEN = Insurance penetration; DEN = Insurance density; GDSPC = Gross Domestic Savings per-capita; FIND = Financial depth; URB = Urban population; YDR =Young dependency ratio; ODR = Old dependency ratio; ADL = Adult literacy rate; LEXR = Life expectancy at birth; RIR = Real interest rate; and CPI = Consumer price index.

Here, subscript i denotes the country, the subscript t represents time, α_i are cross-sectional intercept terms, β's are the slope parameters and ε_{it} and i_{it} are random error terms. The model argues that variations in the independent variables in the 12 selected economies may contribute to insurance penetration and insurance density.

To address the problems of estimation and inference associated with panel data, we estimate both the fixed effects model (FEM) and the random effect model (REM). The FEM does not assume any time effect and focuses only on cross section effects. An incorporation of a dummy in (2) and (3) will automatically restrict us to look only for cross section specific effects. Therefore, although we discussed some of the control variables specific to religion, market structure and regulation, we have not considered the same as our objective is to estimate effects of time variant variables. The REM assumes exogeneity of all the regressors with random individual effects[12]. The decision regarding the best model between FEM and REM is arrived at using the Hausman test.

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[12]   Mundlak (1978) cited in Hsiao (2003).

Determinants for India

We begin our analysis by testing the time-variant variables for seasonality. We next make appropriate transformations to make the estimation process free from biases arising due to seasonality of variables used. However, variables of rate value were not transformed because they are already in a preferred form as they are a measure of change. Based on this rationale, the variables of rate value form, i.e., PEN, DEN, INFR, RIR, TDR, ODR, YDR, CDR, LEXR and urban population growth rate (URBGR) were not subjected to any transformation[13]. GDP per-capita, GDS per-capita, FIND, PRICE, and PREM of the level value form were transformed by taking the natural logarithm of their level values so that their coefficients represents elasticity.

To investigate the stationary properties of the selected regressors, we have considered two different tests: the Augmented Dickey Fuller (ADF) Test and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Test.

Augmented Dickey Fuller (ADF) Test: This test is based on the model of the form,
$$\Delta y_t = \phi y_{t-1} + \sum_{j=1}^{p-1} \alpha_j^* \Delta y_{t-j} + u_i \qquad (4)$$
and the pair of hypothesis is; $\quad H_0: \phi = 0 \quad versus \quad H_1: \phi < 0$

The *t-statistics* is calculated for the co-efficient ϕ from an OLS estimation of (i) (Dickey and Fuller, 1979). The null hypothesis is rejected

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[13]   Refer Appendix 1 for a complete discussion on the explanatory and explained variables, their abbreviations and for data sources.

if the calculated *t-statistics* is less than the critical value and implies that the series is stationary and *vice versa*.

Kwiatkowski-Phillips-Schmidt-Shin (KPSS) Test: The integration properties of a series y_t may also be tested against a unit root (the null hypothesis that the series is stationary)

$$H_0: y_t \sim I(0) \quad against \quad H_1: y_t \sim I(1)$$

Kwiatkowiski et al., (1992) has derived a test for this pair of hypotheses. If there are no linear trend term than, they start from a $y_t = x_t + z_t$; where x_t is a random walk and $x_t = x_{t-1} + v_t$, where $v_t \sim iid\left(0, \sigma_v^2\right)$ and z_t is a stationary process. The new pair of hypotheses is now:

$$H_0: \sigma_v^2 = 0 \quad against \quad H_1: \sigma_v^2 > 0 \, .$$

The test statistics proposed is as under:

$$KPSS = \frac{1}{T^2} \sum_{t=1}^{T} S_t^2 / \hat{\sigma}_\infty^2 \qquad (5)$$

where, $S_t = \sum_{j=1}^{t} \hat{\omega}_j$; $\hat{\omega}_t = y_t - \bar{y}$ and $\hat{\sigma}_\infty^2$ is an estimator of the longrun variance of the process z_t. The null hypothesis of stationarity is rejected for larger values of the test statistics KPSS and *vice versa*.

Based on the two test results, all the series were transformed in order to make them stationary. The dependent variables used in this time series analysis are insurance penetration and insurance density. The models estimated are of the form:

$$PEN = f\left[\begin{array}{c} FIND, \, GDPPC, GDSPC, \, INFR, \, RIR, \, PRICE, \\ LEXR, \, CDR, \, URB, \, ODR, YDR \end{array}\right] \qquad (6)$$

$$DEN = f\left[\begin{array}{c} FIND, \, GDPPC, GDSPC, \, INFR, \, RIR, \, PRICE, \\ LEXR, \, CDR, \, URB, \, ODR, YDR \end{array}\right] \qquad (7)$$

Where, GDPPC = Gross Domestic Product per-capita; INFR = Inflation rate and CDR = Crude death rate.

6. Results and Interpretation
Determinants for 12 Asian Economies

We have dropped GDP per-capita to reduce the high level of correlation in the fixed effects model and have considered the inverse of CPI as an indicator of inflation. The discussion in this section is based on the final results of the models and the summary results are reproduced in Table 4.

Our results based on the balanced panel, allow us to exploit both cross-country and time-series variation in the data. The fixed effect model (Model 1) shows that variations in insurance penetration are explained by GDS per-capita, financial depth, urbanization, old dependency ratio, adult literacy, life expectancy and measure of inflation. But, in the random effect model (Model 2), financial depth, old dependency ratio and inflation turn out to be significant. From the fixed effects regression, the *F* statistics for testing the joint significance of the country effect is 13.19 {*F* [11,105]}. This is greater than the critical value and the evidence is strongly in favour of country effect in the data. Also, the Hausman test

for the fixed and random effect regressions give the test statistics 101.89 with 9 degrees of freedom. The critical value of chi-square with 9 degrees of freedom is 16.92 at 95 percent level of significance. Thus, we can reject the fact that the individual effects are uncorrelated with other regressors in the model. This further suggests that of the two alternatives we have considered, the fixed effects model (Model 1) is a better choice.

Similarly, when we use insurance density as the dependent variable to see the impact of variations of the independent variables, fixed effects model (Model 3) turns out to be a better choice. Model 3 also suggests that there is a significant relation between GDS per-capita, financial depth, urbanization, old dependency ratio, adult literacy, life expectancy and inflation.

The regression results obtained from Models 1 and 3 show that GDS per-capita is having a positive relationship with insurance density and penetration, respectively. This suggests that, as savings activity increases, it will push up per capita insurance expenditure and thereby enhance insurance demand. The significant positive relation between density and penetration with financial depth suggests that as the financial sector strengthens, insurance sector too will benefit. Although urbanization is significant, its sign is contradictory to earlier studies and fails to fulfil our expectation that the level of urbanization in an economy raises insurance consumption. For the present study, it suggests that urbanization will decrease insurance consumption. This may be as a result of rural-urban migration and a raising share of poor population in the urban centres in most of the selected economies.

Young dependency ratio has the expected sign but it was found to be insignificant in all the 4-models. Old dependency ratio is significant but again its relationship with demand proxies does not corroborate with earlier studies. It suggests that rising old dependency ratio will taper off demand. Interestingly, the implication of overall education in an economy as studied via using adult literate population variable was statistically significant but failed to confirm the expected relationship. This might probably give rise to the issue whether or not higher education or a certain minimum, guarantees awareness of insurance benefits. The last of the demographic variable studies, the life expectancy of the total population at birth, was highly significant and suggests that as living conditions improve enhancing longevity of life, demand for insurance products would go up. As expected, inverse of inflation is inversely related with density and penetration and is significant but real interest rate is not. The relation between inflation with the demand proxies does not corroborate with earlier studies and hence we conclude that current interest rate or price situation does not affect insurance consumption decisions.

Determinants for India

The results obtained are surprising and re-inforces one to probe further why most of the determinants successful in determining the demand for insurance in the cross country analysis fail to explain the Indian scenario. We have considered two dependent variables (i.e., insurance penetration and density) and tried to explain the variation in these by set of economic variables (income, savings, prices of insurance product, inflation and interest rates) and demographic variables

(dependency ratio, life expectancy at birth, crude death rate and urbanization). The results obtained are presented in Table 7.

The analysis shows that income (GDP per-capita), financial depth, per policy price of insurance products and real interest rates are significant variables. Among the demographic variables, urbanization i.e., the growth rate of urban population as a percentage of total population is significant. In terms of the sign, the results are contradicting our expected signs. Income is inversely related to the demand insurance penetration but in line with expectation is positively related to insurance density. Financial depth has a positive relation with both penetration and density suggesting that as the financial system as a whole grows; it will have a positive impact in raising demand for insurance products. In other words, we can say that as the traditional boundaries break between specialized financial institutions, the overall involvement in financial sector in different business would lead to better supply of insurance products and thus raise demand further. Price is expected to be inversely related to demand. But, here it shows that in all the four different models, it has a positive association and suggests that 'a higher insurance cost encourages purchase of insurance'. The last of the significant variable, urbanization has a positive relation and aptly corroborates with the justification that as more and more urban centres are created, the demand or consumption of insurance products would increase.

7. Conclusions

Overall, our cross-country analysis confirms that if we exogenously consider income to be a crucial factor in explaining insurance consumption, economic variables of importance would be gross domestic savings, level of financial sector development and inflation. As specialized financial institutions turn to financial conglomerates, one important policy implication can be the strength and weaknesses of banking and other non-banking institutions which might have a positive or negative spill-over effect on the insurance industry. As more banks line up for insurance service provision, the entry of these institutions will also push up demand. Our analysis suggests that as the savings increase they raise insurance consumption. But insurance as such is not purely savings, and hence, its purchase may smoothen the income or wealth, over time. If savings plus life risk insurance products are sold, it might boost insurance consumption. Although real interest rate was not significant in our cross country analysis, it turned out to be significant in our time series analysis. Some variant of it may also play an important role in explaining individuals' choice between insurance and other saving instruments.

Our results based on panel of 12 economies over 11 years, supports the fact that demographic variables like life expectancy, young and old dependency ratio, adult literacy rate and rate of urbanization are significant determinants of life insurance demand. However, the same cannot be concluded from the time series analysis on India as only urbanization had some significant relation to the demand proxies. The insignificant dependency ratios once again prove the conclusion of Rosenzweig (1988) study that implicit insurance provided by networks of family and friends in the case of India provide some kind of alternative

arrangement to take care of life related risks[14]. Therefore, if we consider that the older generation in most of the low-income and developing countries considered consumption of insurance as an unnecessary expense, the policy recommendation to enhance awareness among the current generation is via proper information dissemination.

According to Liedtke (2007) insurance should be considered a key component of economic development and the best mechanism to take care of multidimensional risks in modern economies. It is necessary to clear the confusion regarding considering life insurance as a superior or luxury good among potential consumers in developing countries with comparatively low per-capita income. But as per-capita income is steadily creeping up in the selected economies[15] with changes in the standard of living, the suppliers might stimulate demand and increase the availability of insurance products. This would reduce the scarce and costly outlook of life insurance products. The study can be extended considering more variables and dummies to look for the country and time specific factors affecting demand. The results are of importance to the policy makers if they are aspiring to elevate insurance density and penetration in the economies. Most of the selected economies have undergone changes, particularly in terms of regulatory reforms recently. It would be useful to take a much bigger sample in terms of countries and periods considered, to understand why some of the variables behaved so differently than expected.

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[14] The information was collected from the study by Townsend(1995) which dealt with some of the issues relating to evaluation of risk bearing systems in low-income economies.

[15]   Singapore and Hong Kong are however two countries in the high-income group.

Table 1: Determinants, Research Questions and Expected Relationship

Determinants	Questions	Expected Sign
GDP per-capita	Is income a significant factor in explaining life insurance consumption?	+
GDS per-capita	Is level of saving a significant factor in explaining life insurance consumption?	+
Financial Depth	Does the level of financial sector development have any spill-over effect on enhancing insurance consumption?	+
Urbanization	What relation exists between the rate of urbanization and insurance consumption?	+
Total Dependency Ratio	The impact of rising "dependent population" on insurance consumption	+
Young Dependency Ratio	The impact of growing population in the 0-14 years age group on insurance consumption	–
Old Dependency Ratio	The impact of growing population above 65 years of age on insurance consumption	+
Adult Literate Population	Whether or not level of education, as an indicator of awareness, affect insurance consumption?	+
Life Expectancy at Birth	The effect of life expectancy on insurance consumption	+
Crude Death Rate	The effect on number of deaths on insurance consumption	+
Inflation	Do price fluctuations affect insurance consumption?	–
Real Interest Rate	What is the effect of changes in interest rate on insurance consumption?	–
Price	Does insurance price determine the demand for insurance?	–

Table 2: Life Insurance Premiums and Penetration Figures for the 12 Asian Economies

	1994		1999		2004	
	Premiums*	Density#	Premiums*	Density#	Premiums*	Density#
Bangladesh	0.01[1]	0.0001	103.71	0.81	231.48	1.66
China	2027.41	1.71	10752.17	8.58	30584.31	23.60
Hong Kong	2536.44	422.88	4973.26	752.73	14643.54	2122.25
India	3652.70	3.99	6306.50	6.31	14716.36	13.63
Indonesia	625.08	3.30	780.79	3.83	1496.19	6.88
Malaysia	1222.39	60.81	1892.14	83.32	3798.01	152.53
Pakistan	211.00	1.77	186.49	1.38	230.14	1.51
Philippines	375.08	5.61	538.99	7.20	795.78	9.75
Singapore	1476.57	431.62	2837.70	718.04	6437.32	1532.70
Sri Lanka	0.01[1]	0.0006	73.80	4.05	115.46	5.95
Thailand	1235.20	21.20	1550.48	25.74	2936.49	46.10
Vietnam	0.01[1]	0.0002	35.62	0.46	442.46	5.38

Source: *Sigma* (various issues), Swiss Re.
* in Millions of USD at constant 2000 prices
\# Life Premiums as percentage of total mid-year population
[1] Figures are extrapolated

Table 3: Correlations

	Per Capita GDP	GDS	Life Premium	Penetration	Density
Per Capita GDP	1.000	-0.080	0.205	0.811**	0.879**
GDS		1.000	0.817**	0.050	-0.057
Life Premium			1.000	0.453**	0.305
Penetration				1.000	0.910**
Density					1.000

** Correlation is significant at the 0.01 level (2-tailed).

Table 4: Panel Data Estimation

	Model 1	Model 2	Model 3	Model 4
Dependent Variable	Insurance Penetration		Insurance Density	
Independent Variables	Fixed Effect	Random Effect	Fixed Effect	Random Effect
Constant	-161.993* (39.091)	-59.125* (27.491)	-161.854* (39.378)	-66.253* (28.595)
GDS per-capita	2.997* (1.0540)	0.868 (0.855)	3.190* (1.062)	1.374 (0.875)
Financial Depth	4.268* (1.352)	4.296* (1.200)	4.392* (1.362)	4.495* (1.209)
Urbanization	-0.088* (0.0432)	-0.021 (0.016)	-0.087* (0.043)	-0.020 (0.017)
Young Dependency Ratio	-6.697 (5.968)	-1.617 (3.901)	-6.804 (6.012)	-1.746* (4.042)
Old Dependency Ratio	-8.448* (3.639)	-8.869* (3.388)	-8.152* (3.666)	-8.816 (3.447)
Adult Literate Population	-11.103 (3.212)	*0.752 (0.495)	-10.775* (3.236)	0.624 (0.523)
Total Life Expectancy at Birth	119.749* (0.249)	20.271 (13.940)	118.448* (22.374)	23.716 (14.556)
Inflation	-8.500* (4.620)	-10.485* (3.911)	-8.414* (4.654)	-10.149* (3.935)
Real Interest Rate	0.119 (0.249)	-0.151 (0.284)	0.109 (0.251)	-0.133 (0.279)
Observations	126	126	126	126
F Test Statistics / χ^2	13.19	101.57	13.15	134.96
R^2 Within	0.6467	0.5288	0.6598	0.5639
R^2 Between	0.0829	0.5514	0.3265	0.7086
R^2 Overall	0.0628	0.4627	0.2588	0.6362
Hausman Test Statistics	101.89		91.03	

* Statistically significant; Figures in parentheses are standard errors

Table : 5 *Development of Life Insurance Industry**

Economies	Regulatory Authority	Pre-Regulatory Regime	Regulatory Change	Foreign Ownership	No. of Insurers
Bangladesh	The Department of Insurance, headed by the Insurance Directorate of the Ministry of Commerce.	After separation from Pakistan in 1972, state-owned monopoly life insurer Jiban Bima Corporation was established in 1973	1984 Allowed 50% private underwriting in 1990	Not Allowed	18 1 Public
China P.R.	China Insurance Regulatory Commission (CRIC) formed in 1998	PICC's[1] monopoly as insurer ended in 1985; 5 new public insurer created; 4 regional insurer existed	1992; Interim Management Regulation for foreign Insurance Institutions allowed foreign entry	Allowed; 2002 Regulations on Admn. of Foreign-invested Insurance Company	47
Hong Kong	Office of the Commissioner of Insurance (OCI); 1990	Comparatively the most competitive insurance market with over 204 insurers	1997 after it became PRC's special administrative region	Allowed; 104 captive insurers in operating from 25 countries	140
India	Insurance Regulatory and Development Authority (IRDA); 1999	The Life Insurance Corporation Act of 1956 merged 256 life insurers to form LIC[2]	100% private participation allowed since 1999	26% equity share in local companies	16 1 Public
Indonesia	The Directorate General for Financial Institutions along with Ministry of Finance	—	—	Allowed	62
Malaysia	Ministry of Finance *de facto* regulator with administration by Bank Negara Malaysia (BNM)	In 1984 Takaful Insurance Act permitted insurer operations based on Islamic principles.	Always open to Private Law and Regulatory changes in 1996.	Allowed	7
Pakistan	Securities and Exchange Commission of Pakistan (SECP) 1999	In 1972, 34 out of 50 existing insurers were merged to form State Life Insurance Corp.[2]	1990 100% private entry Allowed since 1992	Allowed	5 1 Public

Economies	Regulatory Authority	Pre-Regulatory Regime	Regulatory Change	Foreign Ownership	No. of Insurers
Philippines	The Insurance Commission (*Komiyon ng Seguro*)	Private sector was always emphasized	The *Republic Act No. 8179* of 1996 permits 100% foreign ownership	New foreign insurer is not allowed to hold a composite license	34
Singapore	The Insurance Department of the Monetary Authority of Singapore (MAS)	Until 1960s the market was loosely regulated	2000 The market was liberalized to direct insurers	In 2000, 49% restriction on foreign ownership in local companies was lifted	8
Sri Lanka	The Insurance Board of Sri Lanka; 2001	Insurance Corp. Act in 1961 nationalized the life insurance Industry to form ICS[4]	2001, 100% private operation allowed since 1986	Up to 90% foreign investment in local companies	10 1 Public
Thailand	The Department of Insurance (of the Ministry of Commerce) independent from 2002	Market was blocked for decades till late 1990s	1992 Insurance business is relatively liberal	25% of foreign ownership in domestic insurers[5]	20
Vietnam	Ministry of Finance	Baoviet, a state owned life insurer started operation in 1996 but was initially created for non-life insurance	1999 2000, approved & enacted new set of laws	Allowed 2 foreign companies in 1999 followed by 2 in 2000	103 Public

Source:

Kwon, W. Jean (2001) "Toward Free Trade in Services: The ASEAN Insurance Market", IIF Occasional Paper, No. 3; International Insurance Foundation, Washington, DC.

Kwon, W. Jean (2002) "The Insurance Markets of South Asia", IIF Occasional Paper, No. 4; International Insurance Foundation, Washington, DC.

Kwon, W. Jean (2002) "The WTO and Insurance in Greater China: The Peoples Republic, Hong Kong, Macau, and Taiwan", IIF Occasional Paper, No. 6; International Insurance Foundation, Washington, DC.

[1] People's Insurance Company of China; [2] Life Insurance Corporation of India under the control of Government of India; [3] The Corporation established under Article 11 of the Life Insurance (nationalization) Order of 1972 ;[4]Insurance Corporation of Sri Lanka, renamed the Sri Lanka Insurance Corporation Ltd. in 1993; [5] to be lifted to 49%;

Table 6: Selected Economic, Demographic variables and Regulatory Restrictions

Year 2004	Pop[n] Growth Rate#	GDP Per – capita@	Religion: Majority Pop[n]	Life Business Regulatory Restrictions		
				Price Regulation	Investment Regulation	Solvency Norms
Bangladesh	1.88	402.07	Muslim	Not Known	Stringent	Weakly imposed
China P.R.	0.60	1323.14	Confucianism	Approval from CIRC	Strict restrictions, confining the areas of insurer investment to bank deposits, Govt. bonds, financial bonds, etc.	The solvency margin is a function of insurer's size of business measured by premiums, claims, or both.
Hong Kong	1.16	27446.32	Confucianism	Self-regulatory	No specific guidelines.	4% of mathematical reserves and 0.3% of capital at risk or $HK 2 million
India	1.43	538.31	Hindu	Approval from IRDA	Stringent Not less than 50% in approved Securities	Excess of the value of insurer over its liability amount value
Indonesia	1.35	906.19	Muslim	Not Known	Total invest. excluding mortgage loans should be equal to technical reserves	1% of Premium Reserves

Year 2004	Pop[n] Growth Rate#	GDP Per – capita@	Religion: Majority Pop[n]	Life Business Regulatory Restrictions		
				Price Regulation	Investment Regulation	Solvency Norms
Malaysia	1.86	4289.72	Muslim	1996 Insurance Act & the Insurance Regulation has provisions regarding pricing	30% in Bumiputra Shares, ownership share by ethnic Malay	Actual valuation of liability, aggregate Insurance coverage, etc.
Pakistan	2.41	566.03	Muslim	To follow SECP Guidelines	Statutory fund for each product sold	Prescribes asset & liability valuation methods
Philippines	1.79	1084.92	Roman Catholic	Approval from the commission of the premium rates	Partial/ varying	Aggregate insurance Coverage in force, subject to min. amount
Singapore	1.31	24163.91	Buddhist	Approval from principal Officers and directors from Insurance Dept. & certificate from appointed actuary	Partial/ varying	Fund solvency margin & company solvency margin

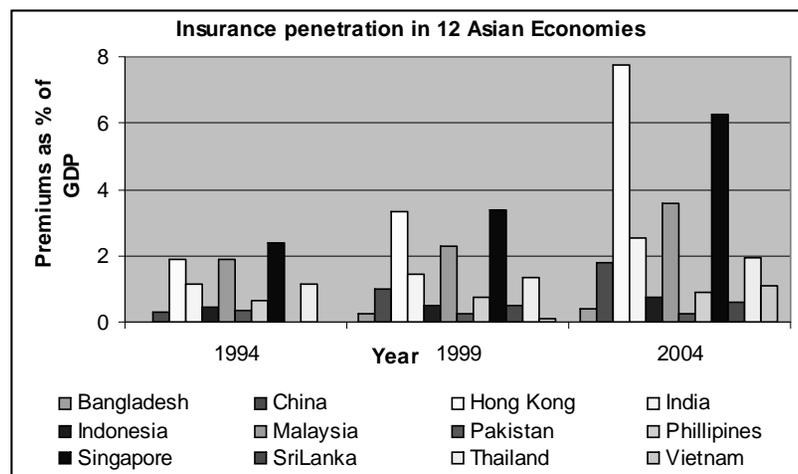| Year 2004 | Pop^n Growth Rate# | GDP Per-capita@ | Religion: Majority Pop^n | Life Business Regulatory Restrictions | | |
				Price Regulation	Investment Regulation	Solvency Norms
Sri Lanka	0.86	961.61	Buddhist	Approval required	30% reserve funds in Govt. securities	Total Assets sufficiently > Total Liabilities
Thailand	0.87	2355.99	Buddhist	Approval required	Investments to be within Thailand	2% of reserve fund subject to min. amount
Vietnam	1.04	501.99	Buddhist	Approval required	Separate for foreign and domestic companies	Exist

Source: As in Table 5 and World Bank (2006) WDI CD-ROM 2006.
Annual rate of growth in percentage; @ In USD at constant 2000 prices;

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Table 7: Results of Time Series Analysis

Dependent Variable	Insurance Penetration		Insurance Density	
Independent Variables	I	II	III	IV
Constant	-0.145795 (0.1651)	-0.079532 (0.1645)	0.001854 (0.0035)	0.00308 (0.0039)
GDP per-capita	-0.553* (0.2769)	-0.55249* (0.2797)	0.510123* (0.2908)	0.510788* (0.2911)
GDS per-capita Financial Depth	0.528458* (0.3060)	0.499001* (0.3064)	0.593214* (0.3208)	0.569971* (0.3176)
Price / Cost of Insurance	0.429667* (0.0984)	0.43861* (0.1003)	0.406632* (0.0993)	0.422833* (0.1005)
Inflation	0.005456 (0.6222)	-0.097568 (0.6217)	-0.302486 (0.6487)	-0.233493 (0.6408)
Real Interest Rate	-0.172807* (0.0031)	0.005457* (0.0031)	0.006023* (0.0032)	0.006005* (0.0032)
Urbanization	0.052922* (0.0409)	0.053652* (0.0290)	0.048496* (0.0275)	0.053051* (0.0288)
Young Dependency Ratio		4.909387 (6.0713)		5.605282 (5.9679)
Old Dependency Ratio	-88.6631 (80.5820)		-75.57763 (78.7703)	
Crude Death Rate			-0.006334 (0.0085)	-0.00612 (0.0085)
Total Life Expectancy at Birth	0.036597 (0.0280)	0.020392 (0.0407)		
Observations	38	38	38	38
F Test Statistics	6.64	6.45	6.12	6.11
R2	0.6470	0.6404	0.6281	0.6276
Adj-R2	0.5496	0.5412	0.5255	0.5249
D-W Statistics	2.7556	2.7350	2.7021	2.7229

* Statistically Significant at some α% level of significance; values in parentheses are standard errors.

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Figure 1: Insurance Penetration in Selected 12 Asian Economies

Insurance penetration in 12 Asian Economies

Legend:
- Bangladesh
- China
- Hong Kong
- India
- Indonesia
- Malaysia
- Pakistan
- Phillipines
- Singapore
- SriLanka
- Thailand
- Vietnam

Source: Swiss Re, Sigma (various Issues)

Appendix 1: Explanatory and Explained variables

Type of Variable	Variable Name	Description
ECONOMIC	Gross Domestic Product (GDP)	It is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output. Growth is calculated from constant price GDP data in local currency unit
	GDP per-capita	It is gross domestic product divided by midyear population.
	GDS per-capita	The gross domestic savings divided by midyear population.
	Consumer Price Index (CPI)	It reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or may change at specified intervals, such as yearly.
	Liquid Liabilities as a % of GDP (for Financial Depth) (FIND)	They include bank deposits of generally less than one year plus currency. It is the sum of currency and deposits in the central bank, plus transferable deposits, electronic currency, plus savings in time and savings deposits, foreign currency transferable deposits, certificate of deposit and securities repurchase agreements etc.
	Inflation Rate (INFR)	Log difference of CPI
	Real Interest Rate (RIR)	Deposit interest minus inflation
DEMOGRAPHIC	Population	Total mid-year population
	Total Dependency Ratio (TDR)	The ratio of dependent young Population and dependent old Population to the working age population-those ages 15 to 64
	Young Dependency Ratio (YDR)	The ratio of dependents - people younger than 15 years of age to the working age population - those ages 15 to 64
	Old Dependency Ratio (ODR)	The ratio of dependents - people older than 64 years of age to the working age population - those ages 15 to 64
	Adult Literacy Rate (ADL)	The percentage of people ages 15 and older who can, with understanding, both read and write a short, simple statement about their everyday life.

Type of Variable	Variable Name	Description
	Life Expectancy at Birth (LEXR)	The number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.
	Crude Death Rate (CDR)	No. of Deaths per '000 population
	Urban Population (URB)	The population of the urban agglomeration, a contiguous inhabited territory without regard to administrative boundaries.
	Urban Population Growth Rate URBGR	Percentage change in Urban Population as a percentage of Total Population
INSURANCE BUSINESS	Premiums (PREM)	Total Premium generated (net)
	Price (PRICE)	Ratio of Total First Year Premium Income to Sum of No. of new individual policies sold and the no. of lives covered under group schemes.
	Premium Density (DEN)	Total Premiums per-capita
	Premium Penetration (PEN)	Total Premium as a percentage of Gross Domestic Product
	(PSAV)	Total Premium Income as percentage of Gross Domestic Savings

Source: Swiss Re (various issues) *Sigma*; IMF (various issues) *International Financial Statistics*; World Bank (2006) *World Development Indicators 2006 in CD Rom*; LIC (various issues) *Annual Report and* IRDA (various Issues) *Annual Reports.*

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