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Insurance Demand in Emerging Asian and OECD countries: A Comparative Perspective

Abstract

Purpose: In this paper we aim to assess insurance demand across selected Asian and OECD countries during the period of the global financial crisis.

Methodology: We collected data from 55 emerging Asian and OECD countries during the period of the global financial crisis. Our methodology relies on panel regressions. Separate models are run for the Asia/OECD economies and a follow-up distinction between high/low income regions is also made.

Findings: We find that global financial crisis affects negatively the general insurance demand particularly in high-income region. Higher dependency ratio in Asia tends to decrease insurance demand, whereas Education in case of Asia positively influences insurance demand indicating that higher literacy rate can be helpful to capture the potential customers. Our results further reveal that life insurance is an important driver for insurance demand in OECD countries whereas general insurance demand is higher in the Asian economies.

Research Limitation: A limitation of this study is that data sets employed do not differentiate between different life and general insurance products.

Practical Implications: This study is helpful for regulators, policy makers and insurance providers to evaluate, assess and monitor insurance demand in relevant countries.

Originality: This is one of the pioneering studies that have assessed insurance demand among emerging Asian and OECD countries during the period of the global financial crisis.

Key words: Insurance demand, Asia and OECD regions, Insurance penetrations and BRIP, Global Financial Crisis.

JEL Classification: G01, G15, G22, N25.

1.   Introduction

Insurance exhibits an important contribution to sustainable economic development and growth especially by pooling the public funds and acting as an institutional investor for the corporate sector. Insurance can trigger economic activities but also affect social welfare through proper allocation/disbursements of funds, loss payments and indemnification for longer period of time (Outreville, 1990; Brown, 2000; Park & Lemaire, 2012).

In 2007, Europe was in the lead of the insurance market with a market share of 42.48% followed by American region with a market share of 34.21%, then Asia with 20.35% and finally Africa with 1.66%. By 2014, the European market share had declined to 35.53%, followed by similar drops in the American region (down to 33.36%) and Africa (down to 1.44%). At the same time period the Asian insurance market share has risen to 27.57%. OECD market share was 89.84% in 2007 but reduced to 80.59% in 2014 (Swiss-Re, 2015).

During the past few decades, the insurance industry has been through a series of financial crises. The most prominent ones are US Liability insurance crisis of early 1980s and collapse of 300 years old Lloyd's insurance in early 1990s (Baluch et al., 2011). The global financial crisis (GFC) of 2007, primarily considered a banking crisis, also has a drastic impact on insurance industry causing higher unemployment and decline in economic growth (Schich, 2009). The GFC had dampened the economic activities initially but later on government interventions through its bailout packages and financial sector's insurance-linked secured investment portfolio building stabilized the economic conditions[1]. The thorough economic impact of the GFC has not left the insurance sector unscathed. Several researchers have investigated the impact of GFC on insurance demand in developed countries like US, UK and Europe (Harrington, 2009; Schich, 2009; Baluch et al., 2011; Firtescu, 2014; Trinh et al., 2016; Akhter et al., 2017). However, little focus has been given to the insurance demand in the emerging Asian economies.

In this paper, we investigate the determinants of insurance demand in emerging Asian and advanced OECD economies. We selected Asian region as it has the third largest insurance market

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[1] Insurance firms were given financial support, such as the US government's emergency bridge loan of $85 Billion to American International Group (AIG) to avoid bankruptcy. It has been estimated that during the GFC about $261 billion of credit losses and write-downs were accumulated in the insurance sector around the world (Ostry et al., 2010; Beck et al., 2010).

after Europe and America and its market share is on the rise even after the global financial crisis (Swiss-Re, 2015). We compared it OECD region as it consists of advanced countries with higher insurance penetration (Swiss-Re, 2015). Our study sample comprises 25 emerging Asian and 30 OECD countries as a reference group, while the period of study ranges from 2004 to 2013, giving us good coverage of the GFC. In our methodology, we utilize panel regressions and control for key economic and demographic factors that are known from the literature to influence insurance demand.

As a preview of our findings, GDP per capita and financial developments are the key factors to influence positively insurance demand across both Asian and OECD region. The positive link indicates that economic and financial sector developments stimulate the demand for insurance products. As far as demographic factors are concerned, education, life expectancy, dependency and urbanization have the expected contribution to insurance demand. In particular, the dependency ratio shows a negative relationship, while education (in Asian region), life expectancy and urbanization are positively linked to insurance demand. Inflation factor is significant only in case of general insurance and for Asian region. Among demographic factors life expectancy effects across Asian region to both life and general insurance while significant only to life insurance in OECD region.

Allowing for a high/low income split of the two country groups shows that higher GDP per capita and increased financial developments have a stronger positive relationship in the high rather than the low-income regions. Moreover, low education and high dependency ratios are significant factors for the low-income regions revealing that lack of awareness among them significantly causing decline in insurance demand.

The study has several contributions to the existing literature. First, we compare life and general insurance as these are the most widely used forms of insurance contributing to more than 90% of world insurance revenues (Swiss Re, 2015). Second, we contrast between two measures of insurance (both life and general insurance) demand; namely the Benchmark Ratio of Insurance Penetration (BRIP)[2] and the relative insurance penetrations. A third contribution rests with the

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[2] Benchmark Ratio of Insurance Penetration (BRIP) is measured through country actual penetration divided by world average penetration for both life and general insurance. It reveals the insurance demand with respect to certain benchmark (world insurance) and overcome the shortcomings of insurance density and simple penetration. Here we follow the Zheng et al. (2009) to use BRIP as a measure of insurance demand.

comparative analysis of two types of insurance across two regions i.e. emerging Asian economies and the OECD. We have identified the factors that have significant impact on insurance demand in both regions. Specifically, our included indicators capture not only economic factors but also demographic characteristics such as, education and dependency ratio that could highlight differences for both types of insurance demands.

Our paper comprises of 5 sections of which this is the first. Section 2 discusses the extant literature regarding insurance demand determinants. In a third section, we report our research methodology and describe the dataset, data sources and data transformations. Empirical results are presented and discussed in a fourth section. In the final section we conclude based on our findings and discussions.

2. Literature Review

Yaari's work (1965) is the pioneering study in life insurance demand in which he develops an insurance model with uncertain lifetime and argues that an individual expected utility increases with increase in insurance premium. Extending Yaari's model, Lewis (1989) argues that individuals prefer the life insurance to maximize their life time utility. Browne and Kim (1993) provided international evidence on insurance demand. They found that life insurance demand was positively associated with country national income and social security expenditures whereas it was negatively associated with inflation. They further revealed that economic development and financial stability greatly increased the life insurance demand. Schlesinger (2000) extends the single risk model to account for multiple risks such as insolvency risk (in which insurer may not pay its claims in full) and background risk (that includes other risks). Einav and Finkelstein (2011) conducted an empirical study based on insurance demand theory and found that adverse selection of customers exists in some insurance markets. They also discovered that some markets exhibit advantageous selection.

Inflationary pressure affects the demand of insurance as customers are sensitive to the future (often uncertain) value of insurance policies (Babbel, 1985; Feyen, Lester, and Rocha, 2011). Potential customers respond sensitively to expected or realized inflation; thus, reducing insurance consumption (Babbel,1985). Fortune (1973) in his study regarding life insurance in the US market found high sensitivity between the optimal amount of life insurance, wealth and the real interest rate.

Beenstock, Dickinson and Khajuria (1986) verified a link between macro-economic and demographic factors upon insurance demand. In particular, a positive impact between each of age, life expectancy, dependency ratio, income and interest rate to insurance demand is documented, while social security coverage bears a negative impact. Truett and Truett (1990) further verified that the level of education positively affects demand insurance. Browne and Kim (1993) investigated macro-economic and demographic factors as key demand determinants finding income and social security expenditures positively influencing while inflation having negative impact on insurance demand. In a related context, Outreville (1996) claimed that price of insurance, personal disposable income and the level of financial development has a significant impact. Browne, Chung, and Frees (2000) illustrated that wealth holding, legal regularity system, income level, control and shares of foreign companies in insurance marketing the country are important in reshaping decision to go for insurance plans. Ward and Zurbruegg (2002) focused on 4 broader categories of macroeconomic, demographic, political and legal factors. They found that improved civil rights, political stability, Income level, inflation rate, insurance price charged as premiums and provisions for social welfare significantly improve the insurance demand. Beck and Webb (2003) also found a positive impact of per capita income, banking sector development, private saving rate, real interest rate and old dependency on insurance demand. They also found the negative impact of schooling, inflation, young dependency and anticipated inflation. Nesterova (2008) found that higher life expectancy at birth, income level; old dependency ratio had positive impact on insurance demand while financial development indicator, inflation and real interest rate had negative impact. Çelik and Kayali (2009) investigated insurance demand determinants and found a positive impact of population and income while education level and inflation found having negative impact. Feyen, Lester and Rocha (2011) studied macroeconomic, demographic, socio-cultural and institutional-market structure factors impact on insurance demand. Their research findings depicted positive impact of income, population, population density, age dependency, private ownership, legal framework, while negative impact of inflation and life expectancy.

Hwang and Gao (2003) focused on the impact of macroeconomic and demographic factors on insurance demand across the Chinese insurance market. Their research findings revealed positive yet insignificant impact of inflation, while significant and positive impact of income, education and urbanization. Rising income levels affect insurance consumption and expenditure pattern, which may lead to purchase insurance policy plans either to save for their dependents or for their

after-retirement life. Kjosevski (2012) focused on environment specific factors found GDP per capita, inflation, health expenditure, level of education and rule of law had significant impact on insurance demand across Central and South-Eastern European Countries.

Investors often make investment decisions typically involving a mix of financial assets, financial instruments or insurance policies on the basis of their return/risk appetite, with financial crisis known to affect such investment decisions (Burnett and Palmer, 1984; Savvides, 2006). Firtescu (2014) focused on economic, technological, demographic, insurance market and institutional factors on insurance demand to check the crisis impact. They described that for the period before crisis, there is continuous increase in the share of insurance industry revenues from the premiums, while level of employment, GDP per capita and access to the internet have significant positive influences. Trinh et al. (2016) investigated the GFC impact on non-life insurance demand using economic, institutional, demographic, social and structural factors across 67 developed and developing countries. Their research findings revealed that economic freedom, income, bank development, culture, and law system are the key drivers for non-life insurance. Zerriaa and Noubbigh, (2016) focused on life insurance demand across the MENA region using economic and socio-demographic factors. They found a positive impact of GDP per capita income, inflation, financial developments, life expectancy, while dependency ratio and social security were found to negatively impact insurance demand.

Few studies have investigated the insurance demand in Asian and OECD countries. For example, Sen and Madheswaran (2013) focused on Asian economies to investigate the life insurance demand determinants and found Income, financial depth, Inflation, real Interest rate and youth dependency ratio are significant determinants. Similarly, Dragos (2014) focused on investigating insurance demand determinants across Asian and European economies. Their research findings revealed that income does not significantly affect non-life insurance across Asia region while urbanization and education found significant impact on life and non-life insurance. On the other hand, Li et al. (2007) focused on OECD countries using socioeconomic and financial factors as insurance demand determinants. Their research findings revealed positive impact of income elasticity, number of dependents, level of education, financial development and competition on insurance demand. They also documented the negative impact of life expectancy, social security expenditure, inflation and real interest rate.

From the above-mentioned literature, it is clear that most of the explanatory factors can be grouped into economic and demographic ones. To further account for the effect of global financial crisis, we develop the following hypothesis for our study:

Hypothesis: Insurance demand is affected by demographic and economic factors during financial crisis.

3. Methodology

Data

Our dataset consists of 25 emerging Asian economies and 30 OECD (excluding Japan, Israel, Korea, Latvia and Luxemburg) based on insurance data availability from OECD database and Swiss-Re Sigma[3]. They are further divided into two regions high and low income regions based on World Bank categorization of countries into higher and lower income. Time period of the study is consisted on 10 years from 2004-2013. Independent variables (socio-demographic and economic) regarding data are collected from the World Development Indicators database.

Econometric model

The dependent variables in our model are the life and general insurance penetration and their respective BRIP measurements. Separate models are run for the Asia/OECD economies and a follow-up distinction between high/low income regions is also made. The following equation is estimated using panel random effects with cluster robust standard errors, while allowing for country and year fixed effects. All variables are stationary either through log-transformations following Outreville (1996), Zerriaa and Noubbigh, (2016), or through log differencing.

$$\begin{aligned} Y_{j,t} = {} & \beta_0 \ + \ \beta_1 \times \text{GDP}_{j,t-1} \ + \ \beta_2 \times \text{Inflation}_{j,t-1} + \ \beta_3 \times \text{Saving rate}_{j,t-1} \ + \ \beta_4 \\ & \times \text{Financial Sector Development}_{j,t-1} \ + \ \beta_5 \times \text{Life expectancy}_{j,t-1} \ + \ \beta_6 \\ & \times \text{Education}_{j,t-1} \ + \ \beta_7 \times \text{Urbanization}_{j,t-1} \ + \ \beta_8 \times \text{Dependency ratio}_{j,t-1} \\ & + \ \beta_9 \times \text{Crisis}_t \ + \ \varepsilon_{j,t} \end{aligned}$$

where j and t index country and time respectively. $Y_{j,t}$ is either the general/life insurance penetration or the BRIP. Description of variables is given Table 1.

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[3] List of 25 emerging Asian economies and 30 OECD sample countries are shown in Appendix I.

Table 1: Variables Measurement

Variable	Measurement	Source
Life/General Penetration	It is obtained each country's life or general premium volume divided by the country's GDP (Life or General insurance volume/GDP). It is used to measure insurance demand.	World Insurance Reports, Swiss-Re. (2006-2015). Sigma
Life/General BRIP	BRIP refers to 'Benchmark Ratio of Insurance Penetration'. It is measured through country actual penetration divided by world average penetration for both life and general insurance.	World Insurance Reports, Swiss-Re. (2006-2015). Sigma
Income	Per capita income (in US dollar) is taken as proxy to represent income level of these countries	World Development Indicators (WDI) (2006-2015), the World Bank
Saving rate	Deposit rates on saving accounts are offered as proxy to represent the return rates of alternatives.	WDI (2006-2015)
Inflation	Consumer price index (CPI) is taken as proxy for inflation rate as it affects the purchasing behaviors.	WDI (2006-2015)
Financial Sector Developments	Domestic credit to private sector by banks is used as its proxy.	WDI (2006-2015)
Life expectancy	Average age prevails in these countries is taken as a proxy for life expectancy at birth.	WDI (2006-2015)
Dependency ratio	Number of dependents of the individual using insurance products is taken as a proxy for dependency ratio.	WDI (2006-2015)
Urbanization	Urban population as percentage age of total population is used as a proxy for urbanization.	WDI (2006-2015)
Education	Population having tertiary school enrollment as a percentage of the total population is used as proxy for education.	WDI (2006-2015)
Crisis period	To account for the 2007 global	Akhter et al., 2017; Baluch et al.,

financial crisis, a binary variable is used that takes the value 1 for the years between 2007-2010, zero otherwise.	2011; Harrington, 2009; Schich, 2009

4. Empirical Results

Table 2. Descriptive Statistics

Variables	Asia		OECD	
	Mean	**SD**	**Mean**	**SD**
Life Insurance Penetration	1.9744	2.6749	3.7321	4.3913
General Insurance Penetration	1.3058	0.8938	3.0063	1.6170
Life Insurance BRIP	0.5151	0.7191	0.9621	1.1226
General Insurance BRIP	0.4398	0.3011	1.2603	1.0215
Economic				
GDP/capita	3.8838	0.6219	4.4791	0.2804
Inflation	114.121	31.181	96.941	9.2213
Saving Rate	4.6246	3.2111	4.4550	4.2212
Financial Development	68.648	39.540	104.914	52.674
Demographic				
Education	31.542	19.590	56.664	11.609
Dependency ratio	46.664	12.843	48.934	4.192
Life expectancy	74.511	4.9289	78.952	2.589
Urbanization	66.465	26.604	75.754	11.232

Notes: This table shows key descriptive statistics for life and general insurance demand (on penetration and BRIP basis) as well as key economic and demographic variables used in the analysis across both Asian and OECD regions. SD denotes Standard Deviation.

Table 2 presents key descriptive statistics for the variables included in the study per country group. A cursory inspection of the results suggests that insurance demand is larger in the OECD countries irrespective of the measure used. In particular, the Asian economies have an average General Insurance BRIP of 0.4398 against 1.2603 of the OECD. Similar conclusion is reached for the economic variables, where the OECD present a group of more solid economic performance, as expected. Hence, GDP/capita (log) is around 4.479 for the OECD, while for the Asian economies, much lower at around 3.883. A similar conclusion holds for the demographic variables, albeit the gap between the country groups is smaller for the dependency ratio and life expectancy.

In greater detail, and firstly among the dependent variables, Life and General insurance penetrations revealed higher variability in life insurance demand (on both penetration and BRIP basis) across both Asian and OECD regions. While less variability found in case of general insurance. Results of penetrations with relative BRIPs indicate the dominance and significance contribution of insurance sector in GDP in OECD countries. These results also revealed that insurance premiums contribution to GDP is approximately double in OECD regions in comparison to Asian region especially in case of general insurance on both penetration and BRIP basis.

The economic and demographic factors descriptive shows that GDP per capita income, financial developments, life expectancy, urbanization and education are higher in OECD region in comparison to Asia. But inflation and interest rates are higher in Asia creating hurdle in insurance products demand here in comparison to OECD. Standard deviation values of these variables represent their relative dispersion around the mean value.

Geographical Analysis

Table 3 presents the results of the panel estimation where the dependent variables measure life and general insurance on a penetration and a BRIP basis. Panel A presents the results of the Asian regions, while Panel B repeats for the OECD.[4]

Here we firstly focus on the crisis impact on the insurance demand on both penetration and BRIP basis across both Asian and OECD regions. The crisis dummy shows a negative impact on life and general insurance demand across both regions in most cases. Due to the GFC, economies and all financial sectors (especially stock markets and banking sector) faced severe financial distress that did not leave the insurance sector unscathed. Giants in insurance sector (like AIG) received multi-billion bailout packages to be kept afloat, but subsequently downsized their operations across countries; thus, causing a substantial decline in insurance sector revenues. Collapse of these financial institutions amidst worsening economic conditions and a lower confidence of consumers to the financial markets (Akhter et al., 2017; Harrington, 2009) caused a sharp decline in financial and insurance products demand at the time of crisis.

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[4] As a robustness against potential endogeneity we run a system-GMM estimation technique. The results confirm the qualitative nature of our main findings and are omitted for brevity.

Table 3. Geographical Basis Insurance demand regression results

Variables	Life	General	Life	General
	Panel A: Asian Region			
	Penetration Basis		BRIP Basis	
GDP/capita	0.201	-0.580	0.134	-0.159
	(0.305)	(0.374)	(0.099)	(0.203)
Inflation	1.648**	0.859*	1.021***	2.337***
	(0.818)	(0.465)	(0.246)	(0.403)
Financial Development	1.867***	0.231	0.640***	0.518*
	(0.622)	(0.473)	(0.201)	(0.301)
Saving Rate	0.020	-0.014	0.009	-0.009
	(0.039)	(0.011)	(0.014)	(0.014)
Education	-0.002	0.001	-0.001**	-0.001
	(0.002)	(0.001)	(0.001)	(0.001)
Dependency Ratio	0.024***	-0.005	0.007***	0.002
	(0.007)	(0.010)	(0.002)	(0.004)
Life Expectancy	0.098**	0.147*	0.026**	0.051**
	(0.041)	(0.078)	(0.011)	(0.021)
Urbanization	0.001	0.009	-0.001	0.003
	(0.006)	(0.011)	(0.001)	(0.003)
Crisis	-0.305**	-0.084**	-0.158***	-0.358***
	(0.131)	(0.038)	(0.048)	(0.055)
Constant	-10.87***	-8.049	-3.304***	-3.532***
	(2.568)	(5.155)	(0.736)	(1.218)
Adjusted R^2	0.4390	0.4931	0.3706	0.3663
Observations	208	208	208	208
	Panel B: OECD			
GDP/capita	1.482	0.840	0.503	1.443
	(1.372)	(0.628)	(0.506)	(0.951)
Inflation	-3.103	0.883	-1.829	-4.518
	(4.810)	(1.333)	(2.124)	(3.085)
Financial Development	0.538	-0.264	0.147	-0.022
	(0.974)	(0.367)	(0.384)	(0.735)
Saving Rate	0.018	0.007	-0.004	-0.019
	(0.018)	(0.013)	(0.006)	(0.017)
Education	0.011	0.010	0.002	0.007
	(0.012)	(0.012)	(0.003)	(0.013)
Dependency Ratio	-0.004	-0.041	0.004	-0.020
	(0.022)	(0.025)	(0.006)	(0.017)
Life Expectancy	0.067	0.040	0.038	-0.016
	(0.106)	(0.057)	(0.034)	(0.065)
Urbanization	-0.018	-0.038	-0.008	-0.003
	(0.021)	(0.023)	(0.006)	(0.010)
Crisis	-0.085	-0.015	-0.111***	-0.592***
	(0.120)	(0.044)	(0.042)	(0.081)
Constant	-9.505**	0.362	-4.571***	-2.859
	(4.493)	(3.822)	(1.416)	(2.882)

Adjusted R^2	0.2489	0.0567	0.2348	0.2373
Observations	232	232	232	232

Notes: This table shows estimated coefficients and standard errors in brackets for Life and General insurance demand. Standard errors are represented in (.) Estimation is done via panel random effects with cluster robust standard errors. Separate Regressions have been applied for comparison of two regions i.e. Asian vs. OECD. Crisis period is (2007-2010). *, **, *** denote statistical significance at the 10, 5, 1% level.

Secondly, among the economic variables, GDP per capita shows a largely positive impact for both life and general insurance whether insurance demand measured through penetration or BRIP basis; although this does not appear significant at conventional significance levels. The results show that insurance (life/general) demand is more inelastic (with respect to income) in the case of Asian region, as indicated by the lower than unity coefficients. In OECD, these products especially general insurance is more income elastic as coefficients values are closer to unity. It determines that a person purchasing power increases with the rise in the per capita income level and that increasing purchasing power positively impacts the demand of these life/general insurance products due to enhanced affordability. Our research findings are in the spirit of previous studies, such as Truett and Truett (1990), Browne and Kim (1993), Beck and Webb (2003), Hwang and Gao (2003), Ward and Zurbruegg (2002), Trinh et al. (2016), Zerriaa and Noubbigh (2016).

Inflation has a significant positive impact on the demand for life and general insurance, for Asian countries only, under both penetration and BRIP basis. Our findings agree with Hwang and Gao (2003), Zerriaa and Noubbigh, (2016) where it is argued that insurance demand has become the necessity for investors to secure their assets, properties and future earnings by hedging their contingent loss risk. This is particularly relevant after the global financial crisis, as investors that tend to be more risk averse have shifted towards less risky portfolio investments. Insurance risk mitigation and hedging characteristics to encounter contingent losses play vital role in the demand of insurance products and are aligned with the degree of financial education, which is under shortage in Asia. This is particularly evident from the prevalence of the money illusion concept, with most people focusing on nominal rather than the real values of financial instruments.

The saving rate issued here to account for the appeal of alternative investment prospects, or substitution effect, vis-à-vis insurance products, as investors are typically attracted towards higher return offering products. Higher return on other financial instruments will cause a shift away from insurance policy products (where possible); and increase the demand for substitutes in the form of

financial instruments or bank savings. Our results verify this negative impact but only for the General insurance products, across Asian countries. These findings are consistent with the Li et al. (2007) suggesting that higher interest rate offered by other financial institutions reduces insurance demand.

Both types of insurance benefit from a strong financial sector. Specifically, a positive impact is observed for the Asian countries but not for the OECD, perhaps the level of financial development in the latter region is more homogenous and does not lend itself to changes in the insurance demand. The finding in the Asian countries is plausible given the economic and financial developments across the financial sector stimulate demand and outreach of financial (and insurance) products, while a rising efficiency of the sector makes such products more approachable to a large clientele. In particular, banking sector developments also increase insurance demand with the rising bancassurance through which insurance companies targeting larger network of banking customers to sell insurance policies. These developments lead to rise in insurance demand as business activities regarding imports and exports also increase. Our findings are consistent with Beck and Webb (2003), Li et al. (2007), Zerriaa and Noubbigh, (2016) studies.

Coming now to discuss the demographic factors, where the dependency ratio shows a significant positive influence on the life insurance products in Asian countries, but no significant relationship in the OECD economies. A higher dependency ratio tends to increase insurance demand because of additional responsibilities of the parents as a result of higher number of dependents they have (Li et al. 2007; Millo and Carmeci, 2015; Zerriaa and Noubbigh, 2016).

Life expectancy shows a significant positive influence over the life insurance demand across Asian countries. Moreover, the magnitude of the coefficients is broadly similar between the two types of insurance products. This shows two things, first life insurance is an important driver for insurance demand, particularly relevant in the less developed Asian economies. Second, general insurance is more affected in the Asian group by higher life expectancies.

Urbanization shows a significant positive influence on general and life insurance demand on both penetration and BRIP basis across Asian economies. The finding reflects that the urge for a better quality of life, more industrialization, higher risk concentration due to increasing assets in result of migrations, more awareness about the financial products and services result in higher insurance demand (Hwang and Gao, 2003; Trinh et al. 2016).

Income based split

Table 4 presents the results of the panel estimation where the dependent variables measure life and general insurance on a penetration and a BRIP basis. Panel A presents the results of the high-income region, while Panel B repeats for the low income region. For the classification of the sample into high and low income regions we follow the income classification of the World Bank (see Table 1 for the countries in each group).

Table 4. Insurance demand regression results

	Panel A: Higher Income Region			
Variables	**Life**	**General**	**Life**	**General**
	Penetration Basis		*BRIP Basis*	
GDP/capita	0.949	0.418	0.350	0.779
	(1.052)	(0.594)	(0.359)	(0.677)
Inflation	-0.663	1.041	-0.406	0.478
	(3.125)	(1.035)	(1.421)	(1.862)
Financial Development	1.437*	0.0384	0.440	0.604
	(0.761)	(0.347)	(0.285)	(0.565)
Saving Rate	0.039*	0.022	-0.003	-0.008
	(0.022)	(0.016)	(0.007)	(0.017)
Education	0.007	0.003	0.002	0.009
	(0.011)	(0.009)	(0.003)	(0.008)
Dependency Ratio	-0.001	-0.032*	-0.002	-0.013
	(0.027)	(0.018)	(0.009)	(0.018)
Life Expectancy	0.161	0.139**	0.068**	0.075
	(0.102)	(0.068)	(0.032)	(0.060)
Urbanization	-0.029**	-0.051***	-0.009***	-0.016***
	(0.012)	(0.017)	(0.003)	(0.005)
Crisis	-0.197	-0.012	-0.152***	-0.561***
	(0.135)	(0.037)	(0.046)	(0.059)
Constant	-15.28***	-5.012	-6.417***	-8.060**
	(5.346)	(5.174)	(1.656)	(3.198)
Adjusted R^2	0.1947	0.0564	0.1932	0.1887
Observations	272	272	272	272
	Panel B: Lower Income Region			
GDP/capita	0.171	-0.106	0.103	0.0171
	(0.333)	(0.294)	(0.095)	(0.176)
Inflation	0.662	0.206	0.659***	1.657***
	(0.692)	(0.458)	(0.182)	(0.315)
Financial Development	0.993**	0.125	0.330***	0.430
	(0.399)	(0.466)	(0.116)	(0.265)
Saving Rate	0.020	0.001	0.001	-0.012

	(0.019)	(0.009)	(0.005)	(0.008)
Education	0.003	0.001	0.001	0.001
	(0.002)	(0.003)	(0.001)	(0.001)
Dependency ratio	0.011	-0.009	0.003	0.004
	(0.009)	(0.011)	(0.003)	(0.007)
Life Expectancy	0.045	0.021	0.016	0.037**
	(0.034)	(0.045)	(0.010)	(0.016)
Urbanization	0.003	0.014	-0.001	0.001
	(0.008)	(0.009)	(0.002)	(0.003)
Crisis	-0.121*	-0.064	-0.073***	-0.268***
	(0.072)	(0.041)	(0.025)	(0.043)
Constant	-5.760**	-0.646	-2.004***	-3.178**
	(2.526)	(3.226)	(0.699)	(1.428)
Adjusted R^2	0.4710	0.3549	0.4431	0.4007
Observations	168	168	168	168

Notes: This table shows estimated coefficients and standard errors in brackets for Life and General insurance demand. Standard errors are represented in (.) Estimation is done via panel random effects with cluster robust standard errors. Separate Regressions have been applied for comparison of two regions i.e. higher income vs. lower income region. Crisis periods are (2007-2010). *, **, *** denote statistical significance at the 10, 5, 1% level.

The results suggest that the impact of the global financial crisis reduces insurance demand of the general insurance type of products. This is evident in both income regions, but is more pronounced in the high-income region. By contrast, the life insurance products seem to be relatively unaffected by the financial crisis in either of the two regions possibly reflecting on the importance individuals place on this type of insurance product and their unwillingness to unengaged from it.

A cursory inspection of the results suggests of a positive impact of GDP per capita and insurance demand, particularly for the case of life insurance, in both income regions. Inflation shows a positive impact over general insurance particularly in the low-income region, whereby the increased uncertainty may lead individuals to secure their assets from contingent losses. Saving rates reveal the expected negative relationship only for life insurance demand across the low-income region on BRIP basis. This possibly indicates that general insurance products are not viewed as direct replacements for other investments products, such as saving and/or investment accounts. Financial development shows a strong positive relationship, particularly in the low-income region. This is expected since these countries have lower availability of financial (and insurance) products, which rises as they become more financially developed.

The demographic characteristics show that increased education may increase demand for insurance products particularly in the low-income region. By contrast, the dependency factor carries a negative sign suggesting that, particularly in the low-income group, higher values are associated with lower insurance demand. It may be plausible that this is mainly driven by the fact that Asian individuals may be more family oriented[5], which could work as a deterrent for insurance products either due to the higher overall costs or due to the fact that a larger family could work as a type of insurance (Sen and Madheswaran, 2013; Ward & Zurbruegg, 2002). Higher life expectancy is linked with higher insurance demand, particularly for life insurance products. Out of the two regions, the effect is more pronounced in the high-income region, possibly due to the fact that such products are more affordable there (Nesterova, 2008; Zerriaa and Noubbigh, 2016). Urbanization decreases insurance demand and the effect is more pronounced in the high-income region.

5. Conclusion

The global financial crisis has had an adverse impact on financial sectors worldwide and led to the partial collapse and/or downsizing in banking and insurance sectors. In this paper, we focus on two of the most widely used insurance types, general and life insurance. Our findings reveal that GDP per capita has positive effect on the demand for both types of insurance. Rising inflation and financial sector developments are also found to positively affect insurance demand. Higher dependency ratio in Asia tends to decrease insurance demand whereas Education in case of Asia positively influences insurance demand indicating that higher literacy rate can be helpful to capture the potential customers. With regards to the demographic factors, life expectancy and dependency ratio support the life cycle hypothesis, whereby people do not want their living standards to be reduced in their post-retirement life. Education is particularly relevant in Asia indicating the need to create awareness to increase insurance penetration in relevant countries.

The economic and demographic factors descriptive shows that GDP per capita income, financial developments, life expectancy, urbanization and education are higher in OECD region in comparison to Asia. But inflation and interest rates are higher in Asia creating hurdle in insurance products demand here in comparison to OECD. Our results further reveal that life insurance is an important driver for insurance demand, particularly relevant in the more developed OECD economies. Second, general insurance is more common in the Asian countries. This could mean

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[5] As larger portion (15 out of 18 countries) of lower income region comprises Asian countries.

that people in the OECD have a certain minimum level of privileges or security that renders general insurance as not necessary. By contrast, citizens of OECD seem to place more value on "after-life" scenarios that is why life insurance seems to be more relevant.

The split in high/low income regions reveals that financial sector development is particularly relevant for enhancing insurance demand in the low-income region. Likewise, the dependency ratio negatively affects insurance demand for low-income regions, possibly attributed to cultural differences with the larger (on average) families in many Asian countries acting as a safety buffer. Education seems to positively influence in lower income region provide opportunities to capture potential customers attracting through awareness drives to increase their demand and eventually revenues.

Finally, the global financial crisis affects negatively the insurance demand. This has been particularly noted for the high-income region and mostly for the general type of insurance. Demand for life insurance seems to be less affected by the crisis. We believe that our result findings are helpful for regulators, policy makers and insurance providers to evaluate, assess and monitor insurance demand in relevant countries. A limitation of this study is that data sets employed do not differentiate between different life and general insurance products. Future studies may focus on premiums for annuities and health insurance products to assess insurance demand in these countries.

Disclosure statement

Conflict of Interest: The authors declare that they have no conflict of interest.

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Appendix I: Sample Countries Classification

Advanced (OECD)		Emerging Asian	
Higher Income Countries	**Middle & Lower Income Countries**	**Higher Income Countries[6]**	**Middle & Lower Income Countries**
1. Australia	1. Mexico	1.Bahrain	1. Bangladesh
2. Austria	2. Hungry	2. Israel	2. China
3. Belgium	3. Turkey	3. japan	3. India
4. Canada		4. Kuwait	4. Indonesia
5. Chile		5. Qatar	5. Iran
6. Czech Republic		6. Saudi Arabia	6. Jordan
7. Denmark		7. Singapore	7. Kazakhstan
8. Estonia		8. Korea	8. Lebanon
9. Finland		9. United Arab Emirates	9. Malaysia
10. France		10. Hong Kong	10. Oman
11. Germany			11. Pakistan
12. Greece			12. Philippines
13. Iceland			13. Sri Lanka
14. Ireland			14. Thailand
15. Italy			15. Vietnam
16. Netherlands			
17. New Zealand			
18. Norway			
19. Poland			
20. Portugal			
21. Slovak Republic			
22. Slovenia			
23. Spain			
24. Sweden			
25. Switzerland			
26. United Kingdom			
27. United States			

[6] Some Emerging Asian countries like Israel, Japan and Korea are also included in OECD countries so we have excluded them from OECD countries of our sample for comparative purpose.