

Drivers of Insurance Demand in Emerging Markets

B. Elango, James Jones

Received: 31 July 2011 / Accepted: 11 November 2011 / Published: 30 December 2011

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ABSTRACT

This study focuses on factors driving insurance demand measured as insurance density and growth rate of premiums in emerging markets during the years 1998-2008. Findings indicate that demographic factors explain a greater variance relative to economic and institutional variables for insurance density, while economic factors explain the greatest amount of variance in terms of insurance growth rates. We find that growth rate of the country, GNI per capita, interest rate, merchandise trade, and business freedom influence insurance density. The influence of growth rate of the country was in opposing directions in the case of non-life and life density.

KEYWORDS

Emerging Markets, Non-Life Insurance, Life Insurance, Insurance Density, Insurance Growth Rate.

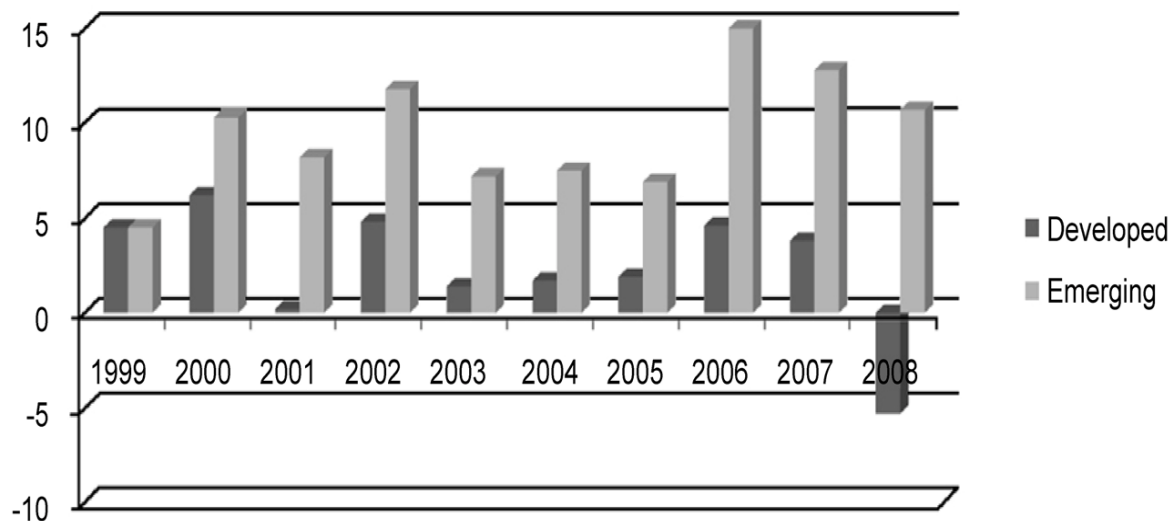
B. Elango (✉), corresponding author
Management and Quantitative Methods Department, College of Business, Illinois State University
e-mail: elango@ilstu.edu
James Jones
Katie School of Insurance and Financial Services, College of Business, Illinois State University

1. INTRODUCTION

The role of insurance companies in the financial services sector and their importance for the economic well-being of societies is well recognized. Insurance firms represent about 8.61% of the GDP in developed world economies but only about 2.71% in emerging market economies. Emerging markets represent about 12.14% of the total global insurance market, compared to the 87.86% represented by developed markets. In recent years, despite the smaller share of emerging markets, their importance for the growth of insurance firms has been well recognized. As illustrated in Figure 1, this segment of the global market is growing at a much faster pace (10.7% and 12.7% for 2008 and 2007, respectively) compared to developed markets (-5.3% and 2.8%) and is considered one of the most promising segments for growth of the insurance industry worldwide. It is widely believed that increases in insurance services will aid the economic development of these countries and enhance the social welfare of these markets (Skipper 1997). Others have cautioned however this relationship between insurance and development depends on country-specific demographic and institutional factors (Elango 2003, Ward and Zurbruegg 2000).

While extant research provides useful information on the patterns for international demand for insurance, several unexplored avenues exist. First, one study (i.e., Browne, Chung & Frees 2000) exists on automobile and general liability insurance demand. Moreover, this study focuses on OECD countries for the time period 1987-1993. Second, while many studies exist on life insurance demand, Outreville (1996) is the only study focusing on developing nations and is based on data for the year 1986. While study samples from Park, Borde & Choi (2002), Beck & Webb (2003), and Chui & Kwok (2008) contained several developing countries, their analyses were done at an aggregate level and did not necessarily focus on emerging markets. Therefore, this study seeks to understand what factors are driving the demand for non-life and life insurance in emerging markets using 11-year panel data. This study will empirically examine the influence of macroeconomic, demographic, and institutional drivers to explain the variation in the insurance density and growth of the insurance market in these countries. Study findings will have significant implications for researchers

and practitioners working on emerging markets, as this study will be one of the first in the past decade to empirically test for this relationship in the emerging market context. The study consists of five sections including this introduction. In the following section we offer background information on insurance demand by presenting an overview of current literature on the topic as well as a conceptual model. In section 3, the data sources and the methodology are reviewed. Section 4 presents the results of this study and following section concludes this paper.



Source: International Monetary Fund, Swiss Re, & World Bank.

Figure 1. Growth Rate in Insurance in Developed vs. Emerging Markets

2. BACKGROUND INFORMATION OF INSURANCE DEMAND

Extant research on the international analysis of demand for insurance can be classified into two categories: four studies which focus on demand for life insurance and one study which focuses on the demand for product-liability insurance. Studies focusing on international life insurance demand use theoretical models provided by Lewis (1989) along with the early conceptualizations of Yaari (1965) and Hakansson (1969), whereas the demand for product-liability insurance studies are conceptually based on expected utility paradigm (e.g., Mossin 1968, Szpiro 1985) and corporate demand models (Macminn 1987).

Table 1. Insurance Statistics Across Developed and Emerging Markets

Variable	Market	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Premium Volume (Mil-US\$)	Developed	2120751	2217505	2170480	2359029	2626542	2871690	2998694	3399936	3730167	37060678
Premium Volume (Mil-US\$)	Emerging	203274	226168	237771	267868	314128	372215	427020	332872	422043	512017
Growth Rate (Inflation adjusted)	Developed	4.5	6.2	0.2	4.8	1.4	1.7	1.9	4.6	3.8	-5.3
Growth Rate (Inflation adjusted)	Emerging	4.5	10.3	8.2	11.8	7.2	7.5	6.9	15	12.8	10.7
World Market Share (%)	Developed	91.25	90.74	90.13	89.8	89.32	88.53	87.53	91.08	89.84	87.86
World Market Share (%)	Emerging	8.75	9.26	9.87	10.2	10.68	11.47	12.47	8.92	10.16	12.14
Premium (% of GDP)	Developed	8.76	9.08	9.01	9.3	9.27	9.08	8.96	9.22	9.25	8.61
Premium (% of GDP)	Emerging	2.91	3.2	3.37	3.7	3.78	3.94	3.58	2.68	2.77	2.71
Premium (Per Capita)	Developed	2296.7	2383.8	2314.9	2480.4	2763.5	2966.1	3286.8	3371.3	3654.3	3602.2
Premium (Per Capita)	Emerging	39.9	44.2	45.7	50.5	58.7	68.7	76.5	59.1	74.1	89

Source: International Monetary Fund, Swiss Re, & World Bank.

One of the earliest studies analyzing international life insurance demand is Browne & Kim (1993). Using data for the year 1987 from 45 countries, they found that dependency ratio, national income, governmental spending on social security, inflation, price of insurance, and religion were factors influencing demand for life insurance. Outreville (1996) focused on life insurance demand in 48 developing countries for 1986 and found that life insurance market size is related to the level of disposable income, the country's level of financial development, anticipated inflation and competitive markets. While both of these studies used one year data, Beck & Webb (2003) used panel data from 1961-2000 from 68 countries to determine factors driving insurance demand. They found that inflation, per capita income, banking sector development, religion and institutional development were predictors of demand. Surprisingly, education, life expectancy, dependency ratio and social security did not play a role in the demand for insurance. The most recent study on international life insurance consumption was Chui & Kwok (2008). Similar to Beck and Webb, they use a panel study of 42 countries using data from the period 1976-2001. However, they attempt to capture the influence of culture and find that individualism has a positive effect on demand for insurance, but power distance and masculinity/femininity has a negative effect on life insurance demand even after controlling for economic, institutional and demographic effects.

Unlike the studies reviewed in the previous paragraph, which focus on life insurance, Browne, Chung & Frees (2000) studied factors influencing demand for general-liability and motor vehicle insurance consumption across countries belonging to the OECD (Organization for Economic Cooperation and Development) during the period 1987-1993. They report that income, wealth, legal systems and operations of foreign firms influence demand for both lines of insurance and find income to have a greater effect on motor vehicle insurance consumption than on general-liability insurance consumption. In contrast to the conventional approach in the insurance literature, Park, Borde & Choi (2002) combined both life and non-life insurance consumption from 37 countries and found masculine-feminine dimension of national culture, income, sociopolitical stability and regulation to be factors influencing insurance consumption.

Based on the review of extant literature, one can claim that three sets of time-variant

factors drive insurance demand in international settings. These drivers can be classified into three categorizations: economic, demographic and institutional factors (see Figure 2). Each of the factors is briefly explained below Figure 2. Conceptually one can claim that each of these factors drive different dimensions of insurance demand, though they could overlap and are not completely independent of one another. For instance, at a macro level one may claim the need for insurance products and services is determined by demographic factors, while economic factors will influence the means of someone to avail themselves of such services and institutional factors capture the role of governmental and legal systems to impact the consumption of insurance. However, at a micro level, the role of these factors would vary by the type¹ of insurance consumed, which is not the focus of this study.

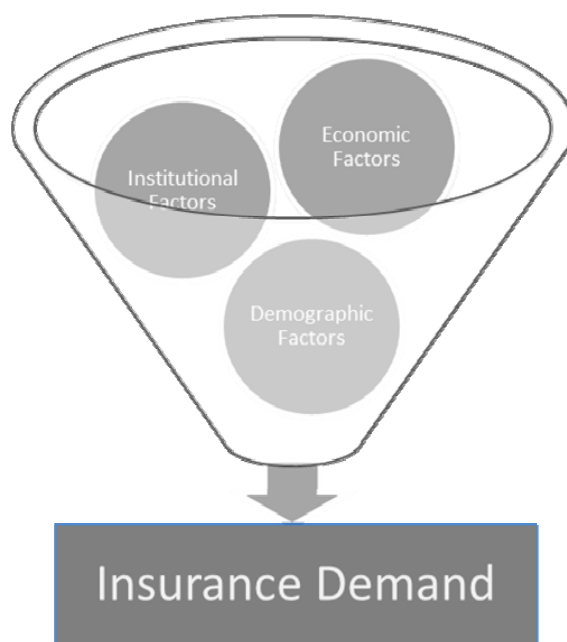


Figure 2. Factors Driving Insurance Demand in International Markets

- *Demographic Factors*: Demographics refer to the distribution of individuals in a society in

¹ Examples of type of insurance include the following: homeowners, personal auto, fire, allied lines, earthquake, glass, farm, commercial multiple peril, ocean marine, inland marine, commercial auto, financial and mortgage guaranty, surety and fidelity, medical malpractice, worker's compensation, general liability, theft, boiler and machinery, international, credit, aircraft, accident and health, ordinary life, annuity, group life, group annuity, other life insurance and deposit-type funds.

terms of factors such as age, sex, marital status, income, etc., which influence buying patterns. These factors influence the maximum potential of a given market, as demand for insurance would vary by a particular population profile (e.g., age dependency, education, etc.).

- *Economic Factors*: Economic factors refer to the variables which capture the overall economic situation of a country. While demographic factors influence the market potential, economic factors determine if the underlying demand profile can be sustained by the means/options (e.g., income, financial institutions and services, inflation, etc.) available to the country's population.
- *Institutional Factors*: Institutions are defined as human devised constraints that structure human behavior (North, 1981). A country's institutional structure can be defined as formal or informal mechanisms which govern human behavior. This includes the legal systems in place to protect the property rights of people and companies. One of the important roles of institutions is to reduce uncertainty felt by firms and individuals (Peng, 2000). As a result, they are likely to influence the actions/attitudes of people towards insurance purchase decisions (e.g. rule of law, quality of governance, etc.).

This study is one of the first studies focusing on emerging markets, and as such, will attempt to include all time-variant variables articulated in previous research subject to data availability. The following section elaborates the research process employed in this study to test the influence of these three drivers.

3. RESEARCH METHODOLOGY

The impact of the three drivers of the insurance market and insurance market growth in emerging markets is captured using panel regression models. Such models are appropriate, as the study is based on time-series data from the years 1999-2008. The dependent variable, insurance demand, is measured through two proxies, insurance density and insurance growth rate. Insurance density captures how many dollars an individual spends on insurance on average, and is measured as insurance premium per capita (Beck & Webb, 2003). Insurance

growth rate is measured as change in consumption of insurance in a particular country. As computation for the growth rate requires data from the previous year, data for growth rates spans the time period 1999-2008. Consistent with previous research practice, we look into factors driving consumption of non-life and life insurance independently, and repeat the above measures for both measures of insurance demand, resulting in four dependent variables. Therefore the influences of the various independent variables are presented in four different panels, namely, non-life/life insurance density and non-life/life insurance growth rate.

While many definitions of emerging markets exist, we decided to use a comprehensive list which includes numerous countries. We felt that using a broad list would give this study greater utility and also allow us to conduct the analysis desired for a study of this nature. Therefore, we chose to focus on the Dow-Jones list, which currently includes 35 countries (Argentina, Bahrain, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Egypt, Estonia, Hungary, India, Indonesia, Jordan, Kuwait, Latvia, Lithuania, Malaysia, Mauritius, Mexico, Morocco, Oman, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Russia, Slovakia, South Africa, Sri Lanka, Thailand, Turkey, and United Arab Emirates).

The various independent variables for each of the drivers were operationalized based on previous usage of these variables. The operationalization of the variables and the source of information for the various elements in the study are described in Table 2. While the 35 countries over the sampling time period should lead to values of 385 and 350 for insurance density and insurance growth rates, this was not the case due to missing values. However, this is not entirely surprising, as one would not expect a comprehensive coverage of the study variables across emerging markets. Therefore, to maximize the sample we ran an additional panel model eliminating two independent variables. This model is elaborated in the following paragraph.

To capture the influence of the three drivers of insurance demand we employ five models for each of the four dependent variables. Model 1-Model 3 across Table 3-Table 6 attempt to capture the influence of each of the drivers separately. Model 4 is the comprehensive model which includes the influence of all drivers and therefore used for discussing the results. However, due to missing values, this model has the smallest sample size relative to other

models. Therefore we reviewed the sample and noted that a major reduction in sample size took place due to missing values for tertiary education and life expectancy. Therefore we ran Model 5 by dropping these variables from Model 4. The full empirical model (Model 4) for testing the hypotheses can be written in the following form:

$$\begin{aligned} \text{Dependent Variable}_{it} = & \alpha_i + \beta_1 (\text{Growth Rate of the Country})_{it} + \beta_2 (\text{GNI Per Capita})_{it} \\ & + \beta_3 (\text{Inflation Rate})_{it} + \beta_4 (\text{Interest Rate})_{it} + \beta_5 (\text{Service Sector})_{it} + \beta_6 (\text{Merchandise Trade})_{it} \\ & + \beta_7 (\text{Population Growth Rate})_{it} + \beta_8 (\text{Age Dependency})_{it} + \beta_9 (\text{Tertiary Education})_{it} \\ & + \beta_{10} (\text{Life Expectancy})_{it} + \beta_{11} (\text{Property Rights})_{it} + \beta_{12} (\text{Business Freedom})_{it} \\ & + \beta_{13} (\text{Fiscal Freedom})_{it} + \beta_{14} (\text{Governmental Spending})_{it} + \beta_{15} (\text{Freedom from} \\ & \text{Corruption})_{it} + \beta_{16} (\text{Financial Freedom})_{it} + \beta_{17} (\text{Openness of Economy})_{it} + u_{it} \end{aligned}$$

where the subscript i represents the country, t represents time, α_i represents time-specific intercepts and u_{it} is the country-specific random error term.

4. RESULTS

Table 3-Table 7 present the results of this study. The White test was employed to test for heteroskedasticity. Given the data structure, we employ a one-way fixed-effect model to test the relationship between the three drivers and insurance demand. Fixed-effect models control for time-specific effects that are not otherwise controlled for by other variables included in the models. One-way fixed-effect models in this study include time-specific intercepts. We also estimated the model using pooled OLS regressions. The results of the OLS models are consistent with that of the fixed-effect models. Hausman's test suggests that fixed-effect models are superior to random-effect models in the case of non-life insurance density, life insurance density and non-life growth rate. In the case of life insurance growth rate, Hausman test results indicated that the random effect model is the better model and therefore we present random-effect models. We present the results for each of the four dependent variables separately in the following paragraphs.

Table 2. Definitions and Sources of Variables

Variable	Definition	Data Source	Mean	Standard Deviation	Sample N
DEPENDENT VARIABLES					
<i>Non-Life Insurance Density</i>	Non-Life Insurance Premiums divided by Population	Swiss Re/World Bank	91.8911	116.546	358
<i>Life Insurance Density</i>	Insurance Premiums divided by Population	Swiss Re/World Bank	61.0172	103.4905	350
<i>Non-Life Insurance Growth Rate</i>	Year to Year Change in Non-Life Insurance Premiums	Swiss Re	14.8472	16.2329	316
<i>Life Insurance Growth Rate</i>	Change in Life Insurance Premiums	Swiss Re	19.5159	29.5058	311
INDEPENDENT VARIABLES					
Economic Drivers					
<i>Growth Rate of Country</i>	Growth Rate of GDP [%]	World Bank	4.8318	3.5429	366
<i>GNI Per Capita</i>	GNI per capita, PPP (current international \$)	World Bank	10034.81	8335.92	362
<i>Inflation Rate</i>	Inflation, GDP deflator (annual %)	World Bank	8.5042	12.0252	366
<i>Interest Rate</i>	Real interest rate (%)	World Bank	6.5109	10.8704	341
<i>Service Sector</i>	Services, etc., value added (% of GDP)	World Bank	56.7392	8.6082	341
<i>Merchandise Trade</i>	Merchandise trade (% of GDP)	World Bank	74.642	40.3116	375
Demographic Drivers					
<i>Population Growth Rate</i>	Population growth (annual %)	World Bank	1.2562	1.718	385
<i>Age Dependency</i>	Age dependency ratio (% of working-age population)	World Bank	51.389	11.2579	385
<i>Tertiary Education</i>	School enrollment, tertiary (% gross)	World Bank	33.2962	18.8286	266
<i>Life Expectancy</i>	Life expectancy at birth, total (years)	World Bank	71.5839	4.5532	234
Institutional Drivers					
<i>Property Rights</i>	Ability to accumulate private property and wealth	Heritage House	53.0287	16.8289	383
<i>Business Freedom</i>	Ability to establish and run a business without interference	Heritage House	67.0645	10.4711	383
<i>Fiscal Freedom</i>	Extent to which individuals/businesses are granted freedom to keep and control their income and wealth for their benefit and use	Heritage House	77.1906	11.4491	383
<i>Governmental Spending</i>	Freedom from excessive government spending	Heritage House	68.9655	18.4382	383
<i>Freedom from Corruption</i>	Extent of freedom from corruption	Heritage House	42.6397	15.5638	383
<i>Financial Freedom</i>	Transparency and openness in financial system	Heritage House	54.6475	17.3754	383
<i>Openness of Economy</i>	We use KAOPEN index of Chinn and Ito (2006; 2008) to capture the degree of openness of a country to cross-border capital transactions.	Chinn and Ito (2006; 2008)	0.737	1.4832	350

Table 3. Parameter Estimates of Panel Models with Non-Life Insurance Density as Dependent Variable

Variable	Model-1	Model-2	Model-3	Model-4	Model-5
Intercept	-194.0172*** (28.4166)	-1116.849 (681.1621)	168.2559*** (51.1607)	-1113.23*** (377.9536)	-162.4023*** (38.4765)
Growth Rate of the Country	-1.2790** (.4510)			.5835* (.9208)	-.7280* (.4236)
GNI Per Capita	.0189*** (.0009)			.0224*** (.0018)	.0192*** (.0009)
Inflation Rate	.2011 (.2351)			.4253 (.4162)	.2629 (.2244)
Interest Rate	.5195* (.2774)			1.2143** (.5043)	.6269** (.2545)
Service Sector	1.3458*** (.4586)			-.2244* (.7388)	.8086* (.4147)
Merchandise Trade	.2436* (.1402)			.4302* (.2304)	.10974* (.1345)
Population Growth Rate		38.785*** (10.1431)		12.6913*** (6.1404)	10.1299*** (3.8311)
Age Dependency		-2.5210 (2.4647)		7.5554*** (1.7537)	1.2468*** (.4003)
Tertiary Education		2.5143*** (.6154)		-.5341 (.4253)	
Life Expectancy		16.7570** (8.3350)		9.3684** (4.4692)	
Property Rights			-1.3923*** (.2836)	.4922* (.2852)	-.0872 (.1533)
Business Freedom			-1.35478 (.3998)	-1.2104*** (.2681)	-.6231*** (.1868)
Fiscal Freedom			1.1392** (.5116)	-.3909 (.3961)	-.4007* (.2575)
Governmental Spending			.8287* (.3376)	-.4748** (.2300)	-.0767 (.1551)
Freedom from Corruption			-2.583*** (.4387)	-.6015 (.4119)	-.0619 (.2440)
Financial Freedom			.5678** (.2544)	.4572** (.1868)	.1115 (.1124)
Openness of Economy			16.5782*** (4.1365)	5.8373** (2.6441)	4.6000** (1.9027)
<i>F-Test [(u_i = 0)]</i>	36.7***	7.75***	26.32***	19.23***	36.23***
<i>R-Square Within</i>	0.7704	0.5315	0.4255	0.8979	0.8088
<i>R-Square Across</i>	0.5478	0.7331	0.2606	0.3948	0.4947
<i>R-Square Overall</i>	0.52226	0.6731	0.0507	0.4425	0.468
<i>Sample N/No. of Groups</i>	297/32	163/31	324/5	144/29	280/32
<i>Hausman Test (P-value)</i>	0	0	0	0	0

- Notes: 1. Model-1 focuses on economic drivers; Model-2 focuses on demographic drivers; Model-3 focuses on institutional drivers; Model-4 focuses on all drivers; Model-5 drops two variables from Model-4 to improve sample size.
2. Standard Errors are reported in the parentheses below coefficient estimates.
3. * Significant at ≤ 0.10 level; ** Significant at ≤ 0.05 level; *** Significant at ≤ 0.01 level.
4. Fixed effects model results is reported when null hypothesis for Hausman test is rejected at the .05 percent level [Random-Effects otherwise].

Table 4. Parameter Estimates of Panel Models with Life Insurance Density as Dependent Variable

Variable	Model-1	Model-2	Model-3	Model-4	Model-5
Intercept	-160.2149*** (47.6471)	-688.2 (541.9547)		-114.4192 (487.3977)	-69.9740 (72.0948)
Growth Rate of the Country	-1.1708 (.7568)			-2.5968** (1.1270)	-1.1106 (.7910)
GNI Per Capita	.0134*** (.0015)			.0146*** (.0023)	.0139*** (.0017)
Inflation Rate	.2463 (.3965)			-.3024 (.5087)	.2709 (.4202)
Interest Rate	.4190 (.4664)			1.3662** (.6171)	.4292 (.4753)
Service Sector	1.1232 (.7702)			-.8716 (.9069)	1.3298* (.7744)
Merchandise Trade	.5700** (.2379)			.9591*** (.2858)	.5929** (.2534)
Population Growth Rate		.6482 (8.2053)		-4.8325 (7.5099)	19.3725*** (7.1568)
Age Dependency		.2311 (1.9396)		3.2388 (2.1686)	.6708 (.7474)
Tertiary Education		2.8898*** (.4767)		.3180 (.5179)	
Life Expectancy		8.5650 (6.6279)		.0147 (5.8378)	
Property Rights			-.71152** (.2375)	.5801 (.3498)	-.2009 (.2877)
Business Freedom			-.6932** (.3350)	-1.6682*** (.3275)	-.4493 (.3509)
Fiscal Freedom			.6471 (.4456)	-.2109 (.4828)	.9406* (.4809)
Governmental Spending			-.0397 (.2819)	-.2767 (.2801)	.0368 (.2896)
Freedom from Corruption			-.2460 (.3740)	1.4542*** (.5042)	.3809 (.4556)
Financial Freedom			.1066 (.2133)	.0256 (.2292)	.0217 (.2099)
Openness of Economy			12.7725*** (3.4556)	1.9800 (3.2207)	3.3656 (3.5598)
<i>F-Test [(u_i = 0)]</i>	89.36***	13.79***	52.92***	14.41***	63.39***
<i>R-Square Within</i>	0.4095	0.498	0.1802	0.7761	0.4204
<i>R-Square Across</i>	0.0144	0.1183	0.325	0.1089	0.0095
<i>R-Square Overall</i>	0.0478	0.1579	0.1259	0.354	0.0274
<i>Sample N/No. of Groups</i>	295/32	159/31	319/35	142/29	278/32
<i>Hausman Test (P-value)</i>	.000	.000	.000	.000	.000

- Notes: 1. Model-1 focuses on economic drivers; Model-2 focuses on demographic drivers; Model-3 focuses on institutional drivers; Model-4 focuses on all drivers; Model-5 drops two variables from Model-4 to improve sample size.
2. Standard Errors are reported in the parentheses below coefficient estimates.
3. * Significant at ≤ 0.10 level; ** Significant at ≤ 0.05 level; *** Significant at ≤ 0.01 level.
4. Fixed effects model results is reported when null hypothesis for Hausman test is rejected at the .05 percent level [Random-Effects otherwise].

Table 5. Parameter Estimates of Panel Models with Non-Life Insurance Growth Rate as Dependent Variable

Variable	Model-1	Model-2	Model-3	Model-4	Model-5
Intercept	-1.2652 (24.1583)	-599.5384* (332.207)	60.5033*** (20.0521)	-93.7793 (352.3031)	58.4838 (36.6173)
Growth Rate of the Country	1.7580*** (.4144)			.6594 (.8703)	1.3326*** (.4465)
GNI Per Capita	.0002 (.0007)			.0032* (.0017)	.0001 (.0008)
Inflation Rate	-.9440*** (.1968)			-.9968** (.3860)	-.8052*** (.2136)
Interest Rate	-.6515** (.2603)			-.7594* (.4546)	-.4887* (.2136)
Service Sector	.3484 (.3726)			1.0814 (.6783)	.4938 (.3984)
Merchandise Trade	-.0552 (.1164)			-.2833 (.2247)	-.1565 (.1310)
Population Growth Rate		3.9103 (4.6526)		.5705 (5.7511)	.3671 (3.5303)
Age Dependency		.1911 (1.1828)		-.8713 (1.6451)	-.4473 (.3550)
Tertiary Education		-.1218 (.2924)		-1.3354*** (.4299)	
Life Expectancy		8.4036** (4.0473)		2.7935 (4.1771)	
Property Rights			-.3939*** (.1105)	.0197 (.2580)	-.0700 (.1374)
Business Freedom			-.2208 (.1539)	-.4319* (.2415)	-.2939* (.1666)
Fiscal Freedom			.0371 (.2224)	.1792 (.3600)	-.0536 (.2494)
Governmental Spending			.0246 (.1343)	-.1401 (.2144)	-.0114 (.1415)
Freedom from Corruption			-.0290 (.1798)	-.3905 (.3944)	.1184 (.2372)
Financial Freedom			-.3516*** (.1051)	-.4327** (.1703)	-.2896*** (.1069)
Openness of Economy			7.4456*** (1.6550)	4.8695** (2.3819)	4.2462** (1.7417)
<i>F-Test [(u_i) = 0]</i>	2.41***	1.46*	2.73***	1.58*	1.77**
<i>R-Square Within</i>	0.2747	0.0929	0.2226	0.432	0.3642
<i>R-Square Across</i>	0.043	0.0269	0.0298	0.0356	0.0189
<i>R-Square Overall</i>	0.1411	0.0061	0.0807	0.0083	0.2070
<i>Sample N/No. of Groups</i>	264/32	156/31	284/35	137/29	248/32
<i>Hausman Test (P-value)</i>	.000	.000	.000	.000	.000

- Notes: 1. Model-1 focuses on economic drivers; Model-2 focuses on demographic drivers; Model-3 focuses on institutional drivers; Model-4 focuses on all drivers; Model-5 drops two variables from Model-4 to improve sample size.
2. Standard Errors are reported in the parentheses below coefficient estimates.
3. * Significant at ≤ 0.10 level; ** Significant at ≤ 0.05 level; *** Significant at ≤ 0.01 level.
4. Fixed effects model results is reported when null hypothesis for Hausman test is rejected at the .05 percent level [Random-Effects otherwise].

Table 6. Parameter Estimates of Panel Models with Life Insurance Growth Rate as Dependent Variable

Variable	Model-1	Model-2	Model-3	Model-4	Model-5
Intercept	19.3624 (14.5160)	31.2050 (74.0141)	73.0631*** (22.8021)	156.3930 (103.1605)	68.9586** (32.6223)
Growth Rate of the Country	1.7567*** (.6655)			3.1495*** (1.0575)	1.3961* (.8116)
GNI Per Capita	.0002 (.0003)			.0032*** (.0010)	.0012* (.0006)
Inflation Rate	.2822 (.2518)			.2298 (.3574)	.1169 (.2793)
Interest Rate	.2598 (.2231)			.5554* (.3380)	.3813 (.2541)
Service Sector	-.2821 (.2391)			.1189 (.4504)	-.3319 (.3466)
Merchandise Trade	.0332 (.0547)			.1016 (.07587)	.0418 (.0617)
Population Growth Rate		-1.2538 (1.6982)		-8.1326* (4.3310)	-5.0631* (3.0717)
Age Dependency		-.4301 (.31525)		.8716 (.5929)	.0160 (.3522)
Tertiary Education		.0235 (.1607)		-.0824 (.1954)	
Life Expectancy		.1390 (.9282)		-1.9706 (1.2310)	
Property Rights			-.1497 (.1563)	-.3282 (.2354)	-.0198 (.1686)
Business Freedom			-.3757 (.2577)	-.3109 (.2354)	-.3442 (.2952)
Fiscal Freedom			-.3197 (.2430)	-1.4443*** (.3892)	-.4721 (.2976)
Governmental Spending			-.01374 (.1231)	.3814* (.2104)	.2175 (.1674)
Freedom from Corruption			.1960 (.2111)	.5390* (.3208)	-.0180 (.2351)
Financial Freedom			-.0772 (.1467)	-.0456 (.1927)	-.1130 (.1713)
Openness of Economy			2.0219 (.18641)	2.4951 (2.2900)	1.2687 (1.8786)
Wald chi2	10.17	3.73	7.82	42.23***	21.46
R-Square Within	0.0066	0.0591	0.0157	0.1697	0.0185
R-Square Across	0.3001	0.0226	0.0937	0.5047	0.4656
R-Square Overall	0.0382	0.0345	0.0333	0.2644	0.085
Sample N/No. of Groups	263/32	153/31	281/34	136/29	247/32
Hausman Test (P-value)	.8289	.0786	.4034	.3223	.905

- Notes: 1. Model-1 focuses on economic drivers; Model-2 focuses on demographic drivers; Model-3 focuses on institutional drivers; Model-4 focuses on all drivers; Model-5 drops two variables from Model-4 to improve sample size.
2. Standard Errors are reported in the parentheses below coefficient estimates.
3. * Significant at ≤ 0.10 level; ** Significant at ≤ 0.05 level; *** Significant at ≤ 0.01 level.
4. Fixed effects model results is reported when null hypothesis for Hausman test is rejected at the .05 percent level [Random-Effects otherwise].

Table 7. Parameter Estimates of Panel Models with Insurance Growth Rate as Independent Variable and Insurance Density as Dependent Variable

Variable	Dependent Variable	
	Non-Life Insurance Density	Life Insurance Density
Intercept	-1149.992*** (376.8929)	49.0932 (511.7152)
Non-Life Insurance Growth Rate	.3208*** (.1121)	
Life Insurance Growth Rate		.1477* (.0860)
Growth Rate of the Country	.6386 (.9336)	2.7222** (1.2217)
GNI Per Capita	.0220*** (.0019)	.0133*** (.0025)
Inflation Rate	.9013** (.4277)	-.2283 (.5324)
Interest Rate	1.4858*** (.4936)	1.3067** (.6253)
Service Sector	-.1063 (.7354)	-.9786 (.9792)
Merchandise Trade	.4125* (.2424)	.9837*** (.3097)
Population Growth Rate	12.2582** (6.1504)	-2.1650 (7.9701)
Age Dependency	7.9482*** (1.7619)	2.7193 (2.3178)
Tertiary Education	.1468 (.4835)	.6765 (.5296)
Life Expectancy	8.6257* (4.4779)	-2.1230 (6.1161)
Property Rights	.5865** (.2759)	.6549* (.3549)
Business Freedom	-1.0329*** (.2627)	-1.6105*** (.3335)
Fiscal Freedom	-.5039 (.3854)	-.0732 (.5193)
Governmental Spending	-.3576 (.2298)	-.3593 (.2968)
Freedom from Corruption	-.3717 (.4240)	-1.3923** (.5431)
Financial Freedom	.5993*** (.1885)	.0532 (.2363)
Openness of Economy	3.6866 (2.6050)	1.1264 (3.2773)
<i>F-Test [(u_i)=0]</i>	20.25***	13.94***
<i>R-Square Within</i>	0.9087	0.7755
<i>R-Square Across</i>	0.4342	0.1174
<i>R-Square Overall</i>	0.4847	0.3429
<i>Sample N/No. of Groups</i>	137/29	136/29
<i>Hausman Test (P-value)</i>	.000	.000

Note: 1. Standard Errors are reported in the parentheses below coefficient estimates.

2. * Significant at ≤ 0.10 level; ** Significant at ≤ 0.05 level; *** Significant at ≤ 0.01 level.

3. Fixed effects model results is reported when null hypothesis for Hausman test is rejected at the .05 percent level [Random-Effects otherwise].

Table 3 presents the panel model results for non-life insurance density. When comparing the three drivers independently (Models 1-3), Model 2 explains the greatest extent of variance, indicating the importance of demographic factors on insurance demand. Among the various variables tested in Model 4, growth rate of the country, GNI per capita, interest rates, merchandise trade, population growth rate, age dependency, life expectancy, financial freedom and openness of the economy impact non-life insurance density positively, while service sector, business freedom, and governmental spending impact non-life insurance density negatively. Table 4 presents the panel model results for life insurance density. Similar to earlier results of Table 3, among the three drivers, demographic factors explained the highest variance. However, compared to non-life insurance density, fewer variables were significant in Table 4. GNI per capita, interest rate, and merchandise trade were positively related, whereas country growth rate and business freedom were negatively related to life insurance density.

Table 5 and Table 6 present models explaining factors driving growth rates of demand in the insurance industry. As one would expect, the models in these tables explain relatively lower variance compared to earlier results on insurance density. Among the three drivers, economic drivers explain the highest variance compared to the other two. In terms of growth of non-life insurance business, openness of the economy was a positive factor, but (to our surprise) inflation rate, interest rate, tertiary education, and financial freedom were negatively related to growth of non-life business (Table 5, Model 4). One plausible explanation is that as loans for property increase so does the demand for insurance as lenders require insurance to protect their interests. As noted earlier, in Table 6 we present the results of a random effects model based on Hausman Test results. Growth rate of a country, GNI per capita, interest rate, governmental spending, and freedom from corruption facilitates growth rate of life insurance consumption while population growth rate and fiscal freedom seem to discourage the growth rate.

In Table 7 we present two additional models wherein we include insurance growth rate as an additional independent variable and non-life and life insurance density as dependent variables, as a robustness test. Results were largely comparable to previous models in the case of non-life density (Table 3, Model 4) with two exceptions. With the inclusion of non-

life insurance growth rate as an independent variable, growth rate of the country and openness of the economy were no longer significant. To some extent, these differences in findings are explainable, as insurance growth rate would capture a certain extent of growth rate of the country, and once industry growth rate is accounted for, it might be the case that openness of the economy does not matter. In terms of life insurance density, the results were similar to results reported earlier with the exception of property rights. This variable, which was insignificant in Table 4 (Model 4), turned significant indicating the importance of this variable.

5. CONCLUSION

Scholars have argued that one of the challenges for the insurance industry is how to diversify operations in underdeveloped markets (Park, Borde & Choi, 2002). In this article, we analyze the drivers of both non-life and life insurance demand across emerging markets, using insurance density and growth rates as proxies of insurance demand. These markets are in the early stages of insurance penetration and to that extent this study offers insights on the factors influencing insurance consumption and growth rates. This study, in contrast with earlier studies on this topic, adds to the literature by focusing exclusively on emerging markets and by looking at non-life as well as life insurance markets using recent time series data. We find that growth rate of the country, GNI per capita, interest rate, merchandise trade, and business freedom influence insurance density, though the influence on non-life and life density were opposite in the case of growth rate of the country. To a limited extent, one may claim these results are largely comparable with the results of Outreville (1996), whose study focused on developing countries. However, a direct comparison is not feasible, as the variables used in this paper differ. Overall, findings indicate that demographic factors explain a greater variance relative to economic and institutional variables for insurance density, while economic factors explain the greatest amount of variance in terms of insurance growth rates.

At a practitioner level, this study's findings are useful to insurance firms as well as public policymakers in two important ways. First, for firms planning to enter emerging markets, this study will be helpful in identifying potentially attractive countries for setting up insurance operations. Second, it will also help in identifying the critical factors which influence the growth of the insurance industry in overseas markets. Finally, this study can also serve as a

guide for policymakers who wish to encourage insurance firms considering overseas expansion to focus on expanding political relationships with emerging countries which offer business potential for insurance services. The focus of this study is on time-variant variables in testing the factors driving insurance demand. One dimension which this study did not take into account due to the lack of data was cultural factors. For instance, we could find data on Hofstede cultural dimensions for only 12 of the 35 emerging markets. Since these variables are time-invariant, we could not run models with 12 data points. At a later date, when more data on culture of specific emerging markets is available, future researchers may incorporate these variables in the models of insurance demand.

ACKNOWLEDGEMENTS

This project is funded by the Katie School Research Grants. The findings reported and the views expressed in this research are those of the authors and do not necessarily reflect the position of the Katie School. The author is also thankful for the assistance offered by Chris Anderson, Christopher Ebenezer, Genevieve Amamoo, and David Schaafsma during the data collection phases of the study. We also thank the JoSS Editor Dr. Daihwan Min and the reviewers for their suggestions during the review process. All other disclaimers apply.

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AUTHORS BIOGRAPHY



Dr. Elango (Ph.D., Baruch College-CUNY) is professor of international strategy at the College of Business, Illinois State University, where he teaches courses in international and strategic management and conducts strategy seminars for corporate clients. His primary research interests are in the area of international strategy and competition. His secondary research interests include service sector firms involved in franchising and insurance, as well as technology innovation management. He has published over forty-five articles in highly respected business journals and his work has been referenced by other scholars over 800 times.



James Jones is the Director of the Katie School of Insurance at Illinois State University. He oversees Katie School research grant projects, industry development, and professional development workshops related to the insurance industry. He is an author of two textbooks. He works across disciplines on research and teaching in the areas of risk management and sustainability, risk management and innovation in microinsurance, business ethics, and human capital development.