Determinants of *Takāful* and Conventional Insurance Demand: Empirical Evidence from Asian Region

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Abstract

In this study, we attempted to analyze the Conventional insurance and Takāful demand and their possible determinants from 14 Asian countries for the period 2005-2012. We applied Fixed and random effect regression models to check the relationship among variables and used Hausman specification test (1978) as selection criteria for these models. The result suggested that per capita income and inflation are key determinants among the macroeconomic variables for both Conventional insurance and Takāful while Education and Urbanization are the key demographic variables have significant impact on both Takāful and Conventional insurance demand. Further, Inflation and income level are the significant factors influencing Takāful demand in South Asian and East Asian region. This research has important implications for policy makers of relevant countries.

Key Words: *Conventional insurance; Takāful; determinants; macroeconomic; demographic; Asian region.*

1. Introduction

In most of the Asian countries the insurance sector was publically owned and they had monopoly over there and government restricted private or foreign investment in the insurance sector. But as most of the Asian countries went through their economic restructuring so they have opened this sector for foreign and private investors. In the 1960-70 decade there was around 93% of insurance market hold by the European and American countries while in 2012 it was down to 56% as the Asian market share increased from 3.8% in 1960s to 30% in 2012 (Sigma, 2013). In the early 1990s decade Japan was the main driver later on followed by other emerging and advanced economies such as China. Now it is expected that emerging economies of Asian countries will lead the growth with a expected growth rate of 8% which is more than three time of advanced countries growth rate of 2.6% (Sigma, 2013). Overall insurance premiums have increased by 6.8% to reach USD 723 Billion in 2012 in emerging markets.

So in response these investors have established their products according to their target markets and that lead to growth of insurance sector but still it is underdeveloped and Conventional insurance acceptability across different Asian countries is questionable especially in Muslim predominant countries. This unacceptability of insurance for Muslims issue leads to establishment of the *Takāful* to fulfill the needs of larger Muslim population due to prohibition of conventional insurance in Islam as insurance contract consists of Riba (interest), Gharar (uncertainty) and Maisir (gambling). *Takāful* is based on the principles of mutual risk sharing and brotherhood. It is basically come into existence with a purpose to fulfill the insurance need of the Muslims. Larger portion of the *Takāful* contributions came from the South East Asian and GCC countries. The *Takāful* market in the GCC was US$ 5.7 billion in contribution volumes in 2010, having expanded at an annual average rate of 28.4% since 2006. GCC formulated nearly 70% of the *Takāful* on the basis of the contributions and in GCC regional market 76.9% contributed by the Saudi Arabia. Larger portion of the *Takāful* contributions came from the General *Takāful* and family *Takāful* formulated approximately 5% of the total contributions (Ernst and Young Report, 2012). Financial crisis has increased the risk element in environment that leads to greater demand for risk controlling products and opening of insurance sector for both Conventional insurance and *Takāful* raises issue to reexamine the factors that can affect the demand of these products in these Asian insurance markets.

So our basic aim is to analyze what are the key factors that affect insurance and *Takāful* demand in these regions, whether same factors affecting both demand. The structure of paper is as follow: After giving brief introduction of the topic, second section is the literature review which covers key macroeconomic and demographic variables affecting insurance and *Takāful* demand. Third section is methodology, which illustrates about population and sampling, data sources, research model and statistical techniques used to analyze the data. Fourth section discusses the results and compares them with previous studies. Last section concludes the paper.

2. Literature Review

2.1 Macroeconomic variables

In macroeconomic factors we considered Income, Inflation and Saving rate affect insurance and *Takāful* demand and discussed as follow:

2.1.1 Income: In this study we will consider income per capita to represent disposable income which is ratio of GDP to total population. Affordability of insurance increases as income level increases and demand for insurance ultimately increases (Browne and Kim, 1993). These results are aligning with the findings Redzuan, Rahman and Aidid (2009) stated that as there is rise in income affordability and access to insurance increases and ultimately family *Takāful* and life insurance demand increases. Gandolfi and Miners (1996) in their study investigated macroeconomic variables affect on performance of life insurance and stated income as the most significant factor affect life insurance demand.

Although income level prevailed in china was low and considerable difference exist in economic development of different areas but people are encouraged to purchase life insurance due to recent growth in economy (Hwang and Gao, 2003). As income increases then human capital and consumptions and expenditures by individuals also increases. Increase in income leads to purchase more insurance policies to save money for their dependents consumptions as well as for their after retirement life. Insurance demand was found positively associated to income by using both aggregate national and individual household data (Beenstock, Dickinson,and Khajuria, 1988; Truett and Truett, 1990; Browne and Kim, 1993 and Outreville, 1996).

2.1.2 Inflation: Inflation is considered as the most important factor influencing demand for insurance. Babbel (1981) found that customers are quite sensitive to the change in inflation either it is expected or realized causes a reduction in consumption of insurance. The cost for insurance protection will increase with anticipation of inflation results a decline in insurance demand. Inflation showed negative relationship which suggest that anticipated inflation may cause a decrease in the value of financial assets that's why the attractiveness of insurance products may also reduce (Redzuan, Rahman and Aidid, 2009; Li, Moshirian, Nguyen and Wee, 2007). Uncertainty regarding monetary benefits substantially had negative influence on insurance products' expected returns. Loan options and fixed interest rates imbedded in certain life insurance policies. These factors made inflation an additional encumbrance to the product pricing decisions of life insurers also resulted in reduction of its supply in high inflation time periods.

In opposition to it Hwang and Gao (2003) in their study regarding insurance demand in China stated that no proof found which determines that in the periods of high inflation insurance industry does not suffered with an adverse impact. As the high inflation period was also a period

of higher economic growth that's why consumers were less responsive to the inflation negative effect as it did not affect people's living standard. And they also stated that the inflation also triggers the element of risk which also causes positive impact on insurance demand.

2.1.3 Saving rate: Most previous research illustrated that customers make comparison of return on a insurance policy with the return of other savings financial instruments. In line with this saving rate is measured by the rate of return commercial banks offered on savings accounts. Findings from literature determines that insurance and *Takāful* demand negatively influenced by savings and saving rate factors (Beck and Webb, 2003; Savvides, 2006; Redzuan, Rahman and Aidid, 2009).

Buyer favors to other substitutes for saving purpose if insurance policy offered them lower returns as compared to other financial instruments prevailed in market (Redzuan, Rahman and Aidid, 2009). Wealth replacement effect prevails which means that investor will make more investment in other financial assets and instrument replacing insurance products for saving purpose on the basis of higher return rates on them (Savvides, 2006). Chang (1995) in his research finding stated that a person's priority to demand life insurance was affected by savings rate as individual may prefer to make investment in other saving alternatives besides choosing and purchasing life insurance

On the basis of above literature our first main Hypothesis will be as follow:

Hypothesis I: There is significant relationship exist between macroeconomic factors and *Takāful* / Insurance demand.

2. 2 Demographic Factors

In demographic variables we considered Dependency ratio, Life expectancy, Education. and Urbanization effect on the insurance and *Takāful* demand and discussed as:

2.2.1 Dependency ratio: The dependency ratio can be illustrated as average number of family members dependent on the income main source (Lenten and Rulli, 2006). Finding by (Ćurak and Kljaković-Gašpić, 2011) determined that the insurance consumption is positive affected by dependency ratio. A rise in young dependency ratio will increase the mortality coverage demand while annuities based products demand for savings purpose decreases. But in case of higher old

dependency ratio is expected to increase the insurance and annuity demand for the savings purpose and the mortality risk component of life insurance demand decreases.

Burnett and Palmer (1984) stated that driving force for insurance consumption is to provide protection to their dependents against financial hardships. They also stated that maximization of the beneficiaries' expected lifetime utility is driving force to the demand for insurance. The most important motive to purchase insurance is to protect members of family which are dependent from financial sufferings arises from premature death of wage earners that's why higher dependents ratio leads to increase insurance demand. But if there are larger family size it may limit financial sources available to wage earners to run their family reduce the insurance demand and results in negative relationship of family size and number of dependents with insurance consumption.

2.2.2 Urbanization: Insurance consumption is higher in those countries where larger portion of their total population lives in urban areas. Geographic areas and concentration of potential buyers reduces costs such as of marketing cost, premium collection; underwriting and claim handling with easy insurance products distribution and lowering cost will enhance the insurance demand. Urbanization is measured by the ratio of portion of population lives in urban areas to total population.

Hwang and Gao (2003) stated that urbanization show a positive relationship as increase in population to urban areas will lead to economic progress as well as reduce birth rate and number of dependents. And through urbanization people try to save more through insurance plan purchase to get protection coverage and also saving for their after retirement life (Beck and Webb, 2003). Beck and Webb, (2003) found positive relationship exist between life insurance demand and urbanization. Individuals live in urban areas are more familiar with risk and risk management in average in comparison to those who live in rural areas also show positive impact of urbanization on demand for insurance.

2.2.3 Life Expectancy: Life expectancy is defined as expected number of years individual can live on average in certain country (Brown and Kim, 1993). It is also described as the average time span a human has before death, calculated from the time of birth (Nesterova, 2008).

Brown and Kim (1993) found positive relationship exists between insurance demand and life expectancy at birth and also described that higher the life expectancy population has more will for the insurance products demand. People try to accumulate money or capital for longer period

of time at lower cost by purchasing insurance plans as through it cost is spread over a longer period of time and the cash accumulated for a longer time period that's why life expectancy shows positive impact on insurance products demand. If there is higher life expectancy prevails in a country then people try to save during their working age to save for their after retirement life and it will positively influence insurance demand as they try to ensure adequate resources for their after retirement life (Savvides, 2006). If higher life expectancy prevails than ultimately prices for insurance products will be lower especially for life insurance products and it will stimulate people to raise capital by saving through insurance products (Sen, 2008). Some of previous researches found negative relationship between life expectancy and insurance demand (Browne and Kim, 1993; Beck and Webb, 2003). They stated that if there is higher life expectancy than people will not demand insurance for mortality coverage and for savings motive they can move to other alternatives.

2.3.4 Education: For *Takāful* and insurance plans demand our expectations are that a higher level of education will be positively associated to their demand. The level of education may build understanding and ability in a person to take benefits from risk management and savings. People with higher level of education tend to be more risk averse. Level of education is found to have positive influence on insurance consumption (Truett and Truett 1990: Browne and Kim, 1993; Burnett and Palmer 1984; Gandolfi and Miners 1996). In their researches they stated that people with better education tend to purchase more insurance plans potentially as they expect that their income will go on increase at quicker rate for longer time period. Negative association is found between education and demand for insurance products (Anderson and Nevin, 1975). They stated that that highly educated people from a savings point view may consider that inflation will reduce the future value of their accumulated capital from insurance and result in decrease in insurance demand. Higher education leads individuals to be dependent on family income for longer period that may negatively affect insurance demand (Browne and Kim, 1993).

Most of researchers use education as proxy of risk aversion. Outreville (1996) stated that highly educated individuals have more awareness and understanding of risk as well as risk management tools so education increases risk aversion and it will also increase insurance products demand as it is a tool to manage and transfer risk.

Above literature indicates that demographic factors play an important role in shaping behaviors and attitudes of the person and ultimately their purchase behavior and buying patterns. So our second main Hypothesis will be as follow:

Hypothesis II: There is significant relationship exist between demographic factors and *Takāful* / Insurance demand.

Summary of various researcher's findings of relationship between these variables and demand for insurance and *Takāful* are given as bellow:

Name of Variables	**Positive Relationships**	**Negative Relationships**
Macro-economic Factors		
Per capita income	Gandolfi and Miners (1996), Hussels, Ward and Zurbruegg (2005), Hwang and Gao (2003),	----------
Inflation	Gustina and Abdullah (2012), Hwang and Gao (2003).	Babbel (1981), Redzuan, Rahman and Aidid, (2009); Li, Moshirian, Nguyen and Wee, (2007).
Saving rate	----------	Beck and Webb, (2003); Savvides (2006); Redzuan, Rahman and Aidid, (2009).
Demographic Factors		
Life Expectancy	Savvides, 2006	Brown and Kim, 1993; Beck and Webb, 2003
Dependency ratio	Ćurak and Kljaković-Gašpić, 2011	Beck and Webb (2003), Truett and Truett (1990), Browne and Kim (1993).
Urbanization	Neumann, (1969).	Hwang and Gao (2003),
Education	Truett &Truett (1990): Browne and Kim, (1993) ; Gandolfi and Miners, (1996).	Anderson and Nevin, (1975)

3. Methodology

In this section we discussed target population sampling selection, data collection and research design.

3.1 Population and Sampling:

The total population for this research work consists of all the countries where both *Takāful* and Conventional insurance operators exist and for sampling purpose we select only Asian countries we both operators are performing and their data is available. The study focuses on 14 selected Asian economies consists of 4 South-Central Asian countries (Bangladesh, Iran, Pakistan and Srilanka); 3 from the South-East Asia (Indonesia, Malaysia, and Thailand); 7 from Western Asia and Middle East (Saudi Arabia, Bahrain, Lebanon, United Arab Emirates, Qatar, Jordan and Kuwait). The availability of data was one key motivating factor behind selection of these economies.

3.2 Data Source:

The panel for 14 selected Asian countries studied for 8 years starting from 2005 to 2012 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) 2014 and the World Development Indicators (WDI) 2014. The explanatory variables in the model are the economic and demographic variables.

3.3 Description of Variables:

This section narrates the explanation of variables to be used in the present study. From previous researches such as (Truett and Truett, 1990; Browne and Kim 1993; Hwang and Gao, 2003; Redzuan, Rahman and Aidid, 2009) it is found that there are certain factors which have significant influence on the dependent variable. In this we are going to analyze the impact and influence of the demographic and macroeconomic variables as determinants for the demand of insurance and *Takāful*. So independent variables are categorized into Macroeconomic and Demographic variables.

In macroeconomic variables, Per capita income is taken as proxy to represent income level of these countries. Saving rate is the deposit rates on saving accounts are offered as proxy to represent the return rates of alternatives. To represent the inflation rate we consider consumer price index as proxy as it affects the purchasing behaviors through different channels and in different ways. While in demographic variables, the life expectancy is used to represent the average age prevails in these countries. To check the impact of the dependents on the purchasing of these Conventional insurance and *Takāful* products we use dependency ratio as proxy. To

check the impact of urbanization on insurance and *Takāful* demand as lot of migration to urban areas happening we use the urban population to represent it. Here Education is used for the awareness and literacy level as well as proxy for risk aversion. For education we considered the population having secondary education.

3.4 Research Design:

We establish two panel data regression models for separately for both insurance and *Takāful*. These models insurance and *Takāful* demand are represented by two different dependent variables: Insurance premiums 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.

To analyze the relationship among variables Fixed and Random effect models will be used. Later Hausman (1978) specification test will be used as selection criteria to select the suitable model among Fixed or Random effect models. The research models are as fallow:

$D_{\text{insurance/ } Takāful} = \beta_0 + \beta_1$ GDP $+ \beta_2$ Inflation $+ \beta_3$ Saving rate$+ \beta_4$ Dependency ratio $+ \beta_5$ life expectancy $+ \beta_6$ Education $+ \beta_7$ Urbanization $+ \acute{\varepsilon}$

4. Results Findings and Discussion

We focus to analyze the data to check the relationships exist between dependent and independent variables and later on we discuss these findings.

4.1 Descriptive Statistics

In Table (1), Descriptive analysis consists on the mean values of the all the dependent variables such as Demographic (education, number of Dependents, life expectancy, urbanization), and mean values of all the Macroeconomic variables (per capita income, saving rate, inflation rate) and the mean values of dependent variables (Total insurance premiums and *Takāful* contributions) are found. Standard deviations, minimum and maximum values are also provided. In it kurtosis and skewness are also used to check data normality pattern and log transformation is used to make them normally distributed.

Table 1. Descriptive Statistics

Variables	Mean	Median	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum
Per capita income	16700.19	5614.43	21703.25	2.44	1.73	421.12	93825.31
Urban%	65.59	77.17	27.20	-1.18	-0.53	15.04	98.89
CPI	129.46	119.11	33.13	9.81	2.60	100.00	316.36
Saving rate	5.46	4.55	3.30	-0.30	0.72	0.97	14.81
Education level	8.40	8.56	2.39	-0.92	-0.13	3.75	12.92
Dependency ratio	45.77	48.19	14.35	-0.42	-0.38	16.54	73.28
Life expectancy	73.52	73.87	3.41	0.10	-0.65	65.17	79.85
Total premiums	3605.33	1124.50	4365.15	1.68	1.56	299.00	18359.00
***Takāful* contributions**	776.89	88.50	1656.42	9.53	2.99	1.30	9271.00
Insurance density	215.60	150.53	211.92	-0.10	0.97	2.45	777.24
***Takāful* density**	37.35	9.57	50.27	2.58	1.65	0.01	237.06

Note: In this overall sample country descriptive statistics are explained. Here insurance premiums and density data are collected from Swiss Re reports (2005-2013), while for *Takāful* we collected data from World *Takāful* conference reports (2006-2013). Macroeconomic and demographic factors data is taken from World Bank Database. In it all independent variables are in further transformed into log values.

Region wise descriptive statistics are described in table (2). In this section we focus on three regions of Asia and these descriptive are based on the data before taking log of all the variables.

Table 2. ***Region wise Descriptive Statistics***

	South Asian Region			Gulf Region			East Asian Region		
Variables	**Mean**	**Median**	**Standard Deviation**	**Mean**	**Median**	**Standard Deviation**	**Mean**	**Median**	**Standard Deviation**
Per capita income	1204	966	741	39901	38109	21640	5114	4851	2400
Urban	26	27	9	90	89	7	65	69	19
Education	8	7	3	7	7	3	9	9	2
CPI	146	142	36	119	116	14	130	120	40
Saving rate	8	8	2	3	4	1	6	6	4
Dependency ratio	59	59	8	33	32	13	50	50	9
Life expectancy	69	69	3	76	76	1	74	73	3

Insurance premiums	812	747	348	2052	916	2056	6296	6073	5292
Takāful contribution	44	11	63	830	136	1452	1099	66	2085
Insurance density	13	7	11	404	446	208	160	108	126
Takāful density	0.41	0.31	0.39	81	68	54	19	3	30

Note: In this region wise descriptive statistics are described. CPI is consumer price index used as proxy, Per capita income as proxy of income level, Education is used as proxy for awareness, Dependency ratio used as proxy for number of dependents, Life expectancy used as proxy for average age prevailed in sample countries, Insurance premiums and *Takāful* are used as overall Insurance and *Takāful* premiums volumes in sample countries while Insurance and *Takāful* density is future calculated through Insurance premiums and *Takāful* contribution volumes.

4.2 Econometric Analysis

Before going for the econometric analysis by applying panel data regression analysis we also go to check the Stationarity and cross dependence of the variables by using unit root tests and Pesaran CD test (2004) respectively. In unit roots tests we have used the Im, Pesaran and Shin test (2003), Levin, Lin and Chu (2002), ADF-Fisher and PP-Fisher (Maddala and Wu, 1999) and result are shown in table (6). In above all unit roots test null hypothesis is non Stationarity of variables.

The result determined that Per capita income, Inflation, Saving Rate, Education, Insurance Premiums, Insurance Density are stationary at 1^{st} difference while Urbanization, Life expectancy, Dependency ratio, *Takāful* Density, *Takāful* Contributions are stationary at level. In the next section we discussed the Fixed/ Random regressions analysis for both Conventional insurance and *Takāful*.

4.2.1 Regression Analysis of Total Insurance and Takāful Demand on Premiums and Contributions Basis:

This regression model consists of independent variables such as demographic (education, dependency ratio, life expectancy and urbanization) and macroeconomic variables (per capita income, Inflation and saving rate). Demographic and macroeconomic variable show their impact over the demand of insurance and *Takāful* as total insurance premiums and *Takāful* contributions used as dependent variables. In it we use log transformation for all the dependent and independent variables.

Table 2. Models for Conventional insurance on Premiums and *Takāful* Contribution Basis

Variable	Coefficients (Insurance Premiums Basis)	Coefficients (*Takāful* Contributions Basis)
Constant	-24.71	-1.9348
Per capita income	0.050435***	-0.100068***
Saving rate	-0.015096***	-0.0031
CPI	0.026848**	0.238209***
Urban	0.471993***	0.218910***
Life expectancy	0.131933***	-0.1247
Dependency ratio	-0.0333	-0.446726***
Education	-0.062405***	0.09319
Hausman Test Value	34.622047***	35.313401***

Note: **** are significant at 1%, **@5%,*@1%.* In it all variables are taken in log form. In this table fixed and random effect models run for both Insurance premiums and *Takāful* contributions. Hausman (1978) specification test is used for selection between fixed or random effect models. In this table we focus on comparing the demand determinants of both conventional Insurance and *Takāful* demand on their volumes basis.

In this study Hausman specification test is used and results for both models determines that for both insurance premiums and *Takāful* contributions based models we go for fixed effect regression analysis. The individual variables show their impact over the overall insurance demand.

Per capita income shows positive but significant impact over the demand for total insurance while negative but significant in *Takāful* models based on insurance premiums and *Takāful* contributions. It determines that as per capita income increases then a person purchasing power also increases and that purchasing power impacts positively on the demand of total insurance. Our research findings are also found consistent to the previous studies such as of Truett and Truett (1990), Browne and Kim (1993), Beck and Webb, (2003), Gustina and Abdullah (2012), Hwang and Gao (2003), Ward and Zurbruegg (2005). This negative relationship of income with *Takāful* demand exist due to reason that it is in its initial stages in most of our sample countries specially in south Asian countries still growing so there is lower level of awareness prevail about it among public also negatively affect. From income elasticity perspective we can suggest that its quantity demand is lower in comparison to change in income level and another reason is the inequality of wealth and income level prevails in these countries which may also negatively affect *Takāful* demand. As people with higher income from a certain

level also tend to be less attractive to purchase these products like in gulf countries scenarios while poor people does not have sufficient money to purchase insurance and *Takāful* plans.

Inflation shows positive and significant impact over the demand for total insurance and *Takāful*, it suggest that when inflation increases then element of risk also increase and that higher risk prevails impact positively on the demand of total insurance and *Takāful*, because insurance acts as a tool to hedge and mitigate the contingent losses if occurs. This finding is consistent with prior studies of Gustina and Abdullah (2012), Hwang and Gao (2003).

Saving rate shows negative for both insurance and *Takāful* but significant impact only on the demand for Insurance. It determines that when saving rates of other financial instruments increases then a person will prefer to invest their money more in those instruments which offer them higher returns and that impact negatively on the demand of total insurance. Research findings are in align with the previous findings such as of Gustina and Abdullah (2012).

Education shows negative and significant impact over the demand for total insurance while positively and insignificantly on *Takāful*. Studies also determine that highly educated people tends to be more risk taker, leads to lower insurance demand and lack of awareness also negatively affect insurance demand, while in case of the *Takāful* its awareness and Shariah compliance leads to increase its demand. This is consistent with prior findings such as Anderson and Nevin (1975), Outreville (1996), Hwang and Gao (2003), Browne and Kim (1993), Gustina and Abdullah (2012). Dependency ratio shows negative for both but it significantly influencing *Takāful* demand. It means that when number of dependents increases than ultimately there will be less to save and invest which cause decrease in the total *Takāful* demand. This is in align with the findings of Truett and Truett (1990), Browne and Kim (1993).

Life expectancy shows positive and significant influence over the total insurance demand while negatively to *Takāful* for both models. It means that when life expectancy increases then a person try to save and accumulate much for later age so he prefer to make different long investment and they also consider insurance for their investments specially after retirement from their jobs. But as in case of the *Takāful* as it is quite unfamiliar to most of the people and it unawareness and reluctance causes this negative relationship. This is in align with the empirical findings of Outreville (1996); Ward and Zurbruegg (2005); Sen (2008) which suggests that insurance demand positive influenced by life expectancy.

Urbanization shows positive and significant influence over the total insurance and *Takāful* demand. It suggest that when urban population increases that lead to more industrialization and that will cause high income as well as more easy access, availability and more awareness about insurance and *Takāful* which leads to high insurance and *Takāful* demand (Hwang and Gao, 2003)

4.2.2 Regression Analysis of Total Insurance and Takāful Demand on their Density Basis:

In regression model for *Takāful* demand we go to analyze the impact of independent variables consist of demographic (education, dependency ratio, life expectancy and urbanization) as well as macroeconomic variables (per capita income, Inflation and saving rate) on the insurance and *Takāful* demand considering total Insurance and *Takāful* density as dependent variables. In it we use log transformation for all the dependent and independent variables.

Table 4. Models for *Takāful* on Contributions and Density Basis

Variable	Coefficients (Insurance Density Basis)	Coefficients (*Takāful* Density Basis)
Constant	-40.062	-16.399
Per capita income	0.048085***	-0.103455***
Saving rate	-0.011068***	-0.0006
CPI	0.023715*	0.23290***
Urban	0.301944***	0.201905***
Life expectancy	0.205585***	-0.7855
Dependency ratio	0.060073**	-0.37138***
Education	0.01389	0.153535**
Hausman Test Value	13.814*	29.661823***

Note: **** are significant at 1%, **@5%,*@1%. In it all variables are taken in log form.* In this table fixed and random effect models run for both Insurance and *Takāful* density basis. Hausman (1978) specification test is used for selection between fixed or random effect models. In this table we focus on comparing the demand determinants of both conventional Insurance and *Takāful* demand on their Density basis.

On the basis of Hausman specification test results we select fixed effect model for *Takāful* density while for insurance density model we go for random effect model. The individual variables show their impact over the insurance and *Takāful* demand. Per capita income shows

negative and significant impact over the demand for *Takāful* but significantly positive impact over insurance. This negative relationship of income with *Takāful* demand exist due to reason that it is in its initial stages in most of our sample countries specially in south Asian countries still growing so there is lower level of awareness prevail about it among public also negatively affect.

Inflation shows positive and significant impact over the demand for total *Takāful* and insurance models. It means that when inflation increases it triggers the environment risk that leads to increased purchase of insurance and *Takāful* policies. This result is also supported with the previous research findings of Hwang and Gao (2003). Saving rate shows negative but insignificant impact over the demand for both insurance and *Takāful*. It means that when saving rates of other financial instruments increases then a person will prefer to invest their money more in those instruments which offer them higher returns and that impact negatively on the demand of total insurance. Research finding is in align with the previous findings such as of Rose and Mehr (1980), Gustina and Abdullah (2012).

Education shows positive and insignificant impact over the demand for both insurance but significantly to *Takāful*. It means that when level of education increases than ultimately they will get higher income but that education obtained from formal education systems don't provide knowledge and awareness about insurance and as awareness increases it leads to increase the demand for total *Takāful*. This finding is consistent to past studies of Outreville (1996), Hwang and Gao (2003), Browne and Kim (1993), Gustina and Abdullah (2012).

Dependency ratio shows negative and significant impact over the demand for total *Takāful* while positive and significant influence on the demand of insurance on the basis of its density. It means that when number of dependents can affect insurance and *Takāful* demand in both directions positively and negatively. It can positively impact as increasing number of dependents may raise the need to protect and save for dependents. It can negatively affect when number of dependents reach to a certain level than expenditures don't allow saving through these instruments. These relationships existence found between the insurance, *Takāful* and dependency ratio variables which is in align with the empirical research results of Beck and Webb (2003), Truett and Truett (1990), Browne and Kim (1993).

Life expectancy shows negative and insignificant impact over total *Takāful* while positive and significant on insurance demand. It means that when higher life expectancy prevails than people

reluctant to make investments in insurance and *Takāful* and look for other alternatives and vice versa. This is in align with the empirical results of Beck and Webb (2003).

Urbanization shows positive and significant impact over the demand for insurance and *Takāful*. It means that when urban population increases to improve their livings styles that lead to more industrialization and that will cause high income as well as more easy access, availability and more awareness about *Takāful* which lead to higher *Takāful* demand.

4.2.3Region wise Regression Analysis of Conventional Insurance and Takāful Demand:

In this region wise analysis for both *Takāful* and Conventional insurance demand we categorized our sample into three regions of South Asia, East Asia and Gulf countries. On the basis of our analysis we found that inflation, saving rate and income level are the significant factors influencing Conventional insurance demand in both South Asian and East Asian regions while in demographic variables life expectancy and urbanization are the key variable influencing its demand in all three regions of the Asia.

We also found that inflation and income level are the significant factors influencing *Takāful* demand in both South Asian and East Asian but income is positively affecting *Takāful* demand in East Asian regions while negatively in case of South Asian region and the reason for it is maturity of *Takāful* in East Asian region while in South Asia and Gulf region it is in its initial stage. In demographic variables life expectancy and urbanization are the key variable influencing its demand in all three regions of the Asia.

Table 5. Region wise Models for *Takāful* and Insurance

	Conventional Insurance			***Takāful (Islamic Insurance)***		
	South Asia	**Gulf**	**East Asia**	**South Asia**	**Gulf**	**East Asia**

Variable	Coef. (Premium Basis)	Coef. (Premium Basis)	Coef. (Premium Basis)	Coefficients (Contribution Basis)	Coefficients (Contribution Basis)	Coefficients (Contribution Basis)
Constant	-30.36***	-62.68***	-15.46***	-169.4819***	-147.39***	84.26237***
Income	.057***	0.01	.04064***	-.25259***	-0.05	.0803494***
Saving rate	-0.0014***	-0.0025***	-0.003***	0.03	0.01	-.02356***
CPI	-.006***	0.00	.06256***	.38491***	-0.06	.1763***
Urban	.031***	.13711***	.04102***	.05624***	0.18***	.12632***
Life expectancy	.212***	.38267***	.1258***	.9525***	.8454***	-.4235***
Dependency ratio	0.11	-.0830***	0.04	0.47	-.3238***	-0.30
Education	-0.07	0.04	0.02	-0.41	.0557552***	0.14
Hausman Test	**12.05***	**249.45*****	**487.67*****	**0.99**	**205.38*****	**114.62*****

Note: **** are significant at 1%, **@5%,*@1%. In it all variables are taken in log form.* In this table fixed and random effect models run for both Insurance premiums and *Takāful* contributions. Hausman (1978) specification test is used for selection between fixed or random effect models. In this table we focus on comparing the demand determinants of both conventional Insurance and *Takāful* demand on their volumes basis across different regions of the Asia.

5. Conclusion

From these above findings we conclude that urbanization and Education are the two demographic variables which affect the demand for both Conventional insurance and *Takāful.* While the Per capita income and Inflation is the key macroeconomic variables that are significantly affecting demand for both Conventional insurance and *Takāful*. As evident from above findings there is a lot of migration of people to cities occurring providing a larger untapped market to insurance and *Takāful* operators but their awareness to these products and their benefit are very limited which negatively affecting these products demand as evident from the result of per capita income with *Takāful* Demand. Per capita income is found significantly influencing insurance and *Takāful* demand as it is positively affecting insurance demand but negatively to *Takāful* due to the reason that it is its initial stages so the growth in income is quite substantial as compared to the *Takāful*

demand. Education factor also determines that although there is lower demand especially in case of *Takāful* but by increasing the awareness and knowledge level of the general public the demand for these risk mitigating tools will automatically increase.

The analysis for the demand of Conventional insurance and *Takāful* in this study revealed that there are some policy related factors which needs to be considered for the future course of action. For Conventional insurance and *Takāful* operators to increase their demand they should take steps for building general public awareness and understanding about it in order to get and retain good, loyal and supportive customers. Operators of *Takāful* and Conventional insurance must have to make sure accessibility, availability and affordability for this they should build more efficient distribution and delivery channel to reach the prospective customers as there is rapid migration occurring to cities. Conventional insurance and *Takāful* operators should focus to provide better awareness through different media campaigns to build understanding of their customer regarding this so that current participants as well as potential customers attracted towards it for their family or asset protections and saving. They should also focus on providing micro level products for small and medium level enterprises.

This research also provides implications for the governments as well as for policy makers, controllers and relevant regulatory authorities of Asian countries. They must play their role to support and also in the development of Conventional insurance and *Takāful* in their country by encouraging long term savings. Government as regulator should take steps to protect participants' rights and should play its role in building market confidence through necessary rules and regulations. A better economical and regulatory environment can improve the penetration of Conventional insurance and *Takāful* market as well as can invite other companies to join the industry.

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Appendices

Appendix 1: Average data for selected Asian Countries

Country	Insurance premiums	*Takāful* contribution	Insurance density	*Takāful* density
Saudi Arabia	3,699.86	3,553.57	126.4983	118.1326
Lebanon	956.13	5.55	140.168	1.3103
Jordan	487.63	30.56	151.1427	5.101433
Iran	5,413.75	5,154.63	163.0705	69.72743
Thailand	11,175.63	36.60	175.5724	0.552426
Bahrain	477.00	72.00	187.7438	60.47076
Qatar	805.63	188.25	199.8389	113.7778
Kuwait	697.25	114.25	213.1312	40.79946
United Arab Emirates	4,868.00	569.88	224.7741	72.01689
Indonesia	9,369.88	287.38	211.0939	1.193784
Srilanka	546.25	8.44	198.672	0.414331
Malaysia	10,373.88	1,081.71	184.7692	38.59432
Bangladesh	740.63	108.18	168.594	0.716043
Pakistan	1,149.13	15.20	149.1108	0.087501

Note: Here are the sample countries average Insurance premiums and Takāful contributions, their densities over the time period of the study are described.

Appendix 2: Unit root test results

Variable	Levin, Lin & Chu	Im, Pesaran and Shin	ADF-Fisher	PP-Fisher
Per capita income	-8.575*** at 1st diff.	-2.495*** at 1st diff.	53.831*** at 1st diff.	77.560*** at 1st diff.
Inflation	-85.05*** at 1st diff.	-13.7398*** at 1st diff.	64.07*** at 1st diff.	76.344*** at 1st diff.
Saving Rate	-9.295*** at 1st diff.	-2.514*** at 1st diff.	51.701*** at 1st diff.	67.355*** at 1st diff.
Education	-9.336*** at 1st diff.	-3.460*** at 1st diff.	67.309*** at 1st diff.	87.288*** at 1st diff.
Urbanization	-6.218*** at level	-1.660*** at level	66.240*** at level	77.904*** at level
Life expectancy	-7.4325*** at level	-15.339*** at level	107.598*** at level	166.361*** at level
Dependency ratio	-8.0641*** at level	-22.6625*** at level	164.314*** at	85.3244*** at

			level	level
Insurance Premiums	-6.957*** at 1st diff.	-1.646** at 1st diff.	44.532** at 1st diff.	57.236*** at 1st diff.
Insurance Density	-7.572*** at 1st diff.	-1.863*** at 1st diff.	46.903*** at 1st diff.	60.56*** at 1st diff.
***Takāful* Contributions**	-24.651*** at level	-12.831*** at level	97.409*** at level	97.627*** at level
***Takāful* Density**	-25.850*** at level	-12.618*** at level	94.577*** at level	87.682*** at level

Note: **** are significant at 1%, **@5%,*@1%.* In Levin, Lin & Chu (2002), Im-Pesaran and Shin (2003), ADF-Fisher and PP-Fisher tests null hypotheses are that series have unit root while alternative hypotheses are series are stationary. Here results determined that series are stationary at level or at 1st difference.

Appendix 3: Pesaran Cross Dependence test Results

Variable	**CD VALUE**	**P VALUE**
Per capita income	19.46	0.000
Inflation	25.46	0.000
Saving Rate	4.88	0.000
Education	15.41	0.000
Urbanization	24.04	0.000
Life expectancy	26.48	0.000
Dependency ratio	17.33	0.000
Insurance Premiums	25.30	0.000
Insurance Density	21.15	0.000
Takāful Contributions	24.54	0.000
Takāful Density	23.55	0.000