

Akhter, Waheed; Khan, Saad Ullah

Article

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*Corresponding author: Waheed Akhter, Center of Islamic Finance (CIF), COMSATS Institute of Information Technology, Lahore, Pakistan
E-mails: drwaheed@ciitlahore.edu.pk, wakhter007@hotmail.com

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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Determinants of *Takāful* and conventional insurance demand: A regional analysis

Waheed Akhter^{1*} and Saad Ullah Khan²

Abstract: In this study, we focused on analysing and differentiating the determinants of conventional insurance and *Takāful* demand across ASEAN and Middle East Regions. We used panel data econometrics on a sample of 14 Asian countries having both conventional insurance and *Takāful* over the period 2005–2014. We applied fixed and random effect regression models to assess the impact of macroeconomic and demographic factors on conventional insurance and *Takāful* demand. Income and financial sector were found to have significant positive impact on insurance demand across all regions. On the other hand, dependency ratio was found to be negatively affecting *Takāful* demand across all regions while inflation shows positive impact. Urbanization was found to be significant positive impact on both conventional insurance and *Takāful* demand. Financial sector development positively triggers the insurance and *Takāful* demand across ASEAN region, while it triggers conventional insurance demand only in Middle East Region. Education shows negative impact on *Takāful* demand across both regions while it shows positive impact on insurance demand in Middle East. The study recognises the key role of urbanization and education in creating awareness to enhance *Takāful* demand in large populated countries of ASEAN and South Asia.

Subjects: Economics, Finance, Business & Industry; Macroeconomics; Econometrics; Insurance

Keywords: *Takāful* (Islamic Insurance) conventional insurance; middle east; ASEAN

JEL classification: G15; G22; J11; N45; O18

ABOUT THE AUTHORS

Waheed Akhter is an assistant professor at Center of Islamic Finance, COMSATS Institute of Information Technology, Lahore, Pakistan. He has authored one book and published over 20 research papers related to Islamic banking, *Takāful*, Corporate Governance and Risk Management in national and international journals. His research interests encompass Islamic banking, *Takāful*, Islamic Microfinance, Shari'ah Issues and business ethics in Islamic finance, Employee and customer motivation and satisfaction, etc.

Saad Ullah Khan is a research scholar at Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan and aims to pursue his PhD. His areas of interest are related to *Takāful*, Conventional insurance, Role of Islamic finance in economic growth, poverty alleviation and financial inclusion, etc.

PUBLIC INTEREST STATEMENT

This study attempts to investigate the determinants of conventional insurance and *Takāful* demand across ASEAN and Middle East Regions. Our study focuses on a sample of 14 Asian countries having both conventional insurance and *Takāful* over the period 2005–2014. In this study, we found that Income and financial sector were found to have significant positive impact on insurance demand across all regions. On the other hand, dependency ratio was found to be negatively affecting *Takāful* demand across all regions while inflation shows positive impact. Education shows negative impact on *Takāful* demand across both regions while it shows positive impact on insurance demand in Middle East. The study recognises the key role of urbanization and education in creating awareness to enhance *Takāful* demand in large populated countries of ASEAN and South Asia.

1. Introduction

Insurance is considered as a source of risk hedging; saving mobilisation, economic development through long-term investments, fund availability and their proper allocation. However, insurance sector, across most of Asian countries, was ignored, monopolised and publically owned. As a result foreign and private investments in insurance sector were quite limited (Sigma, 2013). However, economic development across most of Asian economies and events, such as Asian financial crisis (1997) and global financial crisis (2007–08), triggered the demand of insurance as risk mitigating and saving tool. Asian market share rose from 3.8 to 30% in 2012 while European and American insurance share declined to 56% (Sigma, 2013). Japan was the main driving force in 1990s followed by other emerging and developed economies such as China, India and Taiwan (Sigma, 2013). In 2014, the world advanced economies insurance growth rate was only 2.9% in comparison to world emerging economies growth rate that is 7.4%. In Asian scenario, emerging economies growth rate in 2014 is 11.8% followed by ASEAN region with 7.2%, Middle East and Central Asian region with 6.4% while in advanced Asian economies growth rate is 3.8% (Sigma, 2015).

Beside government restrictions and economic conditions other factors affecting insurance demand were religious beliefs¹ and regional demographics that lead to establishment of *Takāful* especially for Muslims as an alternative to conventional insurance. Beside its non-*Shari'ah* compliance, insurance contract aims to provide facilitation through risk transferring while *Takāful* based on the concept of risk sharing and brotherhood. Other Difference causing prohibition is the pooled fund investments by conventional insurance operators in interest based securities without consideration of Halal/Haram on which fixed returns are paid. While in case of *Takāful*, profit is obtained through *Shari'ah* compliant modes of financing.² *Takāful* has a rapid growth reaching around US\$ 14 billion globally. Saudi Arabia, ASEAN (Association of Southeast Asian Nations) and GCC (Gulf Cooperation Council) are the main demand drivers for *Takāful* with world *Takāful* market share of 48, 30 and 15%, respectively (Ernst & Young, 2015).

Higher risk due to uncertain events such as global financial crisis and economic growth lead to growth of risk hedging and mitigating products demand and growth-both conventional insurance and *Takāful*. Here, our study contributing to literature in two ways. At first, to our knowledge, we provide the first comparative study across ASEAN and Middle East regions that investigates the determinants of conventional and Islamic insurance demand. Previous literature on comparative studies between insurance and *Takāful* demand determinants is mostly time series nature such as, (Abdullah, 2012; Redzuan, 2014; Yazid, Arifin, Hussin, & Daud, 2012). Secondly, use of macroeconomic and demographic factors as explanatory variables that generalise those used in recent studies pertaining to conventional insurance (e.g. Trinh, Sgro, & Nguyen, 2015; Zerriaa & Noubbigh, 2016) to highlight differences on the demand for *Takāful* and conventional insurance. Our results will be relevant to policy makers of countries where Islamic insurance has proved to be an established or a rising alternative to conventional insurance products. Fixed and Random effect was used to analyse the impact of income, inflation, education, urbanization and dependency ratio on conventional insurance and *Takāful* demand on regional basis as well as for overall sample.

The structure of paper starts with brief introduction regarding insurance and *Takāful* demand across Asian countries. Second section focuses on literature review regarding the previous studies on insurance and *Takāful* demand determinants. After giving brief findings regarding relationships between macroeconomic and demographic factors with insurance and *Takāful* demand we devise hypotheses to test. Third section is research methodology describing target population, sampling, data sources, research model and statistical techniques used to analyse the data. Fourth section discusses the results and compares the findings with previous studies. Last section concludes the paper.

2. Literature review

Most of the previous studies have divided the determinants of insurance and *Takāful* demand into two broad categories of macroeconomic and demographic factors (e.g. Abdullah, 2012; Beck & Webb, 2003; Browne & Kim, 1993; Dragos, 2014; Redzuan, 2014; Yazid et al., 2012). So we also focus to check the effect of macroeconomic and demographic factors on insurance and *Takāful* demand.

Among the macroeconomic factors, income is considered as the most important factor that leads to more affordability and ultimately higher demand for insurance products (Browne & Kim, 1993; Hammond, Houston, & Melander, 1967). Outreville (1996) in his findings showed that to predict insurance consumption or demand income is the key factor as measured by GDP per capita to represent the personal disposable income. Gandolfi and Miners (1996) conducted a study on life insurance demand and found that income is the most significant factor affecting its demand. Using household or national income data, several studies have documented that fact that income has positive impact on demand for property and liability insurance (Beenstock, Dickinson, & Khajuria, 1988; Browne, Chung, & Frees, 2000; Esho, Kirievsky, Ward, & Zurbrugg, 2004). Beck and Webb (2003) studied life insurance demand determinants across 68 countries and found that rise in income leads to rise in human capital which ultimately increases life insurance products' demand. Baharul-Ulum and Yaakob (2003) in their study regarding life insurance demand in Malaysia found that the GDP plays a vital role in reshaping insurance demand. Ćurak and Gašpić (2011) measured income through GDP per capita and found that it was positively associated with demand for life insurance products. Trinh et al. (2015) focused on non-life insurance demand across sample of 67 developed and developing countries using economic, institutional, demographic, social and structural factors as key demand determinants. Their research findings revealed that culture economic freedom, banking sector developments with strong legal system and increasing income level are the key demand drivers for non-life insurance across these sample countries. Zerriaa and Noubbigh (2016) studied economic and socio-demographic factors as life insurance demand determinants across MENA region. Their findings revealed the positive impact of GDP per capita income, inflation and financial sector developments among macroeconomic factors while life expectancy in socio-demographics. Dependency ratio and social security found negatively affecting the insurance demand.

Rahman, Rosylin, and Faizah (2008) studied the impact of macroeconomic variables on demand for family *Takāful* (*Takāful* Malaysia and *Takāful* National) and found that for *Takāful* National (TN) GDP was significant. Redzuan, Rahman, and Aidid (2009) studied the impact of economic factors on family *Takāful* demand and found that affordability for these products to protect their dependents from risk of their premature death rises with the rise in the income level. Abdullah (2012) in their comparative study for life insurance and family *Takāful* in Malaysia also found income as the key demand determinant for life insurance and family *Takāful*. Sherif and Azlina Shaairi (2013) investigated the impact of macroeconomic and socio-demographic factors on family *Takāful* and found that the income has positive and significant impact. Redzuan (2014) also found long- and short-term relationship of per capita income with life insurance and family *Takāful* as positive.

From the above discussion, we devise the following hypothesis to check the significance of per capita income for *Takāful* and conventional insurance demand:

Hypothesis I-A: Significant relationship exists between Per capita income and Conventional insurance demand.

Hypothesis I-B: Significant relationship exists between Per capita income and *Takāful* demand.

Inflation is another most important factor as customers are sensitive to the change in inflation realised or anticipated, and this might result in reducing the consumption of insurance products (Babbal, 1981). Mixed evidence was found by researchers regarding impact of inflation on insurance demand. For example, Li, Moshirian, Nguyen, and Wee (2007) in their research findings stated that

negative relationship of inflation with demand of these insurance products results in their less desirability and attractiveness. Insurance products are used as saving instruments used for long-term financial and monetary benefits, and if there is uncertainty regarding these benefits, it results in decline of insurance demand (Beck & Webb, 2003; Outreville, 1996). On the other hand, Hwang and Gao (2003), in opposition to it in their study findings, found that insurance demand, in case of China, was not adversely affected by higher inflation. They elucidated that in higher inflation period, higher economic growth is also there. So people using these products were less responsive towards change in their demand for insurance products. Inflation is also a key factor that can affect insurance pricing policies and their related supply decisions.

Rahman et al. (2008) in their study for demand of life *Takāful* (*Takāful* Malaysia and *Takāful* National) and found that CPI was found insignificant for both organizations. Redzuan et al. (2009) depicted negative but insignificant relationship of inflation with family *Takāful* demand. They asserted that inflation depresses the value of financial assets, life insurance and family *Takāful* products. Abdullah (2012) in their comparative study for life insurance and family *Takāful* found inflation negative for family *Takāful* demand, while positive but for insurance demand. However, both results were insignificant. On the other hand, Redzuan (2014) found significant negative relationship of inflation with insurance demand but for family *Takāful* results are ambiguous as it has only long-term positive relationship.

On the basis of above discussion, we can devise the following hypotheses to testify the significant impact of inflation on conventional insurance and *Takāful* demand.

Hypothesis II-A: Significant relationship exists between inflation rate and Conventional insurance demand.

Hypothesis II-B: Significant relationship exists between inflation rate and *Takāful* demand.

Financial sector developments play a vital role towards the economic growth through strengthening the financial institutions and building investors confidence. Cash flows and financial assets securitization create a close links between financial sector developments and insurance demand. On the other hand, after the global financial crisis, financial sectors (especially banking developments) more focused on insurance backed investments to minimise the contingent losses. Financial sector development encourages investors to obtain ownership of financial assets to secure their future income and to expand their operations. So it generates need to secure these assets through insurance products results their increasing demand (Beck & Webb, 2003; Li et al., 2007). Here, we used the domestic credit to private sector by banks as its proxy following the Feyen, Lester, and Rocha (2011) and Trinh et al. (2015). So here we will testify the impact of financial sector developments on the growth of conventional insurance and *Takāful* demand.

Hypothesis III-A: There exists a significant relationship between financial sector developments and Conventional insurance demand.

Hypothesis III-B: There exists a significant relationship between financial sector developments and *Takāful* demand.

Education is a demographic factor used as proxy for level of risk aversion and awareness. There is ambiguous relationship of life insurance and education as proxy for level of awareness and risk aversion in larger part of literature as life insurance demand determinants (Zietz, 2003). There is positive relationship found between education and life insurance demand as people having higher education tend to protect their dependents from premature death of the family head (Browne & Kim, 1993; Truett & Truett, 1990). Certain studies (Anderson & Nevin, 1975; Auerbach & Kotlikoff, 1989; Duker, 1969) found negative relationship between life insurance and level of education suggesting that more people involvement in gaining higher education reduces labour force affecting GDP of that

country. There are studies that found insignificant relationship between life insurance and education or schooling as argued that insurance education is not basically provided at schools (Beck & Webb, 2003; Hau, 2000; Li et al., 2007; Ofoghi & Farsangi, 2013; Treerattanapun, 2011). And they also stated that educated people having insurance knowledge are more risk averse than without that knowledge. Tan, Wong, and Law (2009) stated that people learn about life insurance mostly through insurance agents rather than educational institutes. But in case of the general insurance, all studies indicate positive relationship between general insurance and education illustrating that education enhances knowledge regarding financial stability threats, insurance benefits and awareness of risk mitigation (Curak, Dzaja, & Pepur, 2013; Ofoghi & Farsangi, 2013).

Similarly, mixed evidence was found regarding impact of education on demand for *Takāful* products. For example, Hawariyuni (2006) in her study indicated that education is not a significant variable affecting *Takāful* demand as it is not necessary that highly educated people will buy these *Takāful* products. Sherif (2010) determined that education was found having positive influence on *Takāful* demand. Abdullah (2012) found positive but insignificant impact of education on demand for life insurance and family *Takāful*. Redzuan (2014), in his study analysing Malaysian life insurance and family *Takāful* from period 1970–2008 using ARDL approach, found significantly positive and long run impact of education level on life insurance and family *Takāful* demand.

On the basis of above discussion, we can expect that education can play an important role in enhancing awareness about insurance and *Takāful* products. So our hypothesis will be:

Hypothesis IV-A: There exists a significant relationship between education level and Conventional insurance demand.

Hypothesis IV-B: There exists a significant relationship between education and *Takāful* demand.

Urbanization is another demographic factor that has an impact on insurance and *Takāful* demand due to industrialisation and expansion of cities and towns. It provides opportunities for insurance sector to grow especially in developing economies. Hwang and Gao (2003) in their study found a positive impact of urbanization on saving propensity of urban people. They argue that insurance can play a vital role in providing protection and financial security to small families. Life insurance products and urbanization are found positively related in Asian countries scenario (Sen, 2008; Sen & Madheswaran, 2007). However, some studies have found insignificant impact of urbanization on life insurance in Central and East European countries (Beck & Webb, 2003; Nesterova, 2008). For non-life insurance demand, Park and Lemaire (2011) found positive relationship of urbanization while it was found insignificant by Treerattanapun (2011). Dragos (2014) found positive and significant impact over non-life insurance for both Asian and Central and East European countries (CEE), but positive and significant for life insurance in Asian region only. Yazid et al. (2012) developed a conceptual framework for family *Takāful* demand and proposed a positive relationship between *Takāful* demand and urbanization. Hence, we can devise the following hypotheses for urbanization:

Hypothesis V-A: There exists a significant relationship between urbanization and Conventional insurance demand.

Hypothesis V-B: There exists a significant relationship between urbanization and *Takāful* demand.

Dependency ratio is also considered another important factor affecting insurance and *Takāful* demand. Lenten and Rulli (2006) defined dependency ratio as average family members young or old dependent for support on the primary income earner. Providing protection from financial hardships to their dependent family members is basic driving force for the demand and consumption of these insurance products (Burnett & Palmer, 1984; Lewis, 1989). There are studies that have documented a positive relationship between dependency ratio and insurance demand (Chui & Kwok, 2008; Ćurak

& Gašpić, 2011; Li et al., 2007). On the other hand, some studies provide evidence that young dependency ratio causes a decline in life insurance demand for saving motive (Beck & Webb, 2003; Sen, 2008; Sen & Madheswaran, 2007). They also stated that maximisation of the beneficiaries' expected lifetime utility is the driving force to the demand for insurance. For primary wage earners (family supporter) larger family size can be a cause of financial sources limit indicating negative relationship between dependents and insurance consumption. While in older dependency ratio scenario, there exists a positive relationship.

In case of *Takāful* demand, Sherif (2010) found positive impact of dependency ratio and family *Takāful* demand revealing that increase in it will trigger the family *Takāful* demand. While Yazid et al. (2012) in their conceptual framework for family *Takāful* demand expects positive impact of dependency ratio. Redzuan (2014) found both long run and short run positive impact of number of dependents on life insurance and family *Takāful* in Malaysia. To testify this relationship of it with conventional insurance and *Takāful* demand following hypotheses developed.

Hypothesis VI-A: There exists a significant relationship between dependency ratio and Conventional insurance demand.

Hypothesis VI-B: There exists a significant relationship between dependency ratio and *Takāful* demand.

3. Research methodology and preliminary analysis

There are around 33 countries worldwide where both *Takāful* and conventional insurance operators exist (Appendix 1). For sampling purpose we focused on only Asian countries where both *Takāful* and conventional insurance exist and their data were available. We found 19 countries³ in Asia where both *Takāful* and conventional insurance operators exist. On the basis of data availability our sample consisted of 14 Asian economies—3 South Asian countries (Bangladesh, Pakistan, Sri Lanka), 8 Middle East (Iran, Saudi Arabia, Bahrain, Lebanon, United Arab Emirates, Qatar, Jordan and Kuwait) and 3 ASEAN (Indonesia, Malaysia, Thailand). The availability of data was one key motivating factor behind selection of these economies. We also focus on analysing the insurance and *Takāful* demand determinants across ASEAN⁴ and Middle East⁵ regions. We further compared these regions to check the difference demand determinants of insurance and *Takāful*.

We collected 10 years annual aggregate data for the time period 2005–2014 using different secondary sources. The Insurance premium figures were collected from various issues of Sigma (2015), a publication from Swiss Re. *Takāful* contributions data was collected from yearly issues of world *Takāful* Conference, Ernst and Young (2015) reports. The macroeconomic and demographic factors used were collected from the World Development Indicators (WDI) 2015 (World Bank, 2015). The explanatory variables in the model were economic and demographic variables.

We developed two panel data regression models separately for both insurance and *Takāful*. These models for the insurance and *Takāful* demand were represented by dependent variables: Insurance and *Takāful* densities. We used 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 analyse the relationship among variables, Fixed and Random Effect models were used. Later Hausman (1978) specification test was used as selection criteria to select the suitable model among Fixed or Random effect models. The research models are as follows:

$$Y_{D \text{ insurance/Takāful}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon$$

where $Y_{D \text{ (insurance)}}$ = Demand for Insurance measured through insurance density (Insurance premiums written are divided by total population); $Y_{D \text{ (Takāful)}}$ = Demand for *Takāful* measured through *Takāful* density (*Takāful* contributions written are divided by total population); X_1 = per capita income; it is measured through GDP per capita (GDP in millions US dollar divided by total population available through World Development Indicators); X_2 = Inflation; measured through change in CPI (available at World Development Indicators); X_3 = Urbanization; measured through percentage of population in urban area (available at World Development Indicators); X_4 = Dependency ratio; measured through average number of dependents (available at World Development Indicators); X_5 = Education; measured through tertiary (%) school enrollment, (Total enrollment in tertiary education from total population available at World Development indicators); X_6 = Financial sector developments; measured through domestic credit to private sector by banks, (available at World Development Indicators); ϵ = Error term.

Table 1 reveals the insurance and *Takāful* demand on density basis across the overall sample, ASEAN, Middle East and South Asian regions. While the given below figures show the insurance and *Takāful* growth across ASEAN, Middle East and South Asian regions on their densities CAGR (Compound Annual Growth Rate) basis. These findings reveal that for insurance and *Takāful* growth rates are higher in ASEAN region, followed by Saudi Arabia, GCC, South Asia and Levant countries.

To check the trend of all dependent and independent variables across the ASEAN, South Asia and Middle East regions are defined in graphical representation shown in Figure 1. The Figure 1 shows higher dependency ratio and inflation across the South Asian region followed by ASEAN and Middle East regions. Per capita income and Urbanization are highest across Middle East followed by the ASEAN and South Asian regions, respectively. Education is highest among the ASEAN region followed by the Middle East and South Asian regions, respectively.

Among dependent variables, the insurance and *Takāful* Densities are highest in Middle East followed by the ASEAN and South Asian region. These amounts for insurance and *Takāful* in Table 1 as well as figures shown below depicts that the demand rise in *Takāful* and Insurance especially after the financial crisis (2007–2008) time period. Due to lower urbanization, per capita income, *Takāful* recent emergence, people religious and personal hesitancy towards insurance and *Takāful* products with their lower awareness, insurance sector is still struggling especially in South Asian region.

Table 1. Descriptive statistics of conventional insurance and *Takāful* demand

Region	Insurance demand			Takāful demand		
	Mean	Median	S.D.	Mean	Median	S.D.
Overall	236.9201	226.3807	55.14612	43.52092	45.31873	20.12828
Middle east	329.8462	313.839	73.21793	65.95812	72.31181	28.18699
ASEAN	215.8705	206.4358	68.97616	17.1688	16.14509	9.747923
South Asia	14.15594	13.88243	3.731715	0.474206	0.574459	0.252421

Notes: The above table shows the descriptive statistics results for conventional insurance and *Takāful* demand.

Conventional insurance demand is measured through insurance density (Insurance premiums written divided by total population). *Takāful* demand is measured through *Takāful* density (*Takāful* contributions written divided by total population). Middle East Region consists of countries of Saudi Arabia, Iran, Jordan, Lebanon, Kuwait, Qatar, United Arab Emirates and Bahrain. ASEAN Region consists of countries Malaysia, Indonesia and Thailand. South Asian region consists of Countries of Pakistan, Srilanka and Bangladesh.

Source: Authors' own calculation using STATA 11 software.

Figure 1. Dependent and independent factors across sample regions.

Source: Authors' own calculations based on sample data.



4. Results and discussion

We focused to analyse the data to check the relationships between dependent (insurance and *Takāful* demand) and independent (income, inflation, urbanization, education and dependency ratio) variables. We applied Fixed and random effect models and criteria for selection among these fixed or random models is Hausman (1978) specification test. Here, we first focus on Overall sample then we will attempt to analyse these independent factors impact over insurance and *Takāful* demand across ASEAN and Middle East Regions.

Here, Table 2 represents the overall sample analysis for conventional insurance and *Takāful* (Islamic insurance) demand. For insurance and *Takāful* demand, income (income elasticity as per capita income in log form) shows positive and significant impact indicating that as per capita income rises the demand for these risks mitigating products also increases. Urbanization shows positive and significant impact for both insurance and *Takāful* demand indicating that rise in population shift to urban areas due to industrialisation leads to higher income and awareness regarding these products

Table 2. Results of fixed effects regression model for conventional insurance and *Takāful* demand

Variable	Insurance demand	<i>Takāful</i> demand
Income	0.589*** (5.59)	0.614** (1.98)
Inflation	0.001*** (3.61)	0.005*** (4.81)
Financial developments	0.002** (2.49)	0.003 (0.93)
Education	0.011* (1.75)	−0.029 (−1.57)
Urbanization	0.033*** (4.53)	0.113*** (5.07)
Dependency ratio	−0.002 (−0.85)	−0.039*** (−5.29)
Constant	−2.673*** (−5.80)	−3.517*** (−2.49)
Hausman test value	24.03***	12.96***
No. of observations	140	140

Notes: The above table shows the results of fixed effect regression for conventional insurance and *Takāful* demand. Conventional insurance demand is measured through insurance density (Insurance premiums written divided by total population). *Takāful* demand is measured through *Takāful* density (*Takāful* contributions written divided by total population). Income is measured through GDP per capita (GDP in millions US dollars divided by total population). Urbanization is measured through percentage of population in urban area. Education is measured through tertiary (%) school enrollment Education. Inflation is measured through change in CPI (consumer price index). Dependency ratio is measured through average number of dependents. Financial sector developments measured through credits of banks to private sector. Data for Conventional insurance and *Takāful* demand were collected from Swiss Re Sigma Reports and Ernst & Young Reports, respectively. Data for independent variables was taken from world development indicators. Hausman test is used to select fixed or random effect regression model. Values in parentheses show t-values of respective co-efficients using fixed effect models.

Source: Authors' own calculation using STATA 11 software.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

especially for after retirement life and to protect their assets. Inflation also depicts positive impact on both products demand indicating triggering effect as a result of increasing risk in investing and business environment especially after the global financial crisis.

Fourth hypothesis regarding impact of education on insurance and *Takāful* demand is verified for the insurance demand scenario while education is negative but insignificant affecting on *Takāful* demand. This ambiguous relationship of *Takāful* demand with education determined that there is lack of awareness regarding *Takāful* products as it is in its initial stage across certain sample countries leads to lower demand for it. There is still ambiguity in the minds of the general public compliance regarding its *Shari'ah* compliance as they are not able to differentiate properly due to lack of knowledge and awareness. While to protect their dependents from financial distresses and to save for their after retirement life they prefer insurance demand due to higher awareness of these conventional insurance products. Inflation shows positive and significant impact for insurance and *Takāful* demand. For *Takāful* and insurance products demand, it triggers its demand due to their risk hedging attributes as rising risk in business environment forcing higher demand for these risk mitigating products for securing investments purpose dependency ratio shows negative for both but

significant impact on *Takāful* demand indicating that rise in number of dependents leads to decline in the demand for insurance and *Takāful*. Financial sector developments show positive impacts on both products demand but significant only for conventional insurance. Developments in financial sector leads to higher demand for these risk hedging products to mitigate risks. It also indicates that higher growth among other financial sectors (e.g. banking sector) leads to expand of their business and financial assets, to secure them insurance demand increases.

In Table 3, results of fixed effect regression are presented for ASEAN region analysis to analyse the factors affecting insurance and *Takāful* demand. Here, financial sector developments, urbanization and inflation affect positively while dependency ratio⁶ has negative impact, respectively, on *Takāful* demand. These findings indicate that although there is lower urbanization prevails but with the passage of time people are shifting towards urban areas and due to their religious beliefs they prefer

Table 3. Results of fixed effects regression model for conventional insurance and *Takāful* demand in ASEAN region

Variable	Insurance demand	<i>Takāful</i> demand
Income	1.232*** (8.82)	-0.154* (-1.69)
Inflation	-0.396*** (-4.31)	0.618*** (4.75)
Financial developments	0.002*** (4.99)	0.002** (2.39)
Education	-0.004 (-0.87)	-0.006** (-2.17)
Urbanization	0.003*** (3.71)	0.121*** (3.00)
Dependency ratio	-0.015*** (-4.99)	-0.027** (-1.99)
Constant	-1.19*** (-4.74)	-7.023*** (-3.39)
Hausman test value	18.79**	47.05***
No. of observations	60	60

Notes: The above table shows the results of fixed effect regression for conventional insurance and *Takāful* demand in ASEAN region. Conventional insurance demand is measured through insurance density (Insurance premiums written divided by total population). *Takāful* demand is measured through *Takāful* density (*Takāful* contributions written divided by total population). Income is measured through GDP per capita (GDP in millions US dollars divided by total population). Urbanization is measured through percentage of population in urban area. Education is measured through tertiary (%) school enrollment Education. Inflation is measured through change in CPI (consumer price index). Dependency ratio is measured through average number of dependents. Financial sector developments measured through credits of banks to private sector. Data for Conventional insurance and *Takāful* demand were collected from Swiss Re Sigma Reports and Ernst & Young Reports, respectively. Data for independent variables was taken from world development indicators. Hausman test is used to select fixed or random effect regression model. Values in parentheses show *t*-values of respective co-efficients using fixed effect models.

South Asian countries have been merged with ASEAN countries as they have less than 5% *Takāful* share in the world *Takāful* market (Ernst & Young, 2015).

Source: Authors' own calculation using STATA 11 software.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

these *Shari'ah* complaint products. While rising inflation increases the risk in environment also triggers these products demand but higher number of dependents make difficult to save especially in these long-term investments due to their lower affordability (purchasing power) and higher family expenditures. Similarly financial sector developments build confidence of the investors which ultimately increases the demand for these insurance products. Income shows negative and significant impact over *Takāful* demand illustrates that income elasticity (as per capita income in log form) is lower for these *Takāful* products indicating higher change in per capita income with respect to their density especially in south Asian countries where it is still in its initial stages. This is due to its recent emergence, lack of awareness and ambiguity with regard to understanding of these products *Shari'ah* compliance in the mind of general public. Education factor shows negative and significant impact determining that there is lack of awareness affecting negatively to *Takāful* demand.

For insurance, income with financial sector developments and urbanization are the significant factors affecting positively indicating that rises in per capita income, financial sector developments and rising migration to urban population with increasing level of awareness regarding these products trigger the demand for insurance. On the other hand, inflation and dependency ratio are negatively affecting insurance; however, education results are negative but insignificant even at 10% level. Inflation has negative and significant impact indicating that rise in inflation decline the insurance demand as it increases the risk in the environment also affects the purchasing power of people and their decisions to purchase these insurance policies. Dependency ratio negatively affects as higher number of dependents results in lower savings funds availability.

Table 4 shows fixed effect regression results for conventional insurance demand while random effect regression results for *Takāful* demand. Both results for insurance and *Takāful* demand determinants are shown for Middle East⁷ region. Income, Urbanization, financial sector developments, inflation and Education are the factors having significant and positive impact on insurance demand while dependency ratio affects negatively. Urbanization and inflation found positively and significantly affecting *Takāful* demand while dependency ratio and education negatively affecting it. Financial sector developments shows positive but insignificant impact on *Takāful* demand due to its lack of awareness and newly emergence. Income (income elasticity as it is in log form) factor shows negative relationship indicating that although in most of the Middle East countries *Takāful* demand increases but relative change in per capita income is greater with respect to change in *Takāful* density due to its recent emergence across these countries. This negative relationship between income and *Takāful* demand can be explained with income inequality across the people especially in this region. Beenstock, Dickinson, and Khajuria (1986) concluded that if higher income inequality exists then higher income people do not demand for insurance protection plans while lower income people due to their financial limitations and lower budget availability do not demand these products. They further examined that middle class are the main driving force behind the insurance products demand. Eck and Nizovtsev (2006) determined that countries where similar income distribution prevails then income equality positively influence to insurance demand.

In overall analysis our hypothesis regarding the positive impact of income on insurance and *Takāful* demand is affirmed in most of the scenarios and is aligned with the findings of Ward and Zurbrueg (2002), Beck and Webb (2003), Sherif (2010), Abdullah (2012), Redzuan et al. (2009), Trinh et al. (2015), Zerriaa and Noubbigh (2016). They determined that rising income positively trigger these insurance and *Takāful* products demand. But negative relationship found in case of the Middle East and ASEAN explained as *Takāful* emerged recently there so the per capita income rise is more as compared to its density. *Takāful* demand is growing as people are now shifting towards it for the sake of “peace of mind” due to its *Shari'ah* compliance and even willing to pay higher prices result in increasing demand.

Hypothesis regarding positive influence of urbanization on insurance and *Takāful* demand also affirmed and in line with the research findings of Hwang and Gao (2003), Dragos (2014), Park and Lemaire (2011), Yazid et al. (2012), Trinh et al. (2015), Zerriaa and Noubbigh (2016). Positive

Table 4. Results of fixed and random effects regression model for conventional insurance and *Takāful* demand in middle east region

Variable	Insurance demand	<i>Takāful</i> demand
Income	0.273** (2.10)	−0.636** (−2.43)
Inflation	0.862*** (3.91)	0.351** (2.58)
Financial developments	0.006* (1.67)	0.007 (0.38)
Education	0.026*** (2.70)	−0.031* (−1.79)
Urbanization	0.033** (2.52)	0.128*** (4.70)
Dependency ratio	−0.005* (−1.79)	−0.041*** (−5.73)
Constant	−3.588*** (−3.12)	−5.635** (−2.40)
Hausman test value	26.79***	11.43**
No. of observations	80	80

Notes: The above table shows the results of fixed and random effect regression for conventional insurance and *Takāful* demand in Middle East region. Conventional insurance demand is measured through insurance density (Insurance premiums written divided by total population). *Takāful* demand is measured through *Takāful* density (*Takāful* contributions written divided by total population). Income is measured through GDP per capita (GDP in millions US dollars divided by total population). Urbanization is measured through percentage of population in urban area. Education is measured through tertiary (%) school enrollment Education. Inflation is measured through change in CPI (consumer price index). Dependency ratio is measured through average number of dependents. Financial sector developments measured through credits of banks to private sector. Data for Conventional insurance and *Takāful* demand were collected from Swiss Re Sigma Reports and Ernst & Young Reports, respectively. Data for independent variables was taken from world development indicators. Hausman test is used to select fixed or random effect regression model. Values in parentheses show t-values of respective co-efficients using fixed effect models.

Source: Authors' own calculation using STATA 11 software.

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

relationship of urbanization across all regions can be explained with higher urban population increases the awareness and need to secure the family with their valued assets across all Asian regions of our sample. Education factor results are ambiguous and in line with the findings of Zietz (2003) who found that it affects positively the insurance demand while negatively the *Takāful* demand indicating its lower awareness due to *Takāful* emergence across most of sample countries.

Inflation was found to be positively triggering the insurance and *Takāful* demand. It is also in line with the findings of Hwang and Gao (2003) who found that insurance products demand are not affected in higher inflation period as economic growth also going on across the economies. Dependency ratio factor was found to be negatively but significantly affecting both insurance and *Takāful* demand indicating that higher number of dependents either old or young reduces purchasing power and generate budget constraints to purchase insurance and *Takāful* policies. This is in line with the findings of Beck and Webb (2003), Sen and Madheswaran (2007), Sen (2008) who concluded that larger family size can be a cause of financial sources limit indicating negative relationship between dependents and insurance consumption. This result is contrary to the findings of Sherif (2010),

Yazid et al. (2012) and Redzuan (2014) who found a positive impact of dependency ratio on *Takāful* demand in Malaysian economy. This might be due to lack of awareness of *Takāful* in other sample countries. Financial sector development are found positively affecting the insurance demand in most of the scenarios. But for *Takāful* demand it is insignificant indicating these developments play vital role in building confidence on other institutions for investments but lack of awareness and recent emergence regarding it are creating hurdles in its growth. The global financial crisis also played its role towards these products growth as it turns investors to make secured investments and banking sector also focusing on making insurance linked investments (e.g. leasing). This is in line with the findings of Trinh et al. (2015).

Table 5 gives overall summary of results for ASEAN region, Middle East region and overall sample. It shows that income and financial developments across all scenarios but inflation and education are positively and significantly affecting conventional insurance in overall and Middle East regions. In case of ASEAN region inflation found negatively affecting the insurance demand but positively to *Takāful* demand. Urbanization found positively and significantly affecting both conventional insurance and *Takāful* demand in overall sample while dependency ratio found negatively affecting.

Table 6 shows the results summary of hypotheses tested. These also confirm that hypotheses for income, inflation and urbanization are accepted for both conventional insurance and *Takāful* demand. On the other hand, hypothesis for education depicted ambiguous results as it was accepted for *Takāful* in Middle East and ASEAN regions but affecting negatively while positively in case of insurance in Middle East and overall cases. It shows lack of awareness of *Takāful* especially in ASEAN and South Asian regions which consist of largely populated countries and have low level of *Takāful* contribution as evident in low level of *Takāful* density in descriptive statistics of Table 1. On the other hand, hypothesis for dependency ratio was accepted for both conventional insurance and *Takāful* demand in most scenarios affecting negatively their demand. However, positive impact of financial sector developments was found on insurance demand in only. Rejection of financial sector developments for *Takāful* can be attributed for low level of awareness among largely populated countries and its recent emergence.

5. Conclusion and research implications

We estimated the differentiated effects of income, inflation, financial sector developments, dependency ratio, urbanization and education over insurance and *Takāful* demand across 14 Asian countries, where both *Takāful* and insurance operators work at same time. Our main aims to analyze and

Table 5. Overall results summary

Variable	Overall sample		ASEAN		Middle east	
	Insurance demand	<i>Takāful</i> demand	Insurance demand	<i>Takāful</i> demand	Insurance demand	<i>Takāful</i> demand
Income	+	+	+	—	+	—
Inflation	+	+	—	+	+	+
Finan. develop	+	+	+	+	+	+
Education	+	—	—	—	+	—
Urbanization	+	+	+	+	+	+
Dependency ratio	—	—	—	—	—	—

*Significance at 10% level.

**Significance at 5% level.

***Significance at 1% level.

Table 6. Results summary of hypotheses tested

Hypotheses	Overall sample	ASEAN	Middle east
Hypothesis I-A: Significant relationship exists between Per capita income and conventional insurance demand	Accepted	Accepted	Accepted
Hypothesis I-B: Significant relationship exists between Per capita income and <i>Takāful</i> demand	Accepted	Accepted	Accepted
Hypothesis II-A: There is significant relationship existing between inflation rate and conventional insurance demand	Accepted	Accepted	Accepted
Hypothesis II-B: There is significant relationship exist between inflation rate and <i>Takāful</i> demand	Accepted	Accepted	Accepted
Hypothesis III-A: There is significant relationship existing between financial sector developments and conventional insurance demand	Accepted	Accepted	Accepted
Hypothesis III-B: There is significant relationship existing between financial sector developments and <i>Takāful</i> demand	Rejected	Accepted	Rejected
Hypothesis IV-A: There is significant relationship existing between education level and conventional insurance demand	Accepted	Rejected	Accepted
Hypothesis IV-B: There is significant relationship existing between education level and <i>Takāful</i> demand	Rejected	Accepted	Accepted
Hypothesis V-A: There is significant relationship between urbanization and conventional insurance demand	Accepted	Accepted	Accepted
Hypothesis V-B: There is significant relationship between urbanization and <i>Takāful</i> demand	Accepted	Accepted	Accepted
Hypothesis VI-A: There is significant relationship existing between dependency ratio and conventional insurance demand	Rejected	Accepted	Accepted
Hypothesis VI-B: There is significant relationship existing between dependency ratio and <i>Takāful</i> demand	Accepted	Accepted	Accepted

Note: These results of hypotheses were accepted and rejected at 5 and 1% level only.

differentiate the insurance and *Takāful* demand determinants across ASEAN and Middle East regions. For conventional insurance demand, income, urbanization, financial sector developments, inflation and education are the significant factors, while for *Takāful* demand, inflation, income, education, urbanization and dependency ratio are significant factors affecting their relative demand. For ASEAN regions, income, urbanization and financial sector developments have significant positive impact for both insurance and *Takāful* demand but dependency ratio shows negative impact. Inflation shows positive impact for *Takāful* demand while negative impact on insurance. In Case of Middle East region, income, inflation and urbanization shows positive impact on both products demand while dependency reveals negative impact. Education shows positive triggering insurance demand while affecting negatively to *Takāful* demand due to lack of its awareness.

Rising per capita income and urbanization provide growth opportunities for both insurance and *Takāful* products across these countries. ASEAN and South Asia region has lower urbanization especially in South Asian region providing opportunities for both insurance and *Takāful* operators to grow by providing awareness to general public through education. In ASEAN region *Takāful* demand is on acceleration with respect to insurance followed by Middle East. In Middle East region *Takāful* demand (on density basis) is quite lower in comparison to that of insurance. Growth in per capita income, education level, financial sector developments with rising risk due to inflation and urbanization provide growth opportunities for both insurance and *Takāful* due to larger resources available to purchase these insurance and *Takāful* products by carefully targeting and attracting people from this (Middle East) region. Higher dependency ratio with lower awareness level (indicated through level of education) is negatively influencing and creating hurdles, especially to the *Takāful* demand across ASEAN region. The impact of inflation is also positively with *Takāful* demand indicating that people due to their religious beliefs are also preferring these *Shari'ah* compliant products with rising inflation especially in ASEAN.

Policy makers need to devise policies and create awareness regarding *Takāful*, as it is at the emerging stage across the ASEAN and Middle East regions and even quite low in South Asian region. This research has recognised the key role of urbanization in the growth of both conventional insurance and *Takāful*. So policy makers need to focus on devising policies that can that can upgrade the process of urbanization and education in ASEAN and South Asian countries with large population living in remote areas having limited access to education and other urban facilities. These research findings also provide insights that demographic and economic effects vary across regions so policy makers need to target these regions according to their cultural and economic structures to promote insurance and *Takāful* industry.

Future researchers might focus on other factors that can accurately measure awareness of insurance and *Takāful* as no education is given at tertiary level at the institutions about insurance and knowledge of *Takāful* is even more limited in highly educated people (Akhter & Hussain, 2012). So Education might not be considered a true measure and proxy for awareness of *Takāful*. Future studies could be conducted using insurance and *Takāful* product lines (life or nonlife insurance with family or general *Takāful*) considering global financial crisis, institutional and political factors impact on their demand.

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Author details

Waheed Akhter¹

E-mails: drwaheed@ciitlahore.edu.pk, wakhter007@hotmail.com

Saad Ullah Khan²

E-mail: saadullahkhans@yahoo.com

¹ Center of Islamic Finance (CIF), COMSATS Institute of Information Technology, Lahore, Pakistan.

² Department of Management Sciences, COMSATS Institute of Information Technology, Lahore, Pakistan.

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Notes

1. Acceptability of conventional insurance in Muslim majority countries became questionable in the eyes of *Shari'ah* due to its prohibited elements of *Riba* (interest), *Gharar* (uncertainty) and *Maisir* (gambling) in insurance transactions. Muslims population constitute 22% of overall World population and due to their religious beliefs most of them hesitant to use insurance services and products. This unacceptability of insurance for Muslims led to the establishment of *Takāful* to fulfill the needs of larger Muslim population (for details see Akhter & Khan, 2015; Ayub, 2003, 2009; El-Gamal, 2001).
2. There are two broad types of mode of financing: *Musharakah* and *Modarba* are considered Equity based modes of financing; *Salam* and *Istisna'* are considered debt based modes of financing; *Ijarah* is considered semi-debt mode of financing. For details see Ayub (2009).
3. Sources: *Takāful* Re Annual Reports and Ernst and Young (2015). Other Asian countries excluded due to data availability are Palestine, Turkey, Yemen, Brunei and Singapore. We also excluded regions e.g. Africa region.
4. ASEAN Region consisted of countries Malaysia, Indonesia, Thailand as well as three South Asian Countries of Pakistan, Sri Lanka and Bangladesh for econometric analysis purpose.

5. Middle East Region consisted of countries of Saudi Arabia, Iran, Jordan, Lebanon, Kuwait, Qatar, United Arab Emirates and Bahrain for analysis purpose.

6. In ASEAN and South Asian Countries there is higher dependency ratio but lower per capita income and urbanization prevailed as evidenced in graphs shown. Insurance and *Takāful* density revealed growth across all regions Middle East, ASEAN or South Asian countries. But *Takāful* demand growth led by ASEAN region followed by Saudi Arabia and GCC countries evidenced from their relative compound annual growth rates (CAGR). In south Asian countries lower education level and higher inflation prevails in comparison to Middle East and ASEAN countries.

7. In the Middle East region there is higher per capita income, insurance and *Takāful* density prevailed. On the basis of CAGR of insurance and *Takāful* products demand is growing in Middle East regions after ASEAN. Higher per capita income, urbanization with lower dependency ratio and inflation provide.

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Appendix 1

Number of companies and countries Takāful and Re-Takāful exist in overall world

Location	Number	Location	Number	Location	Number
1. Saudi Arabia	23	12. Syria	4	23. Singapore	1
2. Jordan	3	13. Yemen	1	24. Sri Lanka	2
3.UAE	7	14. Algeria	1	25. Iran	15
4.Bahrain	9	15. Indonesia	6	26. Australia	1
5. Kuwait	11	16. Luxembourg	2	27. Thailand	1
6.Egypt	4	17. Malaysia	9	28. Trinidad	1
7. Lebanon	1	18. Mauritania	1	29. Turkey	2
8.Palestine	2	19. Pakistan	5	30. Bahamas	1
9.Qatar	5	20. Ghana	1	31. Britain	1
10. Libya	1	21. Brunei	4	32. Bangladesh	1
11. Sudan	15	22. Senegal	2	33. Gambia	1



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