

## **Economic Determinants of Family Takaful Consumption: Evidence From Malaysia**

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The Malaysian takaful industry has experienced encouraging growth since its inception in 1985. Annual growth rate of the industry has been estimated at 20%. This research aims to identify the driving force of family takaful consumption in Malaysia. Using time series data over the period 1985-2007, this study finds that income per capita is a robust predictor of family takaful demand, while long-term interest rate and composite stock index have significant relationship with family takaful consumption. Other factors such as inflation and savings rates do not appear to significantly influence family takaful purchase.

Field of Research: Islamic Insurance, Finance

### **1. Introduction**

Insurance is a product designed to provide protection to individuals and businesses against specified contingencies, created out of humans' quest for security and stability. Takaful is an insurance system that complies to Islamic regulations. The concept of takaful or Islamic insurance was first introduced in Sudan in 1979, inspired by the growing needs of the Muslim consumers for an insurance protection that conforms to the Islamic law. In Malaysia, the establishment of the first takaful operator took place in 1985. As in conventional life insurance, the significance of takaful as an integral part of the financial system is exhibited in the growing rate of market penetration, defined as the ratio of the number of certificates in force to total population. The penetration rate in the Malaysian takaful industry increases from 5.62 percent in 2005 to 6.45 percent in 2006.

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The rate for the life insurance market is 38.7 and 39.54 in 2005 and 2006 respectively. For the period 1990 to 2006, the combined market penetration rate for conventional insurance and takaful has shown encouraging growth, increasing from 13.52 percent to almost 46 percent. Although domestic per capita expenditure on life insurance and family takaful remains higher than the regional average for Asia, it is still far below the levels achieved by more developed Asian markets such as Singapore and Taiwan, with per capita expenditures of 6 times higher. Furthermore, domestic premium income to GNP in 2006 is relatively lower than the level observed in more saturated Asian markets (Central Bank Report, 2005). A large potential market for takaful in Malaysia still remain untapped to its fullest. A significant component of this untapped market comprised Malaysian Muslims (Central Bank Report, 2001), thus the insurance sector, particularly takaful operators, should put greater effort in tapping these markets.

Understanding the factors that influence insurance and takaful consumption is crucial to capture the full potential for growth in the industry. This study undertakes to identify the macroeconomic factors that influence the demand for family takaful plans in Malaysia. Economic prospects such as rising disposable income level has been proven to provide support for positive growth in insurance and other financial markets. To summarize the research questions, this study seeks to identify the relationship, if any, that exist between the demand for family takaful, and a set of theoretically identified macro-level variables. This study sets out three primary objectives relating to the Malaysian takaful industry. The first objective is to provide background of takaful and of the Malaysian takaful industry. The second objective is to investigate the relationships that may exist between the demand for family takaful, and a set of theorized variables. Finally, this study aims to suggest some implications of the empirical results relating to the demand for family takaful.

## 2. Overview Of Takaful

Takaful is a system of Islamic insurance based on the principle of mutual cooperation (*ta'awun*) and donation (*tabarru'*), where the risk is shared collectively and voluntarily by the group of participants. It is derived from an Arabic word meaning 'joint guarantee' or 'guaranteeing each other' (Mahmood, 2008). It is an arrangement by a group of people with common interests to guarantee or protect each other from certain defined misfortunes such as premature death, disability and property damages (Obaidulllah, 2005). Under takaful schemes, participants mutually agree to guarantee and to protect each other against a defined loss or damage, by jointly providing financial assistance to any members suffering from a loss. Such financial assistance is made possible through the creation of a common pool contributed out of the participants' resources as donations. As a concept, insurance does not contradict the Islamic principles since it is essentially a system of mutual help. However, the operation of conventional insurance involves the elements of uncertainty (*gharar*) and gambling (*maysir*) in the contract of insurance, and usury (*riba*) in its investment activities, which do not conform to the requirements of Shariah. *Gharar*, may exist with regard to the scope of coverage, terms of the contract and source of the claim payments. *Maysir*, may arise from any speculative element present in a contract, such as an unequal exchange of the amount of money. *Riba*, or excessive profit, may arise from financial interest received from the

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investment of funds collected from the participants. Avoidance of these elements is essential in an insurance system acceptable by the Syariah, and this is where takaful differs with the conventional insurance. Takaful arrangement embraces the elements of mutual cooperation, shared responsibility, mutual protection, and joint indemnity (Central Bank of Malaysia, Takaful Industry Review, 2005).

The majority viewpoint by many contemporary Islamic jurists and scholars is that, for an insurance system to be acceptable by Islamic tenets, it must be founded on the principles of (1) mutual cooperation (2) tabarru' (donation). These are the essence of an Islamic insurance, which embraces the elements of mutual guarantee, mutual protection and shared responsibility. Tabarru' means donation, gifts or contribution. Participants in a takaful scheme mutually agree to relinquish as donation, a certain proportion of their contributions, into a takaful fund, to provide financial assistance to any members of the group suffering from a loss. Under takaful contracts, each participant contributes a certain proportion of the full amount of his contribution as tabarru'. The donations from all participants are accumulated into a common fund called tabarru' fund or risk fund, from which compensation or indemnification is paid to participants suffering a defined loss (Obaidullah, 2005). Takaful is also built on the principle of mutual cooperation where each participant participates in each other's loss, while takaful operator facilitates this cooperation using its expertise (Jching, 2008). The participants assume all the risk involved in the operation of takaful business. If the operation results in surplus, they would be entitled to the whole sum, or to a certain pre-agreed percentage (depending on the takaful model adopted). If the fund is insufficient, participants would not be asked to pay additional premium (Ahmad Nordin, 2007). Instead, takaful operator will provide interest-free loan, known as *Qard Hassan*, from the shareholders' fund, to meet the deficit. Essentially a cooperative risk-sharing plan, takaful system aims to provide insurance protection against risks such as premature death, illness, disability and property damages. It embraces the elements of mutual help, mutual protection and shared responsibility among participants, bolstered by the principle of tabarru'. Takaful is a type of joint-guaranteed insurance mechanism, based on the law of large number, in which members pool their financial resources together against certain loss exposures (Maysami and Kwon, 1999).

### **3. Takaful Development In Malaysia**

While the beginning of insurance in Malaysia can be traced to the colonial period between the 18<sup>th</sup> and 19<sup>th</sup> centuries, takaful is still relatively young. In respond to rising awareness of Islamic financial instruments, the emergence of Islamic financial markets such as Islamic banks and Islamic insurance is relatively a new phenomena. The development of the takaful industry in Malaysia started in the 1980s when the need of the Muslim consumers for an alternative to the conventional life insurance prevailed as the result of a *fatwa* (decree) issued by the Malaysian National Fatwa Committee which ruled that conventional life insurance is a void contract due to the presence of the elements of *maisir*, *gharar* and *riba'* (Central Bank Report, 2005). In conjunction with this fatwa, the Takaful Act was enacted in 1984 and Syarikat Takaful Malaysia Berhad,

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the pioneer takaful operator in the country was soon established. The Malaysian Takaful Act 1984 acknowledges that takaful 'is a scheme based on brotherhood, solidarity and mutual assistance which provide for mutual financial aid and assistance to the participants in case of need whereby the participants mutually agree to contribute for the purpose'.

Takaful business is one of the fastest-growing segments of the insurance market, with an average annual growth of 20 percent globally. In 2006, takaful contributions worldwide were approximately US\$3 billion (Mahmoud, 2008). It is forecasted to grow to US\$7 billion or US\$20 billion by 2015. Beginning from its humble set up in Sudan in 1979, the number of takaful companies has now grown to more than one hundred. Takaful industry also witnesses impressive growth in the Malaysian financial market. The Central Bank statistics recorded a far higher growth of the takaful industry than of the conventional insurance (Central Bank Report 2005). The eight takaful operators currently operating in Malaysia are listed in Table 1. Similar to conventional insurance, takaful products offered in Malaysia can be classified into general takaful (Islamic general insurance) and family takaful (Islamic life insurance). General takaful refers to plans designed to provide compensation to individuals and businesses against financial loss due to damage or disaster inflicted upon properties or asset of the participant by the defined perils. A general takaful scheme is a short-term mutual financial help, usually for a duration of 12 months. The contribution that a participant pays for a general takaful protection is wholly on the basis of *tabarru'*. Under these schemes, the participant agrees to donate all of his contribution to the general takaful fund to mutually help and jointly guarantee fellow participants. Compensation is paid out of the general takaful funds to participants who suffer a defined loss arising from damage or destruction to his property.

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**Table 1: Takaful Operators Registered under the Takaful Act 1984**

	<b>Takaful Operator in Malaysia</b>	<b>Shareholders / Parent Company</b>	<b>Year of Incorporation</b>
1	CIMB Aviva Takaful Berhad	CIMB Group and Aviva plc	2006
2	Etiqa Takaful Sdn Bhd	Maybank Fortis	2007
3	Hong Leong Tokio Marine Takaful Berhad	- Hong Leong Group -Tokio Marine & Nichido Fire Insurance Co., Ltd	2006
4	HSBC Amanah Takaful Malaysia Sdn Bhd	- HSBC Insurance (Asia Pacific) - Jerneh Asia Berhad - Employees Provident Board of Malaysia (EPF)	2006
5	MAA Takaful Berhad	MAA Holdings Bhd Solidarity	2006
6	Prudential BSN Malaysia Berhad	- Prudential plc and BSN	2006
7	Syarikat Takaful Malaysia Berhad	BIMB Holdings Bhd	1985
8	Takaful Ikhlas Sdn Bhd	MNRB Holdings Bhd	2003

A family takaful plan is a long-term saving and investment instrument which also provide a mutual guarantee of financial assistance in the event of death to the participant. The objective of this plan is (1) to save regularly over a fixed period of time through payment of contributions, (2) to earn returns on contributions from investment in Syariah-compliant instruments, and (3) to receive takaful protection in the event of death to the participant prior to the maturity of the plan. Family takaful products can generally be classified as ordinary family, annuity and investment-linked. Ordinary family plans consists of endowment, temporary, medical and health. Similar to life insurance, takaful endowment plans provide protection and savings to the participants. The introduction of education plans, a form of endowment policy, was mainly prompted by the growing public concerns over putting aside fund for their children education. The demand for education plans grew significantly in recent years in tandem to the increasing cost of future education (Central Bank Report, 2004). As consumers' financial needs grow more sophisticated, takaful investment-linked plans are introduced to allow them to enjoy not only takaful protection, but also potential investment gains.

After more than 20 years of establishment, the Malaysian takaful industry continues to be resilient as a result of a strong growth in economy. Major indicators show that the takaful industry continues to grow in 2006, buoyed by the strong growth in the national economy. Market penetration improve to 6.45, the highest attained since takaful introduction in 1985. Total assets of the takaful industry increased by 17.37% to RM6.9 billion in 2006 (Central Bank Report, 2006). The total takaful assets accounts for 5.9%

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of the total assets in the insurance sector in 2006. In the same year, combined family and general takaful net income from contributions grows by 29% to RM1.7 billion. Per capita contribution on family takaful plan increases to RM46.3 in 2006 from RM36.6 in 2005, and for general takaful to RM17.9 from RM13.4. Family takaful experiences a growth rate of 74.6% from RM725.5 million of new business contribution in 2005 to RM1.2 billion in 2006. Investment-linked plans experience encouraging growth of more than 200% percent in the new business contributions, amounting to RM210.4 million from RM70.1 million in 2005. The growth is believed to have supported by attractive product design and effective use of bancatakaful as one of the distribution channels. Benefits and surrendered paid in 2006 amounted to RM558 million, an increase of 20.2 percent from 2005. The family takaful business, which accounted for 75 percent of total contributions in 2006, remains as the main income generator for the takaful sector. Table 2 and Table 3 respectively exhibit the distribution of contribution for new business by plans and distribution of contribution income, assets and benefit payment of the takaful industry.

**Table 2: New Business: Contribution and Market Share, 2004 – 2006**

<b>Family Takaful Plans</b>	<b>Contribution (RM million)</b>			<b>Market Share (%)</b>		
	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Ordinary Family	592.4	653.1	1,055.0	98.1	90.0	83.3
Endowment	104.9	143.0	137.7	17.4	19.7	10.9
Temporary	407.3	418.2	772.9	67.5	57.6	61.0
Medical & Health	57.7	63.2	115.4	9.5	8.7	9.1
Others	22.5	28.8	29.1	3.7	4.0	2.3
Annuity	1.9	2.2	1.1	0.3	0.3	0.1
Investment-linked	9.4	70.1	210.4	1.6	9.7	16.6
<b>Total</b>	<b>603.7</b>	<b>725.5</b>	<b>1,266.6</b>	<b>100</b>	<b>100</b>	<b>100</b>

*Source: Takaful Statistics, Central Bank of Malaysia, 2006*

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**Table 3: Malaysian Takaful Industry Key Indicators, 1990-2006**

	1990	1995	2000	2004	2005	2006
Contribution income (RM mil)	28.4	94.9	522.7	1,123.1	1,333.7	1,720.9
Family	8.4	37.0	373.0	794.4	1,067.0	1290.7
General	20.0	57.9	149.7	328.7	266.7	430.2
Asset (RM mil)	38.2	183.3	1,872.9	5,028.7	5,878.4	6,899.6
Family	15.5	94.2	1,542.4	4,305.1	5,048.4	5,800.9
General	22.7	89.1	330.5	723.5	830.0	1,098.1
Benefit payment (RM mil)	-	-	86.6	377.2	464.1	557.9
Family			55.6	286.4	347.2	400.8
General			31.0	90.8	116.9	157.1

*Source: Takaful Annual Report, Central Bank of Malaysia, 1990-2005  
Takaful Statistics, Central Bank of Malaysia, 2006*

### 4. Literature Review

Most empirical work on the demand for life insurance takes Yaari (1965) as the starting point. Yaari (1965) points that a demand function for life insurance derived from the maximization of utility function of the consumer would depend on wealth, income stream, a vector of interest rates, a vector of prices (including insurance premium) and the consumers' utility functions for consumption and wealth, which can be affected by the level of the market financial development. Theoretical models of the demand for life insurance have also been demonstrated by Hankansson (1969), Fischer (1973), Fortune (1973), Pissarides (1980), Campbell (1980), Burnett and Palmer (1984), Beenstock, Dickinson and Khajuria (1986), Lewis (1989), Truett and Truett (1990), Bernheim (1991), Browne and Kim (1993), Showers and Shotick (1994), Gandolfi and Miners and Outreville (1996). In many of these studies, many socio-economic variables have been identified to significantly affect life insurance consumption across the countries. Among these variables are income (current, expected and future), savings, employment, price of insurance, inflation, interest rate, social security, stock indices, unemployment rate, financial and banking development.

Truett & Truett (1990) demonstrate that life insurance premium expenditures are positively correlated to the national income of a country. Comparing United States and Mexico, they find that income, education and age are significant determinants of life

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insurance consumption. This is in line with the finding of Beenstock, Dickinson and Khajuria (1986) which suggest that income, level of education and age of dependents are significant determinants of life insurance demands. Truett & Truett (1990) also find that income elasticity of demand for life insurance is greater for Mexico than for the US. This is consistent with the hypothesis which indicates income elasticity of demand for life insurance is higher in lower income countries (Enz; 2000, Ward and Zurbruegg; 2002). Browne and Kim (1993) use premium expenditure and life insurance in force to represent insurance consumption. Their cross-sectional study indicates that income, dependency ratio and social security are positively and statistically significant to life insurance demand, while insurance price and inflation are negatively related to demand. They however find that education is not a significant predictor of life insurance consumption. Outreville (1996) investigates the determinants of life insurance demand in 48 countries. Consistent with many previous studies, his findings show that income is a robust predictor of life insurance consumption. As income increases, life insurance becomes more affordable and the demand for and persistency of insurance policy increases. Other factors such as life expectancy at birth, financial development, health status, human capital endowment and dependency ratio are also found to be positively related to insurance consumption. Anticipated inflation and Islam predominance are shown to have a negative impact on insurance demand. The negative effect of anticipated inflation on the life insurance savings have also been demonstrated by Fortune (1973). Inflation erodes the value of life insurance products. Babbel (1985) argues that consumers are sensitive to price variations in the life insurance products.

Ward and Zurbruegg (2002) study the effect of political environment on OECD countries on life insurance demand and find a positive significant relationship between them. Banking development is also crucial to the development of life insurance industry. This is consistent to the finding of Outreville (1996) that shows a positive correlation between financial development and life insurance penetration. An efficient and effective bank services increases consumers' confidence in the financial institutions. Insurance companies, being among the financial institutions, can benefit from this increase in confidence. Beck and Webb (2003) highlights that banking development positively and significantly affect life insurance consumption. This might be due to the fact that well functioning banks may increase the confidence of consumers in other financial institutions. Empirical investigation by Hwang and Gao (2003) shows that the main factors which have influenced the people in China to purchase life insurance are directly related to successful economic reform which resulted in higher level of economic security, increase in the level of education and the change in social structure. They also argue that urbanization is positively related to life insurance consumption since it changes the source and scope of traditional economic support. Hwang and Greenford (2005) go further to explore life insurance consumption not only in China, but also in Hong Kong and Taiwan. Consistent to the findings of Hwang and Gao (2003), the increase in income and education has fed a need for higher economic security across the territories. The one-child policy which reduces family size is found to negatively affect life insurance consumption across the territories.



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Hussels, Ward, Zurbruegg (2005) have shown that the level of insurance demand within an economy can be influenced by a number of variables which can be categorized into (1) economic (2) legal (3) political and (4) social. Among the important economic factors found to significantly affect demand for life insurance are income, inflation, price of insurance, and social welfare provisions. The legal factors have been identified as good investors' protection, better creditors' rights, more vigorous law enforcement and better accounting information. Political environment refers to the degree of stability of a country's socio-political environment, measured by average number of revolution and coup per year. Another political factor identified is income inequality. Social factors relate to variables such as culture, religion, dependency ratios, life expectancy and education.

### 5. Hypotheses And Research Methodology

Various studies indicate that the factors which influence consumers' decision to purchase life insurance policies differ across country. Based on these theoretical underpinnings this study hypothesize that the demand for family takaful plans can be explained by a set of theorized variables, namely **income, interest rate, inflation rate, savings rate and stock market index**. The theoretical framework for this study can be described in a general form of a functional relationship between takaful demand and the theorized determinants as follows:

$$\text{Demand} = f(\text{income, interest, inflation, savings, stock}) + \varepsilon$$

The variables to be examined in the theoretical framework of this study and their measurements are discussed below.

#### **Dependent Variable :**

Two measures of demand for family takaful are used in this study; contribution per capita and contribution per worker.

#### **(a) Contribution per capita**

Many empirical studies on life insurance demand have used premium expenditures as the measure of insurance consumption. (Burnett and Palmer, 1984; Beenstock, Dickinson, Khajuria, 1988; Browne and Kim, 1993; Outreville, 1996; Ward and Zurbruegg, 2002; Hwang and Gao, 2003; Hwang and Greenport 2005). The life insurance premium provide a consistent standard for life insurance consumption although it is not exactly the perfect measure of insurance ownership because premium may vary significantly from country to country due to differences in the types of policies sold, insurance market, issuing costs and regulations. Since it provides a consistent standard for life insurance consumption, this study also employs premiums (referred to as contributions in takaful) as a measure of insurance coverage to allow comparisons being made with earlier work.

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### ***(b) Contribution per worker***

Contribution per worker reflects takaful density within the labor force. These people are the segment of population with higher ability to purchase insurance, and who normally have better education and higher degree of insurance awareness. They are also more likely to have greater demand to protect their dependents through life insurance against financial difficulties arising from their premature death (Hwang and Gao, 2003).

### **Independent Variables**

#### ***(a) Income***

The level of a country's income has been found to be the most important factor in explaining the level of insurance consumption. Many empirical studies have shown that the demand for life insurance is positively related to income (see Fischer, 1973; Fortune, 1973; Campbell, 1980; Beenstock, Dickinson, and Khajuria, 1986; Lewis, 1989). Support for a link between income and life insurance consumption has also been confirmed by several cross-country studies (see Truett and Truett, 1990; Browne and Kim, 1993; Outreville, 1996; Hwang and Greenport 2005). In addition, Ward and Zurbruegg, (2002) and Beck and Webb (2003) also verify these findings when applying income per capita as a proxy. Income has generally been measured as a variant of current GDP, or GDP per capita, which can be assumed to provide a proxy for permanent income. In line with this, this study will use the ratio of GDP to the population to represent income per capita.

#### ***(b) Interest Rate***

The relationship between long-term interest rate and life insurance demand have been studied by Beenstock, Dickinson and Khajuria (1986), Outreville (1996), Beck and Webb (2003). Interest rate is expected to have a positive relationship with takaful consumption. Higher real interest rate increases investment returns of the insurer, thus the insured may enjoy higher benefit from the policies through higher cash values or dividends. Similar to the study by Beck and Webb (2003) and Outreville (1996), this study uses the lending rate to proxy the long-term interest rate of the country.

#### ***(c) Inflation***

The impact of inflation rate on life insurance demand have been studied by Fortune(1973), Babbel (1981), Browne and Kim(1993), Beck and Webb(2003) and Hwang and Greenford (2005). The demand for life insurance usually decrease during volatile economic times (Black and Skipper, 2000). Choate and Archer (1995) hypothesize that consumers' expectation of inflation rates are established by the inflation rates in prior years. In line with this, the expected rate of inflation in this study is measured by the average inflation of three observed prior rates.

#### ***(d) Savings***

The relationship between the demand for life insurance and other financial assets such as savings have been studied by Headen and Lee (1974) Black and Skipper (2000)

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and Beck and Webb (2003). It has been suggested that if the effective return within a policy compares favorably with the return of other savings instruments, life insurance would look more attractive to prospective savers, given its other features such as the protection it provides. Similar to other studies, this variable is measured by the rate of return of savings accounts offered by commercial banks.

### **(e) Stock**

Attempts have been made to relate life insurance sales to the financial market behavior (see for instance Fortune; 1973, Headen and Lee; 1974). These studies find that some competitive relationship exists between the flow of funds into stocks and life insurance sales. It is expected that higher prices of stocks would stimulate its flow of fund, and this can cause the life insurance sales to decline. In this study, the variable stock is measured by the Kuala Lumpur Composite Index.

### **Hypotheses**

Based on the functional relationship as expressed by the theoretical framework, five hypotheses are formulated in the examination of factors affecting takaful consumption in Malaysia.

*Hypothesis I: There is a positive relationship between the level of income and the demand for family takaful in Malaysia.*

*Hypothesis II: There is a positive relationship between the level of interest rate and the demand for family takaful.*

*Hypothesis III: The level of inflation is negatively related to the demand for family takaful.*

*Hypothesis IV: There is a negative relationship between the level of savings and the demand for family takaful.*

*Hypothesis V: There is a negative relationship between the stock composite index and the demand for family takaful.*

### **Regression Model**

A general multiple regression model is designed to test the relationships between the demand for family takaful as the dependent variable and the level of income, interest rate, inflation rate, savings rate and stock composite as the explanatory variables. The regression model is expressed as a log linear equation as follows:

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$$\begin{aligned} \text{Ln [DEMAND]}_t = & \beta_0 + \beta_1 \text{Ln[INC]}_{1t} + \beta_2 \text{Ln[INT]}_{2t} + \beta_3 \text{Ln[SAV]}_{3t} \\ & + \beta_4 \text{Ln[INFLA]}_{4t} + \beta_5 \text{Ln[STOCK]}_{5t} + \varepsilon_t \end{aligned}$$

DEMAND<sub>t</sub> : The consumption of family takaful in period t,

INC<sub>t</sub> : Per capita income of the population during the period under study,

INT<sub>t</sub> : Prevailing market interest rate in period t,

SAV<sub>t</sub> : Rate of return for savings in period t,

INFLA<sub>t</sub> : Inflation rate during the period under study.

STOCK<sub>t</sub> : Composite stock indices during the period under study.

$\varepsilon_t$  is a stochastic error term,

$\beta_0$  is an intercept and the partial regression coefficients  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ , are unknown parameters.

## 6. Data

Takaful industry in Malaysia started its operation in 1985. Due to the infancy of the industry, this study has to use a limited available data to analyze the economic determinants of takaful consumption as it is not possible to make observation over a longer period. To compensate for limited data, the basic regression assumptions are tested to ensure reliability of the empirical findings (Hwang and Gao, 2003). Takaful data for this study are taken from the Takaful Reports compiled by the Central Bank of Malaysia. The economic data are obtained from the Annual Reports of the Central Bank. The dataset are analyzed using statistical software Eviews6.

## 7. Empirical Findings

Summary statistics of all the variables used in this study are reported in Table 4. During the span of the 22 years period under study, GDP per capita increases 5-folds from about RM4,400 to RM23,600. Contribution per capita for family takaful increases from a meager RM0.05 to RM53.99. Contribution per worker also increases significantly from RM0.14 to RM134.60. Despite large untapped market remained to be explored, the Malaysian takaful industry has progressed substantially since its inception in 1985.

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**Table 4: Descriptive Statistics**

	Contribution Per Capita (RM)	Contribution per worker (RM)	GDP per capita (RM)	Inflation (%)	Interest (%)	Savings (%)	Stock Index
Mean	10.979	27.21	12101.74	2.69	7.58	2.99	729.43
Median	3.138	7.85	12378.11	2.84	7.00	3.25	704.71
Maximum	53.99	134.60	23620.52	5.27	10.33	6.00	1297.20
Minimum	0.05	0.14	4416.41	0.46	5.98	1.41	217.59
Std. Dev.	15.58	38.35	5564.11	1.30	1.33	1.087	280.80

Table 5 and 6 report the estimated parameters of the regression equation using family takaful contribution per capita and contribution per worker as the dependent variables, respectively. Contribution per worker is also tested as the dependent variable based on the hypothesis that the employed populations have higher affordability to purchase takaful and are more likely to purchase insurance due to higher education level and insurance awareness.

**Table 5: Regression Estimation Model 1**

Dependent Variable: Contribution Per capita				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Income	5.534970	0.418287	13.23247	0.0000
Interest	-1.444605	0.833876	-1.732399	0.1024
Inflation	-0.046471	0.159795	-0.290819	0.7749
Savings	0.798926	0.512186	1.559834	0.1384
Stock	-1.010223	0.366220	-2.758511	0.0140
C	-41.97090	3.256511	-12.88831	0.0000
R-squared	0.9786			
Durbin-Watson	1.4521			

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**Table 6: Regression Estimations Model II**

Dependent Variable: Contribution Per Worker				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Income	5.420452	0.416635	13.01008	0.0000
Interest	-1.487410	0.830582	-1.790804	0.0923
Inflation	-0.039884	0.159164	-0.250582	0.8053
Savings	0.795629	0.510163	1.559557	0.1384
Stock	-1.001925	0.364774	-2.746702	0.0143
C	-39.92194	3.243648	-12.30773	0.0000
R-squared	0.9779			
Durbin-Watson	1.4527			

The estimated partial regression coefficients show the expected positive relationship between the variable income and family takaful demand (measured by contribution per capita and per worker). Under both models, the coefficient of income is highly significant and robustly predictive of the demand for family takaful. The empirical estimation also exhibit the expected negative sign for stock and inflation. The coefficient stock is significant at the 5% level of significance under both demand functions. However, the coefficient of inflation is found to be insignificant under both models. Variable interest and savings both exhibit unexpected signs. The coefficient of the interest variable is not statistically significant under the estimated demand function using contribution per capita, but significant at the 10% level of significance under the demand function using contribution per worker model. The coefficient of savings is not significant under either model. The coefficient of determination indicates that 97.9% and 97.8 % of the variation in the demand function using contribution per capita and contribution per worker respectively, can be explained by the independent variables under study. Certain classical assumptions must hold in order for OLS estimators to be reliable, such as homoskedasticity among the error term, and absence of serial correlation among the error term, and absence of severe multicollinearity among explanatory variables. High simple correlation coefficient between explanatory variables is a sign of multicollinearity. The correlations presented in Table 7 indicate that the coefficients between the explanatory variables are less than  $|0.8|$ . Although Studenmund (2006) suggests that many researchers would be concerned of severe multicollinearity if the absolute value of the simple correlation coefficient exceeds 0.8., there is a lack of clear definition on what constitute a high degree of multicollinearity among the explanatory variables.

The test for serial correlation with the Durbin Watson d test indicates that the DW statistic which is around 1.45 under both models is in the inconclusive region (For this study, the. null hypothesis of no positive serial correlation can be rejected if  $d < 0.86$  and not to be rejected if  $d > 1.94$ ). Testing serial correlation using Breush-Godfrey LM test with one lag gives the value of  $F = 1.32$  with the p value equals 0.269. The chi-square statistic gives  $\chi^2 = 1.75$  with corresponding p value of 0.1826. In both cases, a null hypothesis of no residual autocorrelation may not be rejected at 5% significance level.

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**Table 7: Correlations**

Variable	Contribution Per capita	Contribution Per worker	Income	Inflation	Interest	Savings
Contribution per capita	1.0000	0.9977***				
Contribution per worker	0.9998***	1.0000				
Income	0.90389***	0.9034***	1.0000			
Inflation	-0.1878	-0.1896	-0.06751	1.0000		
Interest	-0.5351**	-0.5348**	-0.5116**	0.3255	1.0000	
Savings	-0.7712***	-0.7692***	-0.7056***	0.0639	0.7653***	1.0000
Stock	0.5275**	0.5290**	0.7041***	0.1929	-0.1249	-0.5027**

\*\*\* Significant at 1% level

\*\* Significant at 5% level

The null hypothesis for heteroskedasticity test indicates that the variance of disturbance term is constant. Using the Breush-Pagan-Godfrey heteroskedasticity test, the value of the chi-square statistic obtained under both models is approximately  $\chi^2 = 9.8$ . Its corresponding p-value is 0.08, leading to possible acceptance of the null hypothesis that the variance of the disturbance term is constant. The sample data are therefore likely to satisfy the homoskedasticity assumption underlying the least square methods. The test of stationarity using Dickey-Fuller test indicates that only the inflation variable is stationary at the 10% level of significance. Unit root test carried out on the residuals of the regression equation gives the Dickey-Fuller test statistic of -4.077 with corresponding p value of 0.0007. Since the DF test is less than the 1% and 5% critical values, we may reject the null hypothesis of no cointegration. This result provides evidence that the residuals of the regression equation are likely not to contain unit root, indicating cointegration among the explanatory variables under study, thus avoiding spurious regression estimations.

## 8. Discussions Of Findings

The results of the regression analysis on both models using contribution per capita and contribution per worker provide evidence that income variable is statistically significant predictor of family takaful consumption. Income is positively and significantly related to takaful demand. As income arises, insurance becomes more affordable and the demand for family takaful and life insurance increases. Furthermore, the need for life insurance increases with income as it protects the dependents against the financial consequences arising from premature death of the primary income-earner. This finding is consistent with many prior studies of life insurance demand (see for instance Beenstock, Dickinson and Khajuria, 1986; Truett and Truett, 1990; Browne and Kim, 1993; Outreville, 1996; Black and Skipper, 2000; Ward and Zurbruegg, 2002; Beck and Webb, 2003; Hwang and Gao, 2003; Hwang and Greenport, 2005). In Malaysia, about 53 percent of the population comprise of Muslims, to whom takaful plans are mainly

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targeted for. In 2007, monthly per capita income in Malaysia is about RM1,900. Approximately 60 percent of the Malaysian Muslims earn income above RM2,000 a month. (Department of Statistics Malaysia, 2007). With the income level higher than the country's per capita level, majority of the Malaysian Muslims may have the financial capacity to purchase takaful. Therefore, more aggressive marketing techniques should be employed by the takaful operators to increase penetration rate of takaful among the Malaysian Muslim.

The finding of this study further indicates that interest rate is negatively related to family takaful demand, and statistically significant at 10% level of significance for demand measured by contribution per worker, but not statistically significant for demand measured by contribution per capita. Theories suggest that the higher the interest rate, the more return can be earned by the insurers which in turn can increase the value of a life policy. But some consumers may prefer to invest in short-term financial instruments during high interest rate period, which provide higher returns than the long-term investment in insurance policies (Black and Skipper, 2000). This may explain the negative relationship exhibited by the multiple regression results on the variable interest in this study. Both inflation and savings are not statistically significant under either models. Expected inflation rates have been hypothesized to have a significant negative impact on life insurance demand. Inflation erodes the value of life insurance, making it less desirable goods. Theories also suggest a negative relationship between savings and insurance consumption. If the effective return within an insurance policy is lower than those offered by other saving instruments, consumers are likely to consider the alternatives. In Malaysia, agents play a very important role in the marketing of insurance and takaful products. Many Muslims oppose to the idea of life insurance since it is considered a hedge against the fate predestined by God. Agents are therefore needed to personally explain the coverage and convince the consumers of the importance of takaful plans in alleviating financial burden of the dependents. Being similar to a personal financial advisor, many agents develop a strong bond with the clients and their family, and many clients put their trust in their agents. Agents can persuade their clients of the need for coverage and thus they can be less sensitive to changes in inflation and in savings. The estimated regression between the stock variable and family takaful consumption under both models indicates a negative and significant relationship at 5% level of significance. Attempts have been made to relate life insurance sales to the financial market behavior (see for instance Fortune; 1973, Headen and Lee; 1974). These studies find that some competitive relationship exists between the flow of funds into stocks and life insurance sales. It is expected that higher prices of stocks would stimulate its flow of fund, and this may lead to a decline in life insurance sales. But the recent introduction of investment-linked plans would perhaps creates a positive relationship between life insurance and the price of stocks in the future. Some of the investment-linked funds are invested in stock markets, and favorable stocks market environment may intensifies the sales of the plans.

## **9. Conclusions**

Takaful has been established in Malaysia since the last two decades. But less than 7% of Malaysians are covered by family takaful plans in 2006 although 52 percent of the



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Malaysian population constitute Muslim. Understanding the factors that can encourage family takaful demand is crucial because the market is grossly under-tapped. The demand for both life insurance and takaful exceeds 40% in 2006, but overall insurance consumption in Malaysia is still far below that of other more developed Asian markets such as Singapore, Hong Kong and Taiwan. In this study, two dependent variables are used to measure family takaful consumption; contribution per capita which reflect takaful density within Malaysian population, and contribution per worker which reflect takaful density within the labor force. The income variable is found to be positively and robustly predictive of family takaful consumptions within the nation. The stock variable is shown to have a negative and significant relationship with family takaful consumption. Interest rate and takaful demand is found to have negative relationship with each other, and significant among the labor force, but not significant among the population as a whole. However, inflation and savings are found to be statistically insignificant in this study.

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