CRITIQUE ON RISKS IN ISLAMIC HOME FINANCING*

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ABSTRACT

This article examines the housing and financing market in Malaysia and consequently investigates how risk impacts on the Rental Rate Index (RR-i), proposed as an alternative to interest rate in Islamic home financing by researchers in an earlier research. It looks at both inherent and market-wide categories of risks and variables used in deriving the rental rate in the pricing for Islamic home financing. Qualitative research methodology was used, adopting both descriptive and explanatory research design in analysing secondary data retrieved and also reviewing the literature on Islamic home financing. This approach analyses risks that affect determinants of the rental price, through causal or chain explanations between the variables used in the original RR-i research. The study found risks peculiar to the industry arising from Islamic financing contracts rendering potential rental price index a real challenge in maintaining solvency. Credit risk, market risk and operational risk forming part of the risk premium calculations in deriving the rental rate and economic indicators also have issues needing a more robust and resilient variables that will depict an exact measure of rental values. Specifically the research limitation include the longitudinal effects because the eight year analysis on house price and financing used in this investigation to measure change or stability over time is much constrained and may not be sufficient to witness real change occurring.

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1. INTRODUCTION

1.1 ISLAMIC FINANCIAL INSTRUMENTS IN HOME/PROPERTY FINANCING - AN OVERVIEW

Islamic finance instruments introduced in home financing, specifically *Mushārakah Mutanāqiṣah* (MM), has genuinely given an alternative to *Bai' Bithaman Ājil (BBA)* or *Murābaḥah* contracts which at the beginning was seen as mimicking the hire purchase contracts used in the sale of property in conventional finance. Over time *Sharī'ah* scholars too have refined the latter's implementation which made it palatable to the market. However the *MM* or the diminishing *Mushārakah* has surpassed the *BBA* in its application in this market for it fits into the intentions of both parties, namely, the financing institution and the ultimate owner. The final aim is to transfer asset ownership from one partner to the other, for example, from the bank as financier to the owner (individual or corporation). This type of financing fixed asset is suitable for houses, cars and machinery. In practice, the bank will enter into a partnership with its customer for the purchase of the said property over an agreed period of time and both will have common ownership in it. In the arrangement, the bank will lease (*Ijārah*) its share in the property and receive an agreed rent. On the other hand, the customer will purchase a pre-agreed percentage of the bank's share in the property and gradually accumulate his share on the ownership in the property which will result in a decrease in the bank's share by the same amount. At the end of the financing period, the bank will transfer the property to the customer using a sales contract at a representational price, or by giving the property to the customer as a gift or *Hibah* (Frenz and Soualhi, 2010).

The issue now is how the bank determines the rental value for the said property? Most financing institutions calculate the rental payments by using the interest rate payments as in the conventional mortgage. In Islamic financing of property, there is a need to move away from the dependency on interest rates to project growth rates. Deliberating on a new mechanism does not come without risks, difficulties and hardship due to the entrenchment of conventional finance practiced in most countries, including Malaysia with its dual financial system making it harder to move away from using conventional methods. As an alternative, rental rate is proposed to replace interest rates.

1.2 PROPOSED RENTAL RATE INDEX AS AN ALTERNATIVE TO INTEREST RATES

An earlier study looks at the possibility of replacing interest rates used as benchmark in Islamic home financing with rental rate that reflects the true value of property and linked to the real sector of the economy. The study investigated the macroeconomic indicators for Residential Rental Index published in the UK with a view to model rental for *Mushārakah Mutanāqiṣah* in home financing. It also examined the short run and long run dynamics between Rental Price Index (RPI) and macroeconomic variables, which include, Gross Domestic Product, Unemployment Rate, Real Effective Exchange Rate and Interest Rates. It also conducted a few tests to determine whether rental index is correlated to different types of interest rates and mortgage rates in UK. The findings provide evidence that Rental Price Index in the UK is not significantly linked to any of the selected interest rates variables namely, LIBOR 1-Month, LIBOR 3-Month, London OPR, and Bank of England Base Rate. This finding therefore suggests that home financing under MM does not need to depend on the market interest rate as practiced currently. It also found that macroeconomic indicators are not significantly linked to rental prices in UK (Mohd. Yusof, 2016).

1.3 OBJECTIVES OF THE RESEARCH

This research has the following objectives:
i.   To critique on risk and operational issues on Islamic financing contracts used in property acquisition.
ii.   To analyse volatility in residential home demand, supply and financing in Malaysia.
iii.   To critique from the risk point of view the use of Rental Rate Index for Islamic Home Financing.

2. LITERATURE REVIEW

2.1 DEFINITION OF RISK

The definition of risk from various international standards on risk management is varied but pointing toward some adverse event happening resulting in a loss. The first, from the Australian/New Zealand Standard 4360: 2004 is the probability of something happening that will have an impact upon achieving an organization's objectives. The second, characterised it as an effect of uncertainty on

objectives and the effect can be positive or favourable; adverse or unfavourable (ISO 31000-2009, Risk Management Standard 2009). Risk and uncertainty are common in business. Businesses also need to understand sources of risk which occur at different times over a certain period. Risks may be specific at the corporate level, such as political, financial and legal. At the strategic business level, economic and market risk exist that need to be assessed and at the project level, risks are specific to the nature of business such as technical, health and safety, operational and quality risks.

A source of risk is any factor that can affect business performance and risks exist when this effect is both uncertain and significant (Merna and Al-Thani, 2008). Risks also exist in financial intermediation, particularly for banking institutions which certainly determines the bank's survival and success. The future, viability and strength of financial institutions will depend on how they can manage risks effectively. The last global financial crisis has heightened the critical importance of effective risk management and acts as a key component of financial stability. Lapse in risk management intensified the crisis. Ahmed (2009, 7) differentiates risk into two categories: inherent risk and residual risk. The former refers to risks that are present before any controls or actions are taken, while the latter are present after some corrective actions are undertaken. Hence risk management is intended to reduce inherent risks to an allowable level so that residual risks are controlled effectively and within the tolerance limit set by the risk taker. Risk exposures may be specific, or market-wide, continuous or event risks. Firm specific refers to risks only peculiar to the firm or industry (Islamic finance in this case) while market-wide specific risks are abnormalities occurring due to changes in the external environment (volatility in foreign exchange, interest rates etc.) Continuous risks on the other hand, signify factors that can change continuously, e.g. interest rates, while event (hazard) risks are caused by specific events occurring occasionally, e.g. earthquake and natural disasters (Schroeck, 2002).
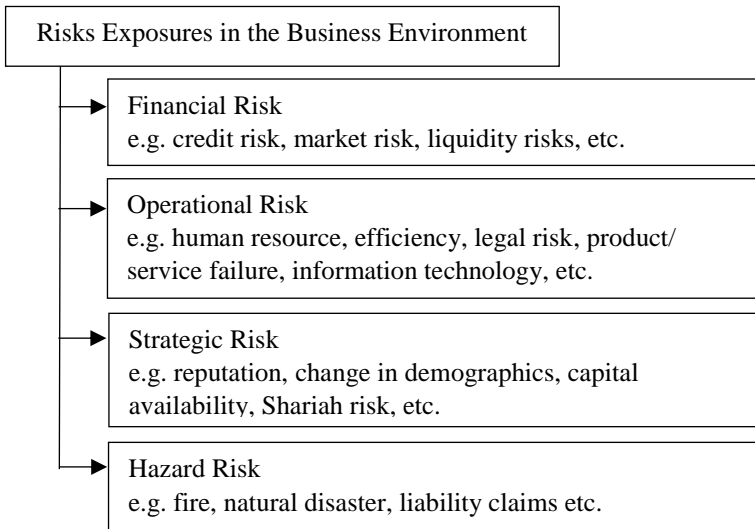
2.2 RISKS IN FINANCIAL INSTITUTIONS

Risk profiles for conventional banks and Islamic banks are different. Basel II lists the risks of conventional banks as credit risk, market risk and operational risk, which is also common to Islamic banks' risk exposure. However, additional risks are also present and unique only to Islamic banks (Lahsasna, 2010) (Table 1).

TABLE 1
Risk Profile: Islamic Bank vs. Commercial Bank

Islamic Bank	Conventional Bank
1. Credit Risk	1. Credit Risk
2. Market Risk (include equity risk, commodity risk, rate of return risk and foreign exchange risk)	2. Market Risk (include equity risk, commodity risk, rate of return risk and foreign exchange risk)
3. Operational Risk (human errors, Information technology risk (IT),	3. Operational Risk (human errors, Information technology risk (IT))
4. Rate of Return Risk	
5. *Sharī'ah* Compliance Risk	
6. Liquidity Risk	
7. Equity Investment risk	

FIGURE 1
Typical Risks of Islamic Finance Institutions

Adapted from the Enterprise Risk Management Framework for Casualty Actuarial Society (CAS) (2003).

Expanding on the conventional banks' risk, the whole risk exposures of the financial institutions can be summarised and categorised into, financial, strategic, operational and hazard risks (Casualty Actuarial Society Enterprise Risk Management Framework, 2003) (Figure 1). Hence, the financial services industry need to

identify, analyse, evaluate and treat all risks using the best tools and techniques to achieve the desired objectives. It is a continuous process which tracks changes in the internal and external environment to ensure risk is properly managed and controlled. Data are collected consistently to allow risk profiles to be adjusted as portfolios and market conditions change. This action allows the regulatory bodies a level of confidence in the banks' ability to manage risks and operate within established parameters. Islamic banks (IBs) which are within the financial services industry similarly are exposed to numerous risks due to activities undertaken and the requirements of *Sharī'ah* compliancy. This article assesses their risks and practical challenges in the course of offering Islamic home financing and the use of Islamic contracts for this purpose. A holistic and typical risk of Islamic Home Financing Institutions is depicted in Figure 1 above.

3. RESEARCH METHODOLOGY

Descriptive research encompasses much government sponsored research including the population census, the collection of a wide range of social indicators and economic information such as household expenditure patterns, employment and crime statistics and the like. Descriptions can be concrete or abstract. A relatively concrete description describes the changing age profile of a population or the income disparity between age groups and is a longitudinal study where data describes events over a period of time and reports changes (Hair et al. 2007). Accurate descriptions of the level of unemployment or poverty have historically played a key role in social policy reforms.
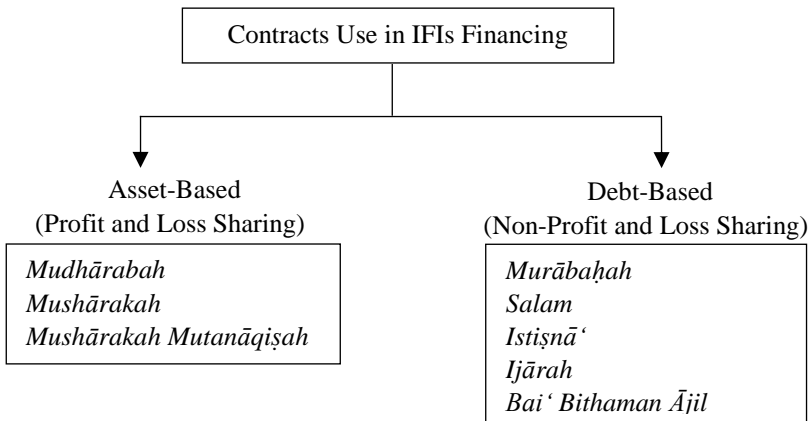
This research design is considered suitable since an analysis is made on the demographics of potential house buyers, based on their age, current and projected income increase in the future, house price index, and home financing disbursed by banks over a period of time. The data was extracted from various government agencies database from 2005 to 2012. The findings could provoke actions or some policy reforms on related institutions such as banking sector, property developers and relevant government agencies. This article critique also uses explanatory research design to explain the 'how' and 'why' certain phenomena occur and to explain some causal relationships between variables. Answering the 'why' questions involves developing causal explanations. Causal explanations argue that phenomenon Y (e.g., income level) is affected by factor X (e.g.,

change in the economic environment) (Hair et al. 2007). Or we may also argue for a causal chain, such as, rise in income does not increase demand for houses due to the effect of a large increase in the house price affecting banks' liquidity position if financing is not properly assessed, that may in turn lead to credit risk and other related events occurring.

4. APPRAISING TYPES OF RISKS AND PRACTICAL CHALLENGES IN THE USE OF ISLAMIC FINANCE CONTRACTS

IFI financing contracts can be categorised into three types, asset-based financing with the provision for profit and loss sharing, debt-based financing and other supporting contracts. Kahf (2005) further distinguishes it between debt-creating mode and non-debt creating mode of financing. Asset-based financing includes all sale types such as, *Murābaḥah, Salam, Istiṣnā'* and *Bai' Bithaman Ājil*, while the debt-based financing comprise of *Ijārah* or leasing mode, which include *Mushārakah*, *Mushārakah Mutanāqiṣah* and *Mudhārabah* which is depicted in Figure 2 below.

FIGURE 2
Typical Islamic Financing Contracts

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                   ┌─────────────────────────────────┐
                   │  Contracts Use in IFIs Financing │
                   └─────────────────────────────────┘
                      │                          │
                      ▼                          ▼
        Asset-Based                    Debt-Based
  (Profit and Loss Sharing)    (Non-Profit and Loss Sharing)
  ┌──────────────────────────┐  ┌──────────────────────────┐
  │ Mudhārabah               │  │ Murābaḥah                │
  │ Mushārakah               │  │ Salam                    │
  │ Mushārakah Mutanāqiṣah   │  │ Istiṣnā'                 │
  │                          │  │ Ijārah                   │
  │                          │  │ Bai' Bithaman Ājil       │
  └──────────────────────────┘  └──────────────────────────┘
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4.1 *MURĀBAḤAH* FINANCING

The differences between Islamic banks and conventional banks are primarily in the profit-sharing element and modes of financing used. IFIs in the course of providing services to their customers create all kinds of contracts to suit the relevant transactions. IFIs activities are

wide in scope (e.g., trading, partnership and *wakīl* or agency). The most common contract created is the *Murābaḥah* contract because the majority of IFIs transactions are concentrated on debt-based contracts. This contract could be the most damaging to the bank because it credit risk emerged (Elgari, 2003).

In addition, there are other contractual relationships between IFIs and customers, either in the form of exchange (*muʿāwaḍāt*), contract of utilization of usufruct (*ʿUqūd al-Manfaʿāt*), contract of *Ijārah,* and contract of security. Credit risk also exist in the investing on business performance in *Mushārakah* and *Mudhārabah* contract, leasing in the *Ijārah,* promising to deliver or to buy in *Istiṣnāʿ* and *Salam* and *Ṣukūk* held to maturity in the banking book. Elaborations on a few selected contracts relevant to property financing are described in greater detail below.

4.2 *ISTIṢNĀʿ* FINANCING

Istiṣnāʿ contract is the most suitable financing for the purchase of property under construction. As a financing tool, it has been legalized based on the principle of *Maṣlaḥah*. In a three-party agreement, the IB enters an agreement with the buyer requesting the bank to build the property. The price of the asset is usually payable over a deferred period. The IB as the seller, then enters into another *Istiṣnāʿ* contract with the contractor to build the property according to the specifications given by the buyer. The bank will release the progress payment to the contractor based on the stage of completion of the property. This is an amicable arrangement but the risks exposure to the IB is when the buyer is unable to meet the obligation on the deferred payments. Another risk to the bank is when the contractor fails to complete the building on time or did not complete the project at all (as evidenced by many abandoned projects during the economic downturns and financial crisis occurring in the 1980s and 1990s in Malaysia).

4.3 *IJĀRAH* FINANCING

Ijārah is a form of leasing contract in which the bank customer promises to undertake to purchase the usufruct of the asset, either at the end of the *Ijārah* term or by stages during the tenure of the contract (Ramli et al. 2013). In home financing, the bank will purchase the property identified by the customer and rents or leases it to the customer over the financing period. At the end of the financing period, the bank then sells the property to the customer at an agreed price. The

monthly installment charged by the bank is normally comparable to the prevailing compounded interest based loan offered by conventional banks. The bank is exposed to credit risk in an *Ijārah* contract (leasing of property) due to the potential default of the lessee to service the rental as per agreement. Another potential credit risk also occurs when the lessee exited earlier than the maturity date and the bank will lose the expected payments in the future.

4.4 *MUSHĀRAKAH MUTANĀQIṢAH* FINANCING

MM consists of two fundamental contracts in Islamic finance namely *Mushārakah* (Partnership) and *Ijārah* (Leasing). *Sharī'ah* allows the combination of two contracts *Mushārakah* and *Ijārah* in one document as long as both contracts are concluded separately and not mixed between the two. This contract is deemed more *Sharī'ah* compliant compared to the dominant mode of financing, *Murābaḥah*. MM is preferred by Islamic scholars because of fewer *Sharī'ah* complexities in its implementation. However, MM also has its flaws where the spirit of partnership set out initially between the bank and the customer, in which both promise to share profits and loss takes a back seat when the latter refuse to share in the risk once the customer defaulted on the instalment payments. IBs practice becomes similar to conventional banks in abandoned housing projects when they force the customers to buy the banks' shares to reduce the banks' loss. The *Wa'd* (purchase undertaking) puts the customers to an even bigger disadvantage when they default. The bank will end the contract and the customer is obligated to settle all outstanding amount and if this could not be done, the property is auctioned off and the bank will recover all that is due to them. However, if the market value of the property is less than the amount outstanding, the customer has to cover for the shortfall (Mahfudz et al. 2016).

Among the most controversial matter in MM is the determination of rental rate in pricing of home financing. IBs up till now still benchmarked against the conventional practices because profits they earned are linked to cost of funds which are inevitably associated with the conventional interest rates. Malaysia has always been at the forefront of the dual banking system, the similarity of practices between the said banks, is unavoidable (Mahfudz et al., 2016).

5. CRITICAL REVIEW ON HOME, PRICE, FINANCING AND RELEVANT VARIABLES

5.1 ANALYSIS ON HOUSE PRICE AND FINANCING

In 2012, Malaysia's private individual consumption was a major driver of growth supported by stable employment conditions and continued gradual wage growth. Simultaneously, the country's economic performance had fostered the demand for individual's purchase of homes and application for financing. However, economic and policy developments had affected the incomes of different category of households to varying degrees. Looking at the trend among those in the age group who are financially capable of purchasing and owning a house, the prediction is demand will increase and financing will surge accordingly.

5.2 ANALYSIS AND COMMENTS ON DEMOGRAPHIC FACTORS AND DEMAND FOR HOUSING

There are approximately 6.3 million individuals in the labour force within the age group of 30-49 years old of the 13.1 million workforce eligible for home financing in 2012. Analysis of data extracted from economic reports taken over an 8-year period between 2005 and 2012, indicated that increase in income did not commensurate with the increase in house price, hence, jeopardising affordability resulting in decline in home sales (Table 2).

 The analysis made on this data is founded on the assumption that household earning less than RM4,000 will not be eligible to apply for home financing because their disposable income will be insufficient to finance the purchase. Further supposition within the context of imperfect credit market conditions, access to credit for lower income households is also more constrained, given the lower current and expected future incomes and the ability to secure collateral for borrowing. Households with limited access to credit, when faced with an adverse income shock, would have to reduce their expenditures by a greater magnitude compared to households who are able to borrow.

 The average income trend in the 10-year period between 2002 and 2012 saw a 66 per cent increase and basing on that premise, estimation of 6 per cent per year was made on the average income in 2005-2008 and 2010-2011 (due to unavailability of data).

TABLE 2
Demographic Data of Malaysian Population Projected Home Ownership based on Real Financial Indicators

Year	30-49 Age Group in the Labour Force ('000)	Increase (%)	Bank Financing Disbursed for House Purchase ('000)	Increase (%)	Average Income/Month	Sales of Homes	Increase (%)	House Price Index Change	Increase (%)
2005	5,190.80	0.017	1,067.90	-	3,443.94	181,762	6.9	116.9	-
2006	5,279.70	0.024	1,688.30	58	3,650.58	182,555	0.44	122.4	5.24
2007	5,411.40	0.012	1,683.70	-0.272	3,869.61	199,482	9.3	125.9	3.5
2008	5,477.00	0.026	2,078.30	23	4,101.79	216,702	8.6	129	3.1
2009	5,623.40	0.027	2,035.30	-2.07	4,025.00	211,653	-2.32	136.1	7.1
2010	7,502.00	0.334	2,292.50	12.6	4,266.50	226,874	7.2	147.2	11.1
2011	6,089.10	0.188	5,358.40	134	4,522.49	269,789	18.9	161.9	14.7
2012	6,327.90	0.039	1,761.80	-67	5,000.00	272,669	1.1	181.7	19.8

Source: Bank Negara Malaysia Report 2006-2014; Department of Statistics Malaysia; National Property Information Centre 2001-2013.

A practical and simple analysis conducted reflects truly market risk and price risk at work (Table 2). The period between 2005 to 2006 saw, despite an increase in the labour force (0.024 per cent), an increase of 6 per cent on average income, and banks' approval on home financing peaked at 58 per cent, but sales of homes contracted by 0.44 per cent. This phenomenon occurred several times between 2007-2008, where house sales dropped from 9.3 to 8.6 per cent, and the same is true between 2011 to 2012 (house sales dropped from 18.9 to 1.1 per cent). If this is matched with the house price index, between 2005 to 2006 it has risen by 5.5 percentage points, 2007-2008, 3.1 percentage points, while 2011-2012, 19.8 percentage points, depicting high volatility in price of houses within this period. Repeat events such as these, i.e. a rapid increase in the price of real property up to an unsustainable level may result in a housing bubble and a repeat of the 2008-2009 financial crises may reoccur.

The Malaysian experience to a certain extent indicated that the increase in wages is not in tandem with the increase in the property value and price of houses. Potential buyers could not afford the property, nor the financing offered by the banks (the 2011-2012 funds disbursed by banks is a case in point, –67 per cent).

The volatility in house price, insufficient increase in wages and salaries resulted in the banks tightening their approvals as well as being over conservative in their financing policies. Price risk, has a direct effect on demand for houses because the problem of affordability and potential credit risk and inflation will emerge and further aggravate the financial glitch in the long run. The relationship of house prices and credit has been extensively studied. Gerlach and Peng (2005), for example, concluded that in Hong Kong bank lending adjusts to house prices in order to ensure affordability of house buyers. Using error-correction models, they concluded that bank lending is influenced by house prices, but that bank lending does not seem to affect property prices.

This scenario is comparatively different to Portugal, after 2007, which had experienced a slowdown in the economy, due to market reductions in aggregated demand originated from fiscal consolidation, credit constraints and lower investments. The decline in economic growth helped to aggravate the crisis in the residential real estate market, evident in the decline of average unit house prices. Households borrowed on the expectation of wage improvements and other future income, however, this did not take place (De Oliveira Tavares et al. 2014). Many exogenous variables that were present led

to a spiral decline in house prices, an exact opposite to Malaysia's real estate experience.

6. POTENTIAL USE OF RENTAL PRICE INDEX TO ADDRESS THE RISKS

6.1 RENTAL PRICE INDEX IN *MUSHĀRAKAH MUTANĀQIṢAH*

Rental Price Index is a potential instrument to be used as a measure of the rental values attached to the property which will eventually replace the use of the interest rates payments as the basis to fix rental payments on the type of mortgaged property. A would-be instrument, however conceivable does not come without risks especially when the market depends on many potential determinants and micro and macro-economic variables to predict demand.

In Islam, the importance of risk is acknowledged. While in conventional finance, risk could be traded and transferred to parties willing to undertake it, but in Islam this is not permissible, rather it must be shared between parties in any venture. Thus Islamic finance and its instruments that are developed must not be risk-free and interest bearing debt.

The use of macro-economic variables as proxies of economic indicators and financial performance of the country and its use in relation to deriving the rental price index also pose a risk.

6.2 APPRAISING RISKS IN THE EXTERNAL ENVIRONMENT - USE OF ECONOMIC INDICATORS AS PROXIES FOR MAKING PREDICTIONS OF RR-i

6.2.1 GROSS DOMESTIC PRODUCT (GDP)

Studies conducted previously, have shown positive correlation between GDP and housing demand. Leung et al. (2006) established that GDP growth rate is a reflection of income; therefore increase in GDP will encourage increase in house price. Similarly Liow et al. (2005) found a growth rate of GDP raises investor confidence which eventually will spark off a demand for housing. Hoffman (2001) also found a positive co-integration relationship between real GDP and property price. Orhan et al. (2013) study in Turkey saw how macroeconomic fundamentals especially income plays a role in explaining the variance in housing demand. Glennon (1989) found government policy focusing on income has a greater impact on housing demand than changes in interest rates. Hossain and Latif

(2007) have also offered evidence of time-varying housing price volatility in the Canadian housing market which confirmed GDP growth rate, house price appreciation rate and inflation are the determinants of house price volatility by using an impulse responses analysis.

Castro's (2012) study in the European banking sector found credit risk is significantly affected by macroeconomic environment (i.e., credit risk rises when GDP and share price dropped). It also increases when unemployment, interest rates and credit growth increased. Similarly Louzis et al. (2012), study found macroeconomic factors, real GDP growth rate, unemployment rate, lending rates and public debt have a strong impact on levels of Non-Performing Loans (symptoms of credit risk). In summary, there has been a multitude studies in the housing literature indicating the relevant use of GDP. Although it serves as a good indicator for a nation's ability to generate revenue, however, it is subject to various risks if related events happening are not taken into account. With the current decline in oil price globally, the GDP may also decrease a few percentage points and may not reflect real performance. Revenue reduction could lead to a snowball effect where income level of the population will similarly be affected and this will in turn affect other variables normally related to GDP, namely interest rates, unemployment rates and other indicators. This unhealthy trend may dampen demand for housing and financing forcing the market to be more cautious, lest a repeat of another episode of sub-prime mortgage which led to the 2008-2009 global financial crisis causing financial melt-down and bankruptcy of many financial institutions around the world.

A GDP per capita is a more reliable indicator because it represents the average individual income earned as opposed to the nation's ability to generate income. However, a GDP per capita, a proxy for average income also does not guarantee a positive demand for housing as revealed by the trends in Table 2. The differences could be explained by the Portuguese real estate market which declined after experiencing good times. According to the empirical analysis estimated by a statistical linear regression, the doubtful loans, the Euribor rate and the youth unemployment rate exhibit a negative relation with house prices, while the GDP growth and the construction confidence index exhibit a positive relation. Most of these results are in accordance with the previous studies but the turbulent period at that time is coincident with the economic crisis in Portugal (De Oliveira Tavares et al. 2014).

6.2.2 CONSUMER PRICE INDEX (CPI) OR INFLATION RATE

The inflation rate ties in with the ability of the population to purchase homes and seek home financing. A study by Apergis (2003) in Greece, found inflation as the second most important factor influencing demand for housing and when inflation rates goes down, house prices decrease which will then drive demand. Tsatsaronis and Zhu (2004, 65) found similar results from their study on 17 industrialized countries. Other studies that indicated a negative relationship between inflation rate and housing demand include Van Order and Dougherty (1991) and Schwab (1983). Liow et al. (2005) concluded that inflation rate plays a significant role in real estate investment decisions, where low level inflation decreased speculation and reduced price volatility in the housing market. Ahearne et al. (2005) study concluded that the real price of houses rise and fall and move in tandem with GDP, consumption, CPI inflation, budget and current account balances and output gap. Stevenson (2000, 24) in his research presented strong evidence of housing and inflation being co-integrated in the long run by utilising co-integration tests. Abelson et al. (2005) on the other hand, found that positive relationships are demonstrated for disposable income and consumer price index in the long run for the housing market.

From the risk perspective, consumer behaviour is also related to financial capability normally influenced by the economic environment of the country. Although the global economic growth is somewhat dampened with the reduction in oil price and demand for home ownership has somewhat reduced, the consumer in general will be hard-pressed for adequate and sufficient financing due to the financial institutions being over conservative and cautious in providing the needed financing due to the potential decline in interest rate and increase in inflation rate. This will result in an erroneous use of CPI as one of the attributes to correlate with Rental Price Index (RPI) and may lead to wrong conclusion on the potential determinants of the RPI. Economically, it erodes the purchasing power for individual's home ownership and other kinds of investment. However, time has shown that during high rates of inflation, the property market has survived but grew at a slower pace. In an analysis of house prices in Portugal, where an evaluation of average prices of apartments according to different typologies and regions was conducted relative to the market environment, several indicators were assessed, such as the evolution of interest rates, the evolution of household credit, the consumption and construction confidence indexes and the evolution

of foreign direct investment in housing from year 2011 to 2013. The conclusion derived, is, after a booming period, the future of the real estate market is somehow worrying (De Oliveira Tavares et al. 2014).

6.2.3 UNEMPLOYMENT RATE

A true test of affordability of housing will be the total number employed in the population and other demographics such as education, credit-worthiness, income, dependents, and so forth, which will determine demand for homes. It is reasonable to assume that property demand and rental rates for property are intertwined with the ability to generate income. Hence unemployment rate will serve as a promising determinant for rental index. People are generally loss averse as opposed to risk averse (i.e. will always look for low probability, high rewarding events even during hard times) (Kathneman and Tversky, 1979). Baffoe-Bonnie (1998) carried out variance decompose analysis on US housing prices and results showed that unemployment growth and mortgage rate are driving factors for the US housing market. Abelson et al. (2005) research offered evidence of unemployment rate, mortgage rate, equity prices and the housing stock as negatively related to Australian house prices. Additionally, Tu's (2000) research also showed that the real weekly earnings, unemployment rates, nominal mortgage rates and housing construction activities are the main factors affecting the Australian housing market. Although logically employment and wage growth will drive demand for housing, the study by Luo et al. (2007) examining the causality linkages between Victorian residential price and macroeconomic variables found that the housing price in Victoria is Granger-caused by the mortgage rate, weekly earning and unemployment rate; however, during the sub-period analysis it also revealed that the relationships are unstable and varied from time to time.

6.2.4 BASE RATES (BR)

BR has time and again been used as proxy for market interest rate. BR functions both as the minimum interest rates to be charged by banks and the cost of funds plus administration charges to be paid by potential homeowners. Borrowers with documentations to prove high net worth usually get by with this evidence and the lending rate will come down accordingly. Islamic financial institutions use of asset-backed as opposed to asset-based for local borrowers, will benefit

foreigners who stand to gain from using BR as an indicator for property demand. The BR is expected to be a good predictor for the property market and rental price and consequently the rental index. A study by Stubbs (2005) showed that interest rate is the prime concern of property investors in Australia, implying that it is the main factor in driving house prices. Changes in market interest rates caused bank profits to fluctuate (Hubbard et al. 2002). This is partly because increased interest rate enhances the likelihood of default by bank customers. However Liebeg and Schwaiger (2008) found in their study that credit risk has no significant effect on interest rate margin; nor does the co-movement of interest rate and credit result in any significant impact on interest rate margin. Even though Islamic financial institutions are supposedly free from interest rate influence, a study by Ibrahim and Sufian (2014) found that Islamic financing seemed to be dominated by variations in interest rates and price level shocks. The authors explicitly suggest that interest rate should be detached completely from Islamic finance to ensure it is not influenced by interest rate variations.

7. CONTINUOUS RISKS FACED BY ISLAMIC FINANCE INSTITUTIONS

In the pricing of the products offered by Islamic Banks (IBs) several factors are taken into account; namely, the source of funds and the risk premium. The components of the risk premium comprise of credit risk, market risk and operational risk. Although both types of banks, IBs and conventional banks faced almost similar types of risks, the former have added risks peculiar only to IBs. This is due to the *Sharī'ah*-compliancy requirements that dictate how IBs should operate.
        The types of risks mentioned by the Islamic Financial Services Board are Financial Risk and Non-Financial Risks. For banking institutions, both Islamic and conventional, typically two types of risks are encountered in daily transactions. These are financial risks consisting of counter-party risk or credit risk, capital risk, liquidity risk, equity risk, market risk and rate of return risk and non-financial risks which include operational risk and those risks related to managing the organization.

7.1 FINANCIAL RISK

7.1.1 COUNTER-PARTY OR CREDIT RISK

This relates to the potential that the counter-party fails to meet its obligations in accordance to the agreed terms of the contract. This is applicable to IFIs managing the financing of exposures such as receivables and exposures. Examples are *Murābaḥah, Musyarakah Mutanāqiṣah* and *Ijārah,* while for working capital, financing transactions or projects, examples include, *Salam, Istisna' or Murarabah.* IFIs need to manage credit risks and investment portfolios relating to default, downgrading and concentration. Also included is risk arising in the settlement and clearing transactions. A study by Ejoh et al. (2014) revealed that there is a positive relationship between liquidity risk and credit risk where an increase in credit risk (bad loan), the asset portfolio of the bank is negatively affected causing an increase in bank illiquidity. Han (2008) recommended that for residential downside credit risk and market risk, these two types of risks could be incorporated into the computation for the cost of funds and risk premium as per Basel II requirements.

7.1.2 CAPITAL RISK

The risk of having inadequate equity capital to continue to operate is another issue to be tackled. Inadequacy could result from customers i.e. members of the public refusing to deposit with the banks (which could lead to liquidity risk) or insufficient equity or investment from shareholders. From a regulatory perspective this is where the bank is closed down because capital is below the regulated minimum amount. Traditional banks use derivative instruments, or options, to manage contingent liabilities or contingent claims. Since call and put options allow one to purchase the right to act or not to act (non-obligation). Such non-obligation to exercise the buying or selling of the asset allows more flexibility and further hedging, risk management and improved cash flows, which are viewed as interest (*ribā*), and are forbidden. In order to manage risk of the banking sector as a whole, central banks of Islamic countries have stipulated various capital adequacy and reserve requirements which are not uniform to all Islamic banks in various regions of the world. Under the Malaysian Islamic Financial Services Act 2013, and Basel Committee requirements or the New Basel Capital Accord (Basel II), since Islamic banks do not have a large portion of their assets in fixed income interest bearing assets, as conventional banks do, they should

budget for a larger capital adequacy ratio and a larger liquidity ratio. Hence, a higher stipulated minimum capital requirement has been enforced for Islamic banks.

7.1.3 LIQUIDITY RISK

The potential risk to the IFIs arises from their inability to either meet their obligations or to fund increases in assets as they fall due without incurring unacceptable costs or losses. Ejoh et al. (2014) study found the relationship and effect of credit and liquidity risk on bank default risk among deposit money banks in Nigeria. Whether Islamic banks have less or more credit and liquidity risk as compared to conventional banks depends on institutional arrangements prevalent in a particular country, for example, the availability of an Islamic Money Market and central bank regulations on capital and liquidity requirements for Islamic banks. The evidence for Malaysia shows that banks engaging in Islamic financing have lower credit and liquidity risks, but higher interest rate risks than conventional banks (How et al. 2005). One reason for lower liquidity risks is that unlike other Islamic countries Malaysian Islamic banks can use the central bank as a lender of last resort (Errico and Sundararajan, 2002; IFSA, 2013).

　　　　Further examination on liquidity risk and its association with credit and interest rate risk, extracted from the research of How et al. (2005) is the emergence of *Sharī'ah* risk. Two issues arise when central banks pay interest to commercial banks on the reserves kept with them and secondly central banks are lenders of last resort to the banking sector. The lending involves an interest penalty for running out of reserves. Islamic banks can neither take interest on their reserves deposited with the central bank nor can they benefit from the liquidity facility provided by the central bank. By not being able to receive a return on their deposits with the central bank, Islamic banks lose earnings and profitability and by not being able to pay interest for liquidity reserves obtained from the central bank, the banks expose themselves to higher priced money market funds or running short on liquidity in crucial times (Siddiqui, 2008).

7.1.4 EQUITY RISK

Equity risk arises from undertaking or participating in a particular financing or general business activity as described in the signed contract in which the provider of funds shares in the business risks. Abdelaziz et al. (2010) studied risk exposures on Islamic banks focusing on leverage ratio, gross revenue ratio and profitability ratio

(measures for capital adequacy) and found them to be in a better position than conventional banks. The Islamic banks' Return on Assets (ROA) and Return on Equity (ROE) indicated low variability trends in earnings and concluded that they have lower risk as measured by capital adequacy than conventional banks.

7.1.5 MARKET RISK

Market risk refers to the risk of losses in an on and off-balance sheet position arising from movements in market prices, for example, fluctuations in values of assets that are traded, marketed and leased (including *Ṣukūk*) and in off-balance sheet individual portfolios (e.g. restricted investment accounts). The risks relate to the current and future volatility of market values of specific assets (e.g. the commodity price of a *Salam* asset, the market value of a *Ṣukūk*, the market value of a *Murābaḥah* asset purchased to be delivered over a specific period) and or foreign exchange rates. Applying this specifically to the housing market, Han's (2008) research in which he studied the effects of house price risk on housing demand in response to financial incentives, households responded by reducing current housing demand to avoid future financial risk, and in a reaction to hedging incentives, households take a bigger housing position to offset potential large housing cost in the future. Households that do not have adequate financial instruments, however, rely heavily on private self-hedging mechanism to reduce home price risk. Han (2008) suggested that available prevailing credit risk and market risk can be incorporated to reflect conditions in the real estate market even though this requirement is only adopted for the Basel Committee in Banking Supervision and not for residential downside market risk. Under Islamic home financing the commercial value of this risk is embedded into the risk premium due to the IBs having ownership of the asset before delivery to the customer.

7.1.6 RATE OF RETURN RISK

This refers to the IFIs exposure to the uncertainty on the rate of return where an increase in benchmark rates may result in Investment Account-Holders having expectations of a higher rate of return. Rate of return risk differs from interest rate risk in that the IFIs are concerned with the result of their investment activities at the end of the investment-holding period. Such results cannot be pre-determined exactly. Under the New Basel II Capital Accord and due to a stricter

and tighter requirement, Islamic banks showed lower variability trends in earnings as compared to conventional banks (Abdelaziz, 2010, 321). Relevant to this issue, citing from a 3-country study involving US, UK and Korea, Hong et al. (2013) found a correlation within the housing return-inflation relationship. In US, overall findings saw stock returns and housing returns weakly positively related and seemed to complement each other. In UK, the real housing returns are negatively related to inflation, and during recessionary period inflation rate changes little while stock markets and housing markets decline significantly. In Korea during recessionary period stock returns are negative while housing returns remain positive. Another finding by Goodhart and Hoffman (2008) saw housing returns led to a higher inflation, which means a higher housing price anticipates, leads to higher spending by households and higher inflation. Financial variables and macroeconomic variables interact to give a mixed result of either a negative or positive outcome in the final rate of return risk for Islamic banks.

8. STRATEGIC OR NON-FINANCIAL RISK

8.1 STRATEGIC BUSINESS RISK

Business risk arises from the type of business, its operations and out of business conditions. Risks that emerged could be from the external environment i.e. macroeconomic condition or those internal within the firm. The owners of the firm are responsible towards managing those risks to ensure conformity to the strategic business plan (Coyle, 2002). Selecting the wrong business strategy could be disastrous to the company. Adoption of the rental rate as opposed to the interest rate in the computation of home financing would require a buy-in from the financial sector. A new method of doing business requires a paradigm shift or change of mind set. IFIs may not perceive rental rate as benefitting the organization in comparison to interest rate. The shareholders must be satisfied that profits generated must be at the optimum level.

8.2 OPERATIONAL RISK

Operational risk are related to IFIs functioning which include computer related and other technologies, compliance with financial or banking policies and procedures and measures against mismanagement and fraud (Von Greuning and Iqbal, 2008). The full range of material operational risks affecting the IFIs include the risk

of loss resulting from inadequate or failed internal process, people and systems or from external events. Management Information System or technology to assess and monitor risks in a timely fashion due to limited resources may also lead to high operational risk exposure. Operational risk in effect is inherent in all business processes and considered as residual risk. Losses resulting from *Sharī'ah* non-compliance and failure of the IFIs' in their fiduciary responsibilities also fall under this category. This risk arises mainly due to lack of risk culture and of enterprise-level sponsorship of active risk management. The risk is, operating expenses, such as salaries and wages, utilities and so forth might be higher than expected, and IBs lacking the ability to control these expenses are more likely to have unpleasant earnings surprises and may have difficulty surviving.

Types of operational risks identified include, internal and external fraud control; employment practices and workplace safety; clients, products and business practices; damage to physical assets; business disruption and system failures; execution, delivery and process management. All these issues have been adequately addressed under Basel II. Pillar 1 of Basel II new requirement for operational risk is 12.5 times of the calculated operational risk capital, while credit risk is 8 per cent of risk-weighted assets and market risk remained unchanged. Pillar 2 of Basel II encourages banks to use better risk management techniques while Pillar 3 is concerned with market discipline and increase transparency in methodologies of calculating capital. To produce an estimate of operational risk from impact of credit losses and profit/losses from market risk exposure, any variation in the resulting income is accredited to operational risk, i.e. either an increase in operational cost or decrease in revenue (Abdullah et al. 2011). Sundararajan (2005) added a few other specific attributes that exist within the Islamic banks:

- *Sharī'ah* non-compliance risk; cancellation risk in non-binding *Murābaḥah* and *Istisna'* constracts, difficulties in enforcing Islamic finance contracts in a broader legal environment and risk of non-compliance within *Sharī'ah* requirements impacting on permissible income
- Technical risks of various sorts
- The need to maintain and manage commodity inventories often in illiquid markets
- The potential cost and ensuing risks in supervising equity type contracts and its legal implications

- The use of structured finance transactions – e.g. securitization of loans originated by banks to manage risk on the asset side and potential exposure to legal risks.

8.3 GEOGRAPHICAL RISK

Concentration of risk in a particular region or sector is dangerous as it could lead to a ripple effect which may affect IB funding and financing. Therefore by spreading it through various sectors and regions can help the IBs to improve assets risks which could lead to better management of credit risk by allowing IBs to be more selective in potential customers. This phenomenon was substantiated by Miller and Peng's (2006) study which demonstrated that about 17 per cent of the metropolitan statistical areas (MSA) in the USA exhibit volatility clustering effect. Additionally, the estimated volatility series with a GARCH model is Granger-caused by the home appreciation rate and gross metropolitan product (GMP) growth rate. A general analysis made by Avery et al. (1996) concluded that a portfolio of affordable home program loans would tend to be less geographically diverse than the portfolio of traditionally underwritten loans. From the social perspective, geographical concentration of foreclosed properties can have adverse impacts on neighbourhood stability. This trend may result in a decline in house price and demand.

Other potential variables that could show causality with the demand for property and rental price could possibly be urbanization and population. Bourassa and Hendershott (1995) found that Australian capital city real house prices are driven by the real wage income and population growth. While the former has changed the social structure of people's lives, the latter showed relevance to a number of economic products and services particularly insurance offered in the market. Rental price and property purchasing and financing should also take into account where the people are domiciled, and who are the majority population as they will be the dominant workforce, and their religious affiliation affect decision making on asset purchases (Pew Study, 2007). To a certain extent, the geographical risks could be reduced using this strategy.

9. ISLAMIC FINANCE INSTRUMENTS AND FINANCIAL ENGINEERING TO CUSHION NEGATIVE FINANCIAL POSITION: IMPACTS ON THE INTRODUCTION OF ISLAMIC RENTAL PRICE INDEX

In Islamic finance the decision to share the risk in financing does not increase the risks of the project but reduces the risks for individuals in financing it as it is spread over a larger number of participants by employing instruments of risk transfer practiced in conventional finance but made *Sharī'ah*-compatible. Instruments for risk sharing will help to reduce the impact of economic shocks, frustration and dissatisfaction on the affected individuals by dispersing the effects of the risks to a larger number of people within the same type of transaction. No one individual need to absorb the risk solely but could be efficiently spread to the many.

The stock market is also a form of primary risk sharing. Developing an efficient stock market can effectively complement and supplement the existing and to-be-developed range of other Islamic finance instruments. Stock markets provide a means for business and industry to raise long term capital, allow risk diversification, enables buffering of liquidity shocks by selling equity shares reducing the risk to the rate of return to their own operation or productivity risk. Active participation in the stock market can mitigate the risk of unnecessary and premature liquidation of assets. Louis et al. (2013) analysed cross-regional association between growth rate in local housing price and future long-term abnormal stock returns of local firms from 1979-2002. Evidence suggest that long term abnormal stock returns are negatively related to growth in housing prices in the states where the firms are located. This translates into: progression in housing prices is associated with subsequent decreases in stock price, even in the absence of credit crisis. However, findings suggest that structural shocks in the stock market price do not influence Islamic finance institutions. They are however impacted by innovations in interest rate (Kassim et al. 2009).

The influence of the Islamic banking sector development may also have a positive impact on property rental market and its practical applications (Li, 2008). Lastly, government policy can create a strong motivation for the Islamic finance market, vis-à-vis Islamic Rental Price Index to be successfully implemented and ensuring sustainability in the market (Mirakhor, 2012).

10. RECOMMENDATIONS TO ADDRESS FINANCIAL RISK

10.1 DIMENSIONS TO MEASURE RISK CRITICAL TO ISLAMIC HOME FINANCING REVOLVES AROUND CREDIT, MARKET AND OPERATIONAL RISKS

Credit strategy according to Bank for International Settlement (2000) takes into consideration:

i.   Granting credit based on exposure type, economic sector, geographical location, currency, maturity and anticipated probability of default

ii.   Credit risks must recognize the goals of credit quality, earnings and growth

iii.   Provide opportunity in approach, i.e. cyclical nature of the economy and changes in the quality of the overall credit portfolio.

Credit risk arises due to the unfavourable creditworthiness of a customer, providing a relatively high amount of loans with low net present values, incompetency in appraising the value of collateral pledged against loans, and so forth. In order to operationally define this variable to render it measurable is by looking at the behavioural dimensions. This could be obtained from studying historical data of past defaulters on the numbers, frequency, demographics and probability of such default happening. The Altman (1968) Z-score model is a classificatory model for corporate borrowers using linear discrimination analysis and based on a matched sample (by year, size and industry) of failed and solvent firms. The best fitting score model takes the form:

(1) $Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$

X_1 = working capital/total assets ratio
X_2 = retained earnings/total assets ratio
X_3 = earnings before interest and taxes/total assets ratio
X_4 = market value of equity/book value of total liabilities ratio
X_5 = sales/total assets ratio
Z-Score below a critical value (1.81), is classified as "bad" and the financing will be refused.

This type of credit scoring could also be applied to personal loans but with various limitations. However, because it used historical

data, it could not give a relatively accurate prediction unless banks frequently update either the variables or the weights. It provides a binary outcome, i.e. whether the customer default or does not default (Avery et al. 1996).

Crosbie and Bohn (2003) developed a more objective determining factors of default probabilities to three main elements: Value of Assets, Market value of the Firm's Asset, Asset Risk, the "uncertainty" or risk attached to the asset value; the leverage and the extent of the firm's contractual liabilities. According to Treacy and Carey (2000) many large US banks introduced more structured and formal systems for approving loans, these include portfolio monitoring and management reporting, analysis of the adequacy of loan loss reserves or capital, profitability and loan pricing analysis. Due to the Basel Accord's shortcomings, various alternative approaches were developed. The new approach to setting capital standards depart from the "one-size-fits-all" approach. One of the approaches recommended was the internal ratings-based approach (IRBA), where banks would assign a rating to each borrower based on their rating models and estimate the probability of default (PD) for each of the ratings defined. Regulators would then define a function to convert this variable of PDs into the minimum required capital.

The Basel II provides a new framework which maintains both the current definition of capital and the minimum capital requirement of 8 percent of the risk-weighted assets:

$$(2) \quad \text{Capital Ratio} = \frac{\text{Total Capital}}{\text{Credit Risk} + \text{Market Risk} + \text{Operational Risk}}$$

Han (2008) suggested that available prevailing credit risk and market risk can be incorporated to reflect conditions in the real estate market even though this requirement is only adopted for the Basel Committee in Banking Supervision and not for residential downside market risk. An important tool to measure a bank's operational risk is, to quantify values of risks and to create Key Risk Indicators (KRIs) to ensure no oversight by the bank. Having quantified the risk, evaluating and managing operational risks entails considering those risks and operations that differ in business lines and analyse actual operational risk losses. Both use the bottom up and top down approach in which operational procedures were linked to potential losses arising from operational risks (AIF, 2013).

Islamic and conventional banks are exposed to similar structure of cost of funds, risk premiums and other risks that are

already embedded in calculating the profit rate. Furthermore, there is no general consensus by *Fiqh* scholars on how to determine the rental rate that comply with *Sharī'ah* principles and according to Obaidullah (2005), it is merely a profit rate or mark up for the interest rate leading to the convergence of both the Islamic and the conventional home financing. In order to generate profit, Islamic banks tend to mitigate the risk by securing the profit at the beginning and avoid the loss regardless of the *Sharī'ah* compliancy.

The conventional financing uses Base Rate with the following components:

(3) Base Rate = Statutory Reserve R. (SRR) + Credit Risk + Liquidity Risk + Operation Cost + Profit Margin

while the Islamic Home Financing should be computed using the following components:

(4) Profit Rate = Rental Rate Index (RRI) + Risk Premium (Credit Risk, Market Risk + Liquidity Risk) + Operational Cost + 0 Profit Margin

The above formula was deliberated and agreed upon by the team of researchers after the RR-i was established.

11. CONCLUSION

IFIs need not only search for diversification effect to reduce risk in significantly correlated market movements but must also recognise and distinguish specific risk profiles on the residential housing asset held and the risk management practices for institutional investors to assess the magnitude of market risk exposure. Effectively the measure for operational risk is as per New Basel Capital Accord which has been revised to reflect the importance of operational risk since it is one of the determinants of decreased income and its volatility or increased expenses. Furthermore, IFIs are duty bound to follow *Sharī'ah* rules to the letter; thereby committing efforts and capital to ensure that the organization and its functions discharge their fiduciary responsibility in a professional and transparent manner. Operational risks could only be overcome by having adequate systems and controls. The IBs must have appropriate mechanisms to safeguard the interest of all fund providers and ensure that bases for asset, revenue, expense and profit

allocations are established, applied and reported in a manner consistent with the IBs fiduciary responsibilities.

Both financial and non-financial risks which include credit risk, market risk and rate of return risk and included is the operational risks which forms part of the computation for risk premium need to be addressed in the formulation of the Rental Index because this will affect the volatility of the rental values/price. Other risks such as equity, liquidity and capital could be managed as per IFSB's and Basel II stipulations and requirements which will not totally affect the rental index usage.

Credit risk factor influences both systematic and unsystematic credit risk. Systematic refers to macroeconomic factors such as inflation rate, employment rate, GDP growth rate, stock index and exchange rate movements and fluctuations in the economy. Unsystematic factors are those pertaining to individual customers attributes, such as personality, financial solvency, and creditworthiness. Credit risk strategy and policy being key to ensure liquidity and solvency of IFIs, coupled with the introduction and use of Rental Rate Index takes into account both systematic and unsystematic risk as well as the IFI's risk appetite and how credit risk could be handled to prevent default. In this respect, implementation of credit risk management involving the whole process of identification, measuring, monitoring and control of credit risk is seen as critical steps to begin with. To address the issue of credit risks on the different modes of financing, in which in the majority of cases, *Mudhārabah* financing seemed to create greater credit risk followed by *Mushārakah Mutanāqiṣah and Ijārah* respectively. Hence computation of the rental price index should take this into account as well and also the inherent risks naturally present within the IFIs. Lastly, strategic risk or getting the buy-in from the IFIs from inception is critical.

REFERENCES

Abdullah, Marlina, Shahida Shahimi, and Abdul Ghafar Ismail. "Operational Risk in Islamic Banks: Examination of Issues." *Qualitative Research in Financial Markets* 3, no. 2 (2011): 131-51.

Abdelaziz, Chazi and Lateef, A.M. Syed. "Risk Exposure During the Global Financial Crisis: The Case of Islamic Banks." *International Journal of Islamic and Middle Eastern Finance and Management* 3, no. 4 (2010): 321-33.

Abelson, Peter, Roselyne Joyeux, George Milunovich, and Demi Chung. "Explaining House Prices in Australia: 1970-2003," *Economic Record: The Economic Society of Australia* 81, no. 1 (August 2005): S96-S103.

Ahearne, Alan, G., Ammer, John, Doyle, Brian, M. Kole, Linda, S., Martin, Robert, F. "House Prices and Monetary Policy: A Cross Country Study." *Board of Governors of Federal Reserve System, International Finance Discussion Paper,* Number 841, September, 2005.

Avery, R.B., R.W. Bostic, P.S. Calem, and G.B. Calem. "Credit Risk, Credit Scoring and the Performance of Home Mortgages." *Federal Reserve Bulletin*, July 1996: 621-48.

Baffoe-Bonnie, J. "The Dynamic Impact of Macroeconomic Aggregates on Housing Prices and Stock of Houses: A National and Regional Analysis," *Journal of Real Estate Finance and Economics* 17, no. 2 (1998): 179-97.

Bourassa, S.C., and P.H. Hendershott. "Australian Capital City Real House Prices, 1979-1993." *The Australian Economic Review* 28, no. 3 (1995): 16-26.

Castro, V. "Macroeconomic Determinants of the Credit Risk in the Banking System: The Case of the GIPSI." *NIPE Working Paper*, 2012.

Casualty Actuarial Society. *Overview of Enterprise Risk Management*. 2003.

Chiang, Ming-Chu, I-Chun Tsai, and Cheng-Feng Lee. "The Downside Risk of US and UK Housing Markets." *Journal of Real Estate Portfolio Management* 18, no.3 (2012): 257-72.

Coyle, B. *Risk Awareness and Corporate Governance*. UK: Financial World Publishing, 2002.

De Oliveira Tavares, F., E.T. Pereira, and A.C. Moreira. "The Portuguese Residential Real Estate Market: An Evaluation of the Last Decade." *Pandeconomicus* 6 (2014): 739-57.

Ejoh, Ndifon, Okpa, Inah, and Inyang, Ebong. (2014). The relationship and effect of credit and liquidity risk on bank default risk among deposit money banks in Nigeria. Research Journal of Finance and Accounting, Vol. 5, No.6.

Elgari, M.A. (2003). Credit risk in Islamic banking and finance. Islamic Economic Studies, Vol. 10, No.2.

Erdem, O., A. Coskun, and H. Oruc (2013). "A Survey-Based Analysis of the Housing Market in the Emerging Economy: The Turkish Case." *Emerging Markets Finance and Trade* 49 (2013): 59-79.

Errico, L., and V. Sundararajan. "Islamic Financial Institutions and Products in the Global Financial System: Key Issues in Risk Management and Challenges Ahead." *International Monetary Fund Working Paper* 02/192, IMF, Washington D.C. USA, 2002.

Frenz, T., and Y. Soualhi. "Takaful and Retakaful: Advanced Principles and Practices." Islamic Banking and Finance Institute of Malaysia, Kuala Lumpur, Malaysia, 2010.

Gerlach, S., and W. Peng. "Bank Lending and Property Prices in Hong Kong." *Journal of Banking and Finance* 29, no. 2 (2005): 461-81.

Glennon, D. "Estimating the Income, Price and Interest Elasticities of Housing Demand." *Journal of Urban Economics* 25, no. 2 (1989): 219-29.

Goodhart, C.A.E., and B. Hofmann. "Do Asset Prices Help to Predict Consumer Price Inflation?" *Manchester School Journal* 68 (s1) (2008). SSRN: http://ssrn.com/abstract=242532.

Hair, J., A. Money, M. Page, and P. Samoel. *Research Methods for Business*. England, United Kingdom: John Wiley and Sons, 2007.

Han, Lu. "The Effects of Price Risk on Housing Demand: Empirical Evidence from US Markets." PhD Dissertation, Rotman School of Management, University of Toronto, Ontario, Canada, 2008.

Hoffman, B. "The Determinants of Private Sector Credit in Industrialised Countries: Do Property Prices Matter?" Working Paper no. 108, Bank for International Settlements, Basel, 2001.

Hong, G., J. Khil, and B.-S. Lee. "Stock Returns, Housing Returns and Inflation: Is there an Inflation Illusion?" *Asia Pacific Journal of Financial Studies* 42 (2013): 511-62.

Hossain, B., and E. Latif, E. "Determinants of Housing Price Volatility in Canada: A Dynamic Analysis." *Applied Economics* 41, no. 27 (2009): 3221-531.

How, C.Y., K.A. Janice, and V.P. Melina. "Islamic Financing and Bank Risks: The Case of Malaysia." *Thunderbird International Business Review* 47, no.1 (2005): 75-94.

Hubbard, R.G., K.N. Kuttner, and D.N. Palia. "Are there Bank Effects in Borrowers' Cost of Funds? Evidence from a Matched Sample of Borrowers and Banks." *The Journal of Business* 75, no. 4 (2002): 559-81.

Ibrahim, Mansor, H. and Sufian, Fadzlan. "A Structural VAR Analysis of Islamic Financing in Malaysia." A Studies in Economics and Finance, 2014, Vol. 31, Issue 4, 371-386.

International Organization for Standardization. *Risk Management-Principles and Guidelines on Implementation*. Geneva, Switzerland, 2008.

Islamic Financial Services Act (IFSA) 2013 (Act 759) and Orders. Selangor, Malaysia: International Law Book Services, 2013.

Kahf, M. "Basel II: Implications for Islamic Banking." Paper presented at the *6th International Conference on Islamic Economics and Banking*, Jakarta, Indonesia, 2005.

Kassim, S.H., S.M. Majid, and R.M. Yusof. "Impact of Monetary Policy Shocks on the Conventional and Islamic Banks in a Dual Banking System: Evidence from Malaysia." *Journal of Economic Cooperation and Development* 30, no.1 (2009): 41-58.

Kathneman, D., and A. Tversky. "Prospect Theory: An Analysis of Decisions under Risk." *Econometrica* 47, no. 2 (1979): 263-72.

Khan T. and Ahmed H. "Risk Management: An Analysis of Issues in Islamic Financial Industry." *IRTI Occasional Paper* no.5 (2001).

Lahsasna, A. *Q and A in Islamic Finance*. Kuala Lumpur, Malaysia: CERT Publications, 2010.

Leung, C.K.Y., Y.C.F. Leong and S.K. Wong. "Housing Price Dispersion: An Empirical Investigation." *Journal of Real Estate Finance and Economics* 32, no.3 (2006): 357-95.

Liebeg, D., and M.S. Schwaiger, M.S. "Determinants of Interest Rate Margin of Austrian Banks." *Financial Stability Report* (2008): 104-16.

Liow, K.H., H. Zhu, D.K. Ho, and K. Dapaah-Addae. "Regime Changes in International Securitized Property Markets." *Journal of Real Estate Portfolio Management* 11, no. 2 (2005): 147-65.

Li, M. "Factors Influencing Household Demand for Life Insurance." MBA thesis, University of Missouri-Columbia, USA, 2008.

Louis, Henock, and A.X. Sun. "Long Term Growth in Housing Prices and Stock Returns." *Real Estate Economics* 42, no. 3 (2013): 663-708.

Luo, Z., C. Liu, and D. Picken. "Granger Causality Among House Price and Macroeconomic Variables in Victoria." *Pacific Rim Property Research Journal* 13, no. 2 (2007): 234-56.

Louziz, D., A. Vouldis, and V. Metaxas. "Macroeconomic and Bank-Specific Determinants of Nonperforming Loans in Greece: A Comparative Study of Mortgage, Business and Consumer Loan Portfolios." *Journal of Banking and Finance* 36, no.4 (2012): 1012-27.

Khan, T., and H. Ahmed. "Risk Management: An Analysis of Issues in Islamic Financial Industry." *Occasional Paper* no. 5, Islamic Research and Training Institute, Islamic Development Bank, 2001.

Mahfudz, A.A., N.H. Ahmad, R. Mohd. Yusof, A. Mohd. Naim, and A. Turkhan. "Restructuring Rental Rate Components to be more Innovative Sharia Compliance Product in Islamic Home Financing." *European Journal of Islamic Finance* 1, no. 5 (2016): 1-6.

Merna, T., and F. Al-Thani. *Corporate Risk Management*. United Kingdom: John Wiley and Sons, 2009.

Miller, N., and L. Peng. "Exploring Metropolitan House Price Volatility." *Journal of Real Estate Finance and Economics* 33, no. 1 (2006): 5-18.

Mirakhor, A. "Epistemology of Finance: Mitigating Risk." *Islamic Finance Review* 2, no. 2 (2012): 7-10.

Mohd. Yusof, R. "Rental Rate as An Alternative Pricing for Islamic Home Financing: An Empirical Investigation on the UK Market." *International Journal of Housing Market and Analysis* (forthcoming in 2016).

Obaidullah, M. *Islamic Financial Services*. Jeddah: Islamic Economics Research Centre, King Abdulaziz University, 2005.

Orhan, E., A. Coskun, and H. Oruc. "A Survey-Based Analysis of the Housing Market in an Emerging Economy: The Turkish Case." *Emerging Markets Finance and Trade* 49, supplement 5 (2013): 59-79.

Pew Research Center. *Muslim Americans: Middle Class and Mostly Mainstream*. Washington, USA: Population Reference Bureau, 2007.

Ramli, R., M.N. Ismail, and A.Z.M. Shaarani. *Issues in Islamic Finance from the Practitioners' Perspective*. Kuala Lumpur, Malaysia: IBFIM, 2013.

Schroeck, G. *Risk Management and Value Creation in Financial Institutions*. New Jersey, USA: John Wiley, 2002.

Schwab, R.M. "Real and Nominal Interest Rates and the Demand for Housing." *Journal of Urban Economics* 13, no.2 (1983) 181-95.

Siddiqui, A. (2008). "Financial Contracts, Risk and Performance of Islamic Banking." *Managerial Finance* 34, no. 10 (2008): 680-94.

Stevenson, S. "A Long Term Analysis of Housing and Inflation." *Journal of Housing Economics* 9, nos.1/2 (2000): 24-39.

Stubbs, D. "Australia's Housing Boom Ends – Is a Crash Around the Corner?" *Australian Property Journal* 38, no.7 (2005): 523-9.

Sundararajan, V. "Risk Measurement and Disclosure in Islamic Finance and the Implications of Profit Sharing Investment Accounts." *Proceedings of the 6th International Conference on Islamic Economics and Finance*. Jakarta, Indonesia (2005): 23-4.

Tsatsaronis, K., and H. Zhu. "What Drives Housing Price Dynamics: Cross-Country Evidence." *BIS Quarterly Review* (2004): 65-78.

Tu, Y. "Segmentation of Australian Housing Markets: 1989-98." *Journal of Property Research* 17, no. 4 (2000): 311-27.

Van Order, R., and A. Dougherty, A. "Housing Demand and Real Interest Rates." *Journal of Urban Economics* 29, no. 2 (1991): 191-201.

Von Greuning, H., and Z. Iqbal. *Risk Analysis for Islamic Banks*. Washinton D.C.: The World Bank, 2008.