

SECTION: STOCK MARKET

FINANCIAL CRISIS AND SEGMENTATION OF ISLAMIC STOCK MARKET

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ABSTRACT: Distributed Ledger Technology (DLT) is said to have a huge impact on the financial industry. This paper analyses the frequently mentioned use cases of DLT in the financial services industry by describing the currently established processes and its participants. It develops a structure for evaluating the potential of the DLT-based alternatives. The paper shows the advantages and limitations of blockchain applications in the different finance use cases.

JEL CLASSIFICATIONS: G01; G11, G12

KEYWORDS: Islamic stock markets, Malaysia, CAPM, portfolio Investment

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1. Introduction

Since the 1960s, the topic of financial markets integration has received overwhelming attention among academicians and practitioners as it has implication on international portfolio diversification and on financial steadiness of a country. Some of the plausible factors that led to an increase in financial markets integration around the globe are financial globalization, removal of investment barriers, financial innovation and technological advancement. In addition, studies also found that markets have become more integrated after the financial crisis (see Arshanapalli & Doukas, 1993; Francis et al. 2002; and Yang et al., 2003). In a more recent study, Abdul Majid & Kassim (2009) find that the stock markets tend to show greater degree of integration during the US subprime crisis.

The rapid growth of Islamic finance, particularly Islamic equity markets, has attracted investors worldwide to diversify their investment in the shari'ah compliant stocks. In terms of market capitalization, Islamic stock markets are now valued at more than US\$4 trillion (Siddiqui, 2008). In addition, there are more than 250 Islamic financial institutions currently operating in about 75 countries worldwide. The Islamic financial market records an annual growth rate of 12% to 15% a year. The Islamic stock markets are believed to be relatively more stable as compared to the conventional

stock markets. *Riba* (interest, and usury) and *maysir* (gambling, and speculative activities similar to gambling) are the major factors leading to the current financial crisis (Ahmed, 2010). The prohibition of *riba*, *maysir* and *gharar* (uncertainties) along with Islamic values of justice, fairness and avoidance of exploitation are important ingredients to avoid the world from the present day financial crisis.

Although there are huge volume of studies examining the issue of stock market integration (see Arshanapalli & Doukas, 1993; Yang et al., 2003; Abdul Majid & Kassim, 2010; Karim et al., 2010) for the previous studies conducted), studies on the Islamic stock markets integration worldwide are still limited. Few studies worth noting include Darrat et al. (2000), Marashdeh (2005), Bley & Chen (2006), Abdul Majid et al. (2007), Karim et al. (2010), and Abdul Majid & Kassim (2010). Marashdeh (2005) finds that there are no integration between the selected Middle-East and North African (MENA) stock markets and the developed markets of the US, the UK and Germany. Bley & Chen (2006) document evidence that the stock markets of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates provide benefits of international portfolio diversification. In a more recent study, Karim et al. (2010) provide evidence of potential diversification in Islamic stock markets worldwide even during the US subprime crisis.

However, some studies find conflicting results. For example, Darrat et al. (2000) find that the stock markets of Egypt, Morocco and Jordan are integrated among themselves as well as with the major developed markets. Abdul Majid et al. (2007) explore the degree of integration among eight Islamic countries' stock markets (Turkey, Egypt, Oman, Kuwait, Malaysia, Indonesia, Bangladesh and Pakistan) and the developed markets of the US, the UK and Japan. They find that investors can gain from portfolio diversification in the MENA region but not the Asian region. All the Islamic stock markets are integrated with the major stock markets. Abdul Majid & Kassim (2010) examine the degree of integration among five major Islamic stock markets, namely Malaysia, Indonesia, Japan, the US and the UK. The study finds that Islamic stock markets provide benefit of portfolio diversification across economic grouping but not within the same economic groupings.

Unlike previous studies, this study relates the Islamic stock markets integration with risk pricing. The two markets are considered integrated when assets in different currencies or countries displayed the same risk-adjusted expected returns. In order to achieve that we employ a single factor International Capital Asset Pricing Model (ICAPM) adjusted with moving average approach. From the estimation, using Malaysia as a case, we derive the Malaysian Islamic Stock Market Integration Index to examine the integration of its stock market with the world. To the best of our knowledge, the index construction goes clearly beyond the existing literature on the subject matter.

Malaysia has been recognised as the pioneer and at the forefront in Islamic finance. As at 31 December 2010, 88% of the securities listed on Bursa Malaysia are shari'ah compliant, contributing around two-thirds of Malaysia's market capitalization. Currently, Malaysia far surpasses other Muslim countries in terms of market infrastructure with unflagging support by the Government providing the impetus growth of the local Islamic Capital Market (Bursa Malaysia, 2010).

Thus, the objective of this paper is to examine the degree of integration between Malaysian Islamic stock market and the World Islamic stock market. The rest of this paper is structured as follows. Section 2 provides the empirical framework and description of the data. The third section provides the empirical results and discussion. Finally, the fourth section concludes the study and provides some implications.

2. Empirical framework and data

Empirical framework

Starting with Sharpe (1964) and Lintner (1965), the CAPM has evolved and become dominant in the literature particularly on asset pricing (due to this, Sharpe was awarded the Nobel Prize in 1990). The CAPM is widely used in many applications such as cost of capital estimation, portfolio construction and performance evaluation. The attraction of the CAPM is that it offers a powerful and intuitively pleasing prediction about how to measure risk and the relation between expected return and risk (Fama & French, 2004). However, due to many simplified assumptions and difficulties to implement valid tests of the model, many empirical studies found that the model works poorly. One of the controversial assumptions of CAPM is time-invariant coefficient of the model. Thus, in this study, we use moving average coefficient as an alternative to the linear CAPM.

The standard International CAPM (ICAPM) assumes that markets are completely integrated which is why there are no investment barrier and investment can be made freely to all countries. Markets are completely integrated if assets with the same risk have identical expected returns irrespective of the market. Asset pricing studies can be classified into three broad categories; segmented markets, integrated markets, or partially segmented markets (Bekaert & Harvey, 1995). The ICAPM of this paper is written as:

$$R_t - R_{F,t} = \alpha + \beta(R_{W,t} - R_{F,t}) + \varepsilon_t \quad t = 1, 2, 3, \dots, n \quad (1)$$

Where, R_t , $R_{F,t}$ and $R_{W,t}$ refer to the market portfolio return, world portfolio return and international risk free rate respectively, while t and n are time period and sample size and ε is the white noise residual. If the stock markets are perfectly integrated, the pricing error (given by the intercept term) should be equal to zero (Korajczyk, 1996; Levine & Zervos, 1998). In addition, we employ moving average approach to estimate recursively the time series obtained in Equation 1. In statistics, moving average is a form of finite impulse response filter employed to assess a set of data points via producing a sequence of averages of diverse subsets of the full data set. We use a moving average with time series data to smooth out short-term variation thus producing values that tend to be closer to the true values of their associated calculated values

Following Levine & Zervos (1998), the adjusted time-varying Islamic Market Integration Index for period t is calculated as: $MIMII_t = -|\alpha_t|$. This is positively correlated with the degree of market integration. A zero index means perfect integration with the world market.

Data preliminary

This study uses weekly closing data of the Dow Jones Malaysia Islamic Index, covering the period of February 1996 to June 2011. For the Islamic world portfolio, Dow Jones Islamic World Index is used as a proxy. In addition, the US-3 month Treasury bill rate is used as the proxy for the international risk free rate. All these indices are denominated in the US dollar and extracted from the Bloomberg Database.

Table 1 reports stationarity properties of the time series and some descriptive statistics. We conduct the Augmented ADF and PP unit root tests on the excess returns of the Malaysian portfolio and the world portfolio. As may be observed from the table, the ADF and PP tests suggest that the excess returns are stationary in level, thus indicating the $I(0)$ process. The Malaysian Islamic market earned the highest average weekly excess returns than the world portfolio. All excess returns have excess kurtosis which means that they have a thicker tail and a higher peak than a normal distribution.

TABLE 1: UNIT ROOT TESTS AND DESCRIPTIVE STATISTICS

Properties	Excess Returns	
	$R_t - R_{F,t}$	$R_{W,t} - R_{F,t}$
ADF	-6.2727***	-34.8053***
PP	-31.0150***	-34.9166***
Mean	0.0199	-0.1149
Standard deviation	3.6776	4.5289
Kurtosis	15.3468	9.1543
Jarque-Bera	5188.748	1284.649

3. Empirical findings

Figure 1 shows the Malaysian Islamic Stock Market Integration Index. There are several interesting findings to highlight. First, we document evidence that the MIMII is time-varying in nature. The result is consistent with Bekaert & Harvey (1995) and Kun et al. (2010). For example, using regime-switching model, Bekaert & Harvey (1995) also found that a number of emerging markets exhibit time-varying integration. Some markets appear more integrated while some markets appear segmented although foreigners have relatively free access to their capital markets. The major implication of this time-varying nature of market integration index is that investors find difficulty to gain diversification benefits consistently by including Islamic stocks.

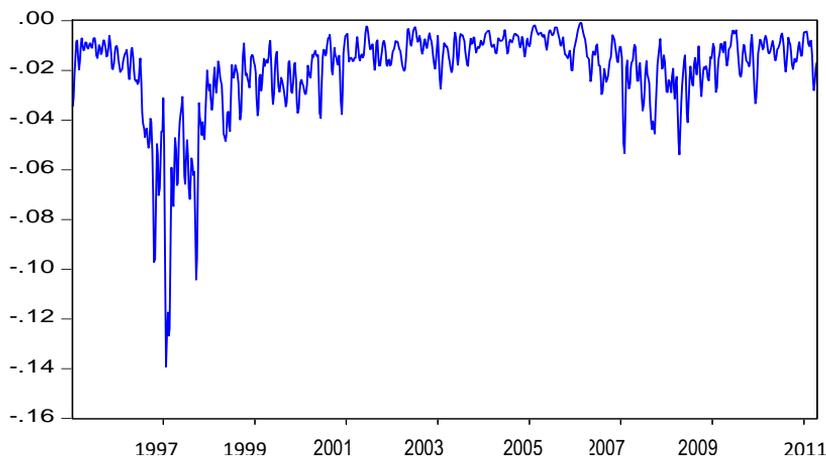
Second, consistent with Francis et al. (2002), Yang et al. (2003) and Abdul Majid & Kassim (2009), we also find that after the 1997-Asian financial crisis the markets become more integrated. We can relate the high co-movement among the stock markets with the “contagion” effect. Forbes & Rigobon (2002) define contagion as a significant increase in cross-market linkages after a shock to one country or a group of countries. In addition, contagion is the transmission of shocks to other countries or, more generally significant cross-country correlations that exist beyond any fundamental links between countries and beyond common shocks (Yang, 2002).

Third, during the 1997-Asian financial crisis and the 2007/2008-US Subprime crisis, the Malaysian Islamic stock market is segmented significantly, thus providing benefits for international portfolio diversification. The prohibition of *riba* (interest), *maysir* (gambling) and *gharar* (uncertainties) along with the Islamic values of justice, fairness and avoidance of exploitation are some of possible reasons protecting the Islamic stock market from the financial crisis.

The resilience of Islamic finance has been a topic of interest among scholars and practitioners worldwide. In the period following the global financial crisis of 2008/2009, Islamic banks generally performed better than their conventional counterparts. In addition, Islamic funds tend to be more resilient whereas in an economic upturn, conventional funds would typically enjoy stronger recovery

(Securities Commission, 2011). However, Kassim & Abdul Majid (2010) provide evidence that both Islamic and conventional banking systems are vulnerable to financial shocks. This is contrary to the popular belief that the Islamic financial system is sheltered from the financial shocks due to its interest-free nature. Ahmed (2010) proposed a new business model for the banking system based on non-interest based transactions but profit and loss sharing concepts. The intrinsic property of Islamic finance contributes towards insulating it from the potential risks resulting from excessive leverage and speculative financial activities which are part of the root causes of the current financial crisis.

FIGURE 1. MALAYSIAN ISLAMIC STOCK MARKET INTEGRATION INDEX



Conclusion

This paper aims to examine the degree of integration between Malaysian Islamic stock market and the World Islamic stock market. We use International Capital Asset Pricing and moving average approach to construct the integration index. The results provide evidence that the Malaysian Islamic stock market integration is time-varying in nature. In addition, consistent with previous studies, we also find that after the 1997-Asian financial crisis the market become more integrated. Interestingly, during the 1997-Asian financial crisis and the 2007/2008-US Subprime crisis, the Malaysian Islamic stock market is segmented significantly thus it provides benefits for international portfolio diversification. The prohibition of *riba* (interest), *maysir* (gambling) and *gharar* (uncertainties) along with Islamic values of justice, fairness and avoidance of exploitation are some of possible reason to avoid the Islamic stock market from the financial crisis.

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