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# Volatility spillover and hedging effectiveness among China and emerging Asian Islamic equity indexes

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ABSTRACT

We study the volatility spillover between China and Asian Islamic stock markets. We use a sample of six Islamic MSCI indices from the Asian region, namely China, India, Malaysia, Indonesia, Korea and Thailand obtained from MSCI (Morgan Stanley Capital International). In this paper we analyze the importance of considering spillover effects between emerging Asian Islamic indexes based on the Bivariate VARMA-BEKK-AGARCH model of McAleer et al. (2009), which includes spillover and asymmetric effects. We compute after the effectiveness of portfolio diversification based on the conditional volatility of returns series. Results show a significant positive and negative return spillover from China to selected Asian Islamic stock market and bidirectional volatility spillovers between China, Korea and Thailand Islamic market showing evidence of short-term predictability on Islamic Chinese stock market movements. However there is no short term volatility persistence in India, Indonesia and Malaysia. GARCH results show no persistence in volatility spillover effect in long term from Chinese to Indian, Indonesian and Korean Islamic stock market. Our findings are beneficial for international portfolio diversification for policy makers and investors since the results of portfolio management and hedging effectiveness ratio are different to previous studies.

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## 1. Introduction

The Islamic finance is viewed now as an alternative way of financial intermediation in the world. This new and innovative financial industry such as: Islamic hedge funds and sukuks are the principal Islamic finance assets. Muslim investors are prohibited to receive and pay interest and to invest in certain companies such as alcohol producers and speculation. The individual or institutional behavior of the Islamic investors had an effect on the markets' behavior.

The institutional and individual investment decisions are restricted by a range of rules determined by scholars who are members of *Shari'ah* Boards. Those scholars use *Shari'ah* in order to determine the general rules according to which the investment decisions are permissible.

Past studies have shown considerable differences between equity markets in conventional and Islamic financial systems, in terms of financial products and principles (El Alaoui et al., 2015; Hammoudeh et al., 2013; Majdoub and Mansour, 2014; Mansour et al., 2015).

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The paper discusses the issue of linkages between Chinese and Asian Islamic stock prices from the prism, exploring their structural differences and volatility spillover perspectives in terms of capital and risk allocation and investment vehicles. The primary aim of this research is to study the dynamics of international Asian assets linkages between China and other selected stock markets, and to combine the literature on *Shari'ah*-compliant finance and the literature on standard market integration and portfolio diversification. The paper is appealing for many reasons whose most important is the policy implications to international Muslim investors and market participants. The study attempts further to shed some light on these issues by contributing to the limited existing empirical evidence of diversification based on Islamic markets.

Furthermore, there are several differences between conventional and Islamic financial markets that stem from Islamic law. Muslim Investors and policy makers in Islamic financial markets are supposed to comply with a set of rules of *Shari'ah* board that advise and certify certain financial products and reject forbidden ones which use interest as an incentive mechanism in financial contracting, restrict trading products having excessive uncertainties, and investing in unethical/illicit sectors. The Islamic Index Methodology has been approved by MSCI's *Shari'ah* advisors' committee of *Shari'ah* scholars, as *Shari'ah*-compliant.

Hammoudeh et al. (2014a) show that the global Islamic equity market index represented by the Dow Jones Islamic Market index exhibits significant dependence with three major global conventional equity indices in Asia, Europe, and United States and the global factors of oil prices and stock market. They find that the *Shari'ah*-compliance rules are not restrictive enough to make the global Islamic equity market index different from the conventional indices. Jawadi et al. (2014) find that the damages on Islamic markets caused by the global financial crisis of 2008–2009 are less significant than conventional counterparts' indices in Europe, the United States and the World. Majdoub and Mansour (2014) explore the extent to which Islamic and conventional markets exhibit strong linkages. The authors use a sample of five countries (Turkey, Indonesia, Pakistan, Qatar, and Malaysia) and investigate their conditional correlations with the US market. In order to proxy for the disparities between Islamic and conventional markets, the authors use both versions of MSCI (Morgan Stanley Capital International) index, namely the conventional and Islamic indexes. The most salient empirical findings suggest a low dynamic correlation when using the Islamic version of the MSCI index, which can be interpreted in terms of a weak integration. Rizvi and Arshad (2016) investigate stock market co-movements among Islamic equity markets vis-à-vis their conventional counterparts across US and Asia Pacific for the period between 1996 and 2014. The findings suggest that the concerned equity markets have been affected by historical periods of both Islamic and conventional indexes and show that the Islamic markets in the US are less exposed to any shock originated from inside the region. Balli et al. (2015) investigate the return and volatility spillovers from developed markets and other selected emerging countries in Asia, the Middle East and North Africa (MENA) region. Based on constant and trend spillover models, they find evidence of significant spillover effects from developed markets to emerging markets. The results indicate the dominance of US shocks across all emerging markets.

Recently, Rahim and Masih (2016) investigate the portfolio benefits of Malaysian *Shari'ah* (Islamic) investors based on an international diversification with Islamic indexes of China, Singapore, Japan, United States and Thailand. They employ a time-varying approach based on a multivariate GARCH-dynamic conditional correlation. These findings indicate that the Malaysian *Shari'ah* investors who invest in China and Singapore may not reap great diversification benefits for almost all investment horizons, but may reap moderate benefits arising from Thailand and Japan up to the investment horizons of 32–64 days and longer. The evidence suggests that the portfolio diversification benefits are greater if the Malaysian *Shari'ah* investors invest in the US *Shari'ah* stock index excepting the long investment horizons. Majdoub and Mansour (2014) investigate the market integration between conventional and Islamic stock prices from the long- and short-run perspectives for France, Indonesia, the UK and the US. The results show that there is evidence of weak linkages between the conventional and Islamic Indonesian and developed markets, thus suggesting that investors can diversify their portfolios at the international level to minimize risk.

Recent studies and policy reports show consistently increasing size and growth of the Islamic finance industry. For example, the International Financial Services London (IFSL 2009), a financial industry trade group in England, reports around 280 Islamic financial institutions at the global level at the end of 2007 with total assets of $729 billion. According to the Global Islamic Finance Report (GIFR 2014), the size of the Islamic finance industry grew to $1631 billion in 2014. According to Ajmi et al. (2014), the last five years record a growth of the assets in the Islamic industry by 500%, reaching $1.3 trillion in 2011

In this light, our study contributes to the literature by examining the time-varying co-movement and dependence structures among China and five majors emerging Asian Islamic stock markets. Therefore, we use a battery of both static and dynamic GARCH models which enable us to capture any changes in dependence level over time as well as any potential asymmetric dependence or structural breaks. It is worth noting that most of the extant empirical studies have examined the links between Chinese stock markets and other Asian markets. There is no study on the Islamic Chinese stock index sensitivity to the Asian stock markets and hedging effectiveness. The remainder of the article is organized as follows: Section 2 presents the data and reports their statistical properties. Section 3 presents our empirical methodology. Section 4 discusses the obtained results. Section 5 provides summary conclusions.

## 2. Data and preliminary analyses

We consider Islamic MSCI equities of six Asian emerging countries (China, India, Malaysia, Korea, Indonesia and Thailand) over the daily period from February 07th, 2011 to February 05th, 2016 (yielding thus 1306 observations). The choice of these economies stems from the need to study the volatility spillover between China which is an important channel of shocks transmission in Asia and other emerging financial markets: Indonesia, Malaysia, India that are anchored in the Islamic finance industry and a set of other Asian stock markets (Korea and Thailand) that have recently exhibited an apparent interest through the trading Islamic financial instruments in Asia. The data are gathered from the Morgan

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