# Regime-dependent relation between Islamic and conventional financial markets[☆]

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## Abstract

The aim of this paper is to examine regime-dependent dynamic relation between Islamic and conventional financial markets by means of Markov Switching Vector Autoregression (MS-VAR). Empirical results suggest evidence in favor of regime-switching properties in all returns series. These findings provide strong evidence in favor of nonlinear relation between the conventional and Islamic stock markets and thus, it is necessary to employ the MS-VAR models to determine the dynamic relationship between series. The regime-dependent Granger causality test and impulse-responses analysis results suggest that Islamic stock market is affected from conventional stock markets in both the bear and bull markets regimes. Therefore, the idea that Islamic financial markets provide diversification benefits and they are safe havens during financial distressed periods cannot be supported empirically.

## 1. Introduction

Empirical studies in the finance literature have showed that the relationship among international stock markets has escalated over recent years subject to several factors (e.g., globalization, bilateral trade and financial liberalization) and hence diversification opportunities in the international stock markets have decreased. Therefore, academics and practitioners in the finance profession have focused on exploring alternative investment tools to increase returns whilst minimizing risk. Thus, there may be potential benefits of Islamic finance instruments in terms of portfolio diversification (El Alaoui, Dewandaru, AzharRosly, & Masih, 2015; Jawadi, Cheffou, & Jawadi, 2016).

Islamic finance provides alternatives to conventional financial market instruments for investors that have religious sensitivities or concerns. In Islamic law, interest (including derivatives with guaranteed interest, bonds and bills, etc.), gharar (uncertainty), gambling and speculative investments are prohibited and profit/loss sharing and physical asset-based financial transactions are encouraged. These prohibitions and encouragements constitute basic principles of Islamic finance.

The fast growth of the Islamic financial system is evident during last decades and the volume of total assets in the Islamic financial system has reached $1.9 billion at the end of 2014 and it is estimated that it will reach $6.5 billion by 2020 (Mensi, Hammoudeh, Sensoy, & Yoon, 2015). Although the share of Islamic banks is 73% (Mensi et al., 2015; 3), global trend in the Islamic finance industry is to invest in the Islamic capital market instruments rather than the banking system

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because the Islamic capital markets have a higher growth rate (Dewandaru, Bacha, Masih, & Masih, 2015; 116).

Although Islamic stock indices are quite new financial products when compared with conventional stock indices, they are the most traded instruments in the Islamic capital markets. For instance, Dow Jones Islamic Market World Index has been created in 1999 by S&P Dow Jones is the most well-known Islamic finance index. The index formed from stocks that are included in the Dow Jones Global Index that covers approximately 95% of global stock markets covers companies operating in 10 sectors located in 58 countries (Hammoudeh, Mensi, Reboredo, & Nguyen, 2014:196). In determining the eligibility of the companies to be included in the index, two types of filters formed according shari'ah compliance screens are used. Eligibility is determined by an independent shari'ah supervisory board and quarterly updates are made.

Dewandaru, Rizvi, Masih, Masih, and Alhabshi (2014) emphasized several distinctive features of Islamic stock markets such as lower financial leverage, smaller size of firms, and under-diversification of the market and hence one can expect different performances for Islamic and conventional stock indices (El Alaoui et al., 2015; 54). Moreover, Islamic stock indices can be expected to perform better particularly during crisis periods where financial risks are substantially high (Al-Khazali, Lean, & Samet, 2014; Ho, Abd Rahman, Yusuf, & Zamzamin, 2014; Jawadi, Jawadi, & Louhichi, 2014; Milly & Sultan, 2012). On the other hand, there have been extensive studies that show Islamic indices have lower performance than conventional indices, while both Islamic indices and conventional indices are subject to global shocks (Ajmi, Hammoudeh, Nguyen, & Sarafrazi, 2014; Hammoudeh et al., 2014; Ghorbel, Abdelhedi, & Boujelbene, 2014; Shamsuddin, 2014; Nazlıoglu, Hammoudeh, & Gupta, 2015; Yilmaz, Sensoy, Ozturk, & Hacihasanoglu, 2015). There is also a growing literature that examines the relation between Islamic financial markets and conventional stock markets in terms of portfolio diversification. While some studies provide evidence in favor of diversification benefits between the Islamic and conventional stock markets (Al-Khazali et al., 2014; Ho et al., 2014; Jawadi et al., 2014; Milly and Sultan, 2012), there are respectable studies that show a lack of diversification benefits (Ajmi et al., 2014; Ghorbel et al., 2014; Hammoudeh et al., 2014; Nazlıoglu et al., 2015; Shamsuddin, 2014; Yilmaz et al., 2015).

In addition, empirical studies have examined Islamic financial instruments in terms of their performance because Islamic financial instruments that are constructed according to sharia'ah rules have similar return performances. For instance, Hayat and Kraeussl (2011) showed that the Islamic equity funds underperform in terms of risk and return when compared with Islamic and conventional stock indices. Hoepner, Rammal, and Rezec (2011) empirically obtained similar results for 256 Islamic equity funds over 20 countries. Aloui, Hammoudeh, and Hamida (2015) examined the relation between Islamic stock indices and sukuk indices via bivariate two-state Markov regime switching EGARCH model and found that Islamic financial instruments have different levels of performance. Furthermore, they indicated that the Islamic investors' behavior shift to safe havens in the bear market regime and hence they tend to invest sukuk indices specifically in the bear market regime.

The literature cited hitherto focuses on the relation between Islamic and conventional stock markets using different econometrics models. Most of these studies have used conventional (linear or asymmetric) causality tests to examine the dynamic relation between Islamic and conventional stock markets. However, there has been a growing literature that finds regime-switching properties in stock returns (Schaller & van Norden, 1997; Li, 2007; Chen, 2008; Shen & Holmes, 2014). Furthermore, Aloui et al. (2015) showed that Islamic stock indices exhibit two-state Markov regime switching properties. Therefore, the dynamic relation between the Islamic and global financial markets may not be stable over time and hence it is more appropriate to employ regime-switching models to investigate the dynamic relations between the two.

The main objective of this paper is to examine the regime dependent relation between Islamic financial markets and conventional stock markets by means of a Markov Switching-VAR (MS-VAR) model. The two important features of the Islamic financial markets that have been widely discussed in the literature are providing portfolio diversification benefits and safe havens during financial distress times. While the portfolio diversification benefits can be examined using a linear VAR model, this model unfortunately fails to account for asymmetry (such as crisis and non-crisis periods). Hence nonlinear models must be employed to study the asymmetric behavior of Islamic financial markets. In this paper, we combine VAR and regime switching models (MS-VAR) to examine the two features of the Islamic financial markets. To the best of our knowledge, this study is the first attempt to examine the regime-dependent relation between the Islamic financial markets and conventional stock markets by using the MS-VAR model.

The rest of the paper is organized as follows. Section 2 provides the theoretical framework for the MS-VAR model. The empirical results are given in Section 3 and Section 4 concludes.

## 2. The MS-VAR model

The MS-VAR model suggested by Krolzig (1997) is the multivariate version of a univariate regime-switching model proposed by Hamilton (1989). The MS-VAR model differs from the linear VAR model as the nature of the causal linkages among the model variables can be different in different regimes. Therefore, all variables in the MS-VAR model are treated as endogenous and causality test and impulse-responses analysis can be used to examine regime-dependent relations among the variables.

Consider $r_t$ to be a $T \times 1$ vector containing the returns series and let $R_t = (r_{1t}, r_{2t}, \ldots, r_{Kt})$ be $K$-dimensional time series vector where $t = 1, 2, \ldots, T$ and $T$ is the sample size. Then, the MS-VAR model with a $p$-th order and $m$ state can be written as: