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Price discovery and regime shift behavior in the relationship between sharia stocks and sukuk: A two-state Markov switching analysis

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ABSTRACT

The main purpose of this study is to analyze the interactive linkages between the sharia stocks and sukuk (Islamic bonds) in the Gulf Cooperation Countries (GCC), using the bivariate two-state Markov switching regime EGARCH of Henry (2009). The results support the presence of two different regimes in both the conditional mean and the conditional variance of those sharia stock and sukuk returns. The first regime corresponds to a high mean–low variance regime and the second is characterized by a low mean–high variance. Furthermore, our results point out that the linkages between the sharia stocks and sukuk GCC markets are also regime-dependent and the sharia stock market volatility reacts asymmetrically to events in the sukuk markets. Additionally, we provide to the literature new evidence which asserts that changes in the GCC sukuk price index have a significant impact on the probability of transmission across regimes. Our findings have several economic and managerial implications for Islamic portfolio managers, Islamic hedge funds, stock market regulators, and policy makers.

1. Introduction

Several theoretical arguments are advanced and various econometric approaches are utilized to provide more insights into the mechanism that links the conventional stock and bond classes. The related literature is abundant and mainly focused on these conventional assets domiciled in developed and emerging countries, but to the negation of serious attempts that aim at investigating the links between them in the Islamic financial markets, particularly in the markets of the countries of the Gulf Cooperation Council (GCC).

In the Islamic financial markets, it is recognized that the sharia-compliant stocks and sukuk (Islamic bonds) are both primary investment instruments that can be used in designing optimal investment portfolios. What is not understood, however, is the nature of the time-variation that affects these two Islamic assets, which is of great interest to Islamic finance scholars, financial institutions, individual investors as well as Islamic capital markets regulators. Recently, the academic interest in Islamic finance assets has been reignited and is mainly focused on whether the sharia stocks and the sukuk behave the same or differently from their conventional counterparts in terms of time-varying correlations. This interest is motivated by the impressive growth of Islamic financial markets

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fueled by a remarkable increase of operations of Islamic banks and the massive issuance of sharia-compliant financial instruments which have been driven by sharia-compliant institutions.

Since the sharia stocks and sukuk have different risk-return characteristics despite their compliance to the sharia law, they are expected to behave differently from conventional stocks and bonds. Concerning the sharia stocks, the Islamic sharia law permits investment in stocks provided that the issuing firms do not engage in '*Haram*' or prohibited activities. Islamic scholars have made some concessions to firms that meet the financial screening, as most of those firms use debt either to address liquidity shortages or have excess cash to invest. For investors to be sharia compliant, they must adhere to several criteria. They should exclude firms that hold interest-bearing debt, receive interest, impure income or trade debts for more than their face values. They should avoid firms whose debt–income ratio is equal to or exceeds 33% and shun companies with "impure plus non-operating interest income" revenues equal to or greater than 5%. Finally, they should eschew companies whose accounts receivable-to-total assets is equal to or exceed 45% or more.

However, for the sukuk to be compliant with the sharia code, three main criteria must be met: First, the certificates must represent ownership in tangible assets, usufruct or services of revenue-generating firms. Second, payments to investors should come from after-tax profits. Third, the value repaid at maturity should reflect the current market price of the underlying asset and not the original amount invested (Godlewski et al., 2013). There recently has been a debate on whether the sukuk are really complying with sharia or whether they are in violation with one of the aforementioned rules. Two counter-arguments are advanced in the literature. On one hand, some scholars including Miller et al. (2007) and Wilson (2008) claim that the sukuk are commonly structured along Western rules of securitization, and therefore do not differ from conventional bonds. On the other hand, some Islamic finance scholars including among others Cakir and Raei (2007) and Thuronyi (2007) claim that there are certain disparities between the sukuk and conventional bonds. They attest that sukuk provide unique risk-reduction benefits when added to a portfolio of fixed income securities, and thus are distinct from conventional bonds.

In the empirical literature, the most popular econometric techniques in modeling time-varying correlations for multiple assets are founded on the multivariate GARCH-class models of Engle and Bollerslev (1986). The GARCH-class models have a fixed persistence level of the covariance process for the entire sample, and that the volatility response to shocks varies with the prevailing regime. For instance, Hamilton and Susmel (1994) identify "low", "moderate", and "high-volatility" regimes in weekly (conventional) stock returns, with the high-volatility regime being linked to economic recessions. Recently, a great interest is focused on the conventional stock–bond regime-switching behavior which is contingent on market conditions but this literature does not cover volatility persistence and regime sensitivity in Islamic assets.[1]

Due to financial asset substitutions, price discovery processes and hedging demand shifts between conventional stock and bond markets, the stock–bond returns may exhibit distinct linkages in "calm" and "unstable" market conditions. Consequently, allowing regime-switching in both volatility and correlation might provide better understanding of the dynamic attributes of the time-varying correlations of the stock and bond markets. However, disregarding regime shifts leads to spurious extreme persistence and incomplete inferences about asymmetric volatility (Zhou, 2014). Our paper is on Islamic stocks and sukuk branded in this strand of the empirical research.

In this study, we ask the following questions. First, is there any regime-switching behavior in the volatility of the sharia stock and sukuk markets? Second, are there any volatility spillovers between these two Islamic assets? Third, is the effect of the sukuk market volatility on the sharia stock market regime-dependent? We approach the volatility spillovers between the sukuk and the sharia stocks by using a two-state Markov-switching regime EGARCH model,[2] which is suggested by Henry (2009) to investigate the price discovery and volatility spillovers between the sukuk and sharia stock indices in the GCC Islamic markets. We use weekly data for the NASDAQ Dubai GCC Sukuk Index (GSKI),[3] which is designed as a replicable benchmark tracking the return of an emerging Islamic GCC sukuk portfolio. Two other sub-indices are also collected: the GCC corporate sukuk index and the GCC financial services sukuk index, representing respectively replicable benchmarks for the GCC corporate sukuk and financial services portfolios.

The use of the bivariate MS-EGARCH model is motivated by at least five reasons. First, this model allows the variance of stock returns to switch across different regimes, which is relevant to Islamic assets that are supposed to endure difficult times. More importantly, the regime at any given date is presumed to be the outcome of a Markov chain whose realizations are unobservable. Second, the model employed in this study possesses more flexibility to detect regime dependence in the impact, the persistence and the asymmetric responses to shocks since the conditional variance depends on past shocks and the present and past states of the economy. Third, this model is based on the assumption that stock returns may shift across different volatility regimes, which is linked to the diverse perceptions and reactions of the sukuk traders and stock market participants to volatility spillovers between the sukuk and sharia-compliant markets. Fourth, a main advantage of using the MS-EGARCH model is that the forecast errors are much more costly in the high-correlation state than in the low-correlation state for a risk-averse investor, which is pointed out by Engle and Collacito (2006). Thus, regime-switching would be better in modeling extreme swings in correlations. We generate the volatility series for sharia stock and sukuk returns to evaluate periods of high and low volatility by employing the bivariate Markov-switching EGARCH model suggested by Henry (2009). Fifth, to our knowledge, the MS-EGARCH model with structural changes has never been applied to sharia-compliant stocks and sukuk.

We find that sharia stock and sukuk returns display two regimes: a high mean–low variance regime (i.e., the "calm period"), and a low mean–high variance regime (i. e., the "turbulent period") for all countries. Then the bivariate MS-EGARCH approach is employed to test the sharia–sukuk dynamic linkage for both the "calm" and "turbulent" periods. We deem that our study may have several

[1] See among others, Aslanidis and Christiansen (2012); Baele et al. (2010); Chen (2007); Guidolin and Timmermann (2005, 2006, 2007, 2008); and Zhou (2014).
[2] The standard two-state Markov switching GARCH model is initially developed by Hamilton (1989).
[3] See: http://www.nasdaqdubaihsbcindices.com/Pages/indices.htm.