University of Pretoria
Department of Economics Working Paper Series

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Working Paper: 2017-43
June 2017

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Geopolitical Risks and Movements in Islamic Bond and Equity Markets: A Note

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Abstract

This study applies a non-parametric causality-in-quantiles test to examine the causal effect of geopolitical risks on return and volatility dynamics of Islamic equity and bond markets. Geopolitical risks are generally found to impact Islamic equity market volatility measures, rather than returns. However, Geopolitical risks tend to predict both returns and volatility measures of Islamic bonds. Interestingly, causality, when it exists for returns and/or volatility of Islamic equities and bonds, is found to hold over entire conditional distributions of returns and volatilities, barring the extreme ends of the same.

Keywords: Geopolitical Risks, Islamic Stock and Bond Markets, Returns and Volatility, Quantile Causality.

JEL Codes: C22, G15.

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1. Introduction

Geopolitical risks (GPRs) are often cited by central bankers, financial press and business investors as one of the determinants of investment decisions, and hence, are believed to affect business cycles and financial markets (Caldara and Iacoviello, 2016). In particular, geopolitical risks, such as political instability, military tensions, and terrorist threats are increasingly persisting in the Middle East region and some Southeast Asian countries, where most of Islamic financial assets are concentrated. Given this, we use a novel nonparametric causality-in-quantiles test of Balcilar *et al.* (2016a) to examine the impact of geopolitical risks on Islamic equity and bond markets that have experienced extraordinary growth over the past decade. For our purpose, we use both daily and monthly equity and bond price data, and analyze the effect of the news-based indices that measure geopolitical risks recently developed by Caldara and Iacoviello (2016), on both returns and volatility of Islamic stocks and bonds.

Note that Caldara and Iacoviello's (2016) index includes not only terror attacks, but also other forms of geopolitical tensions like war risks, military threats, Middle East tensions. Hence, this index allows us to capture geopolitical risks of various forms globally in a continuous fashion, and allows us to go beyond the effect of specific events in a specific country at a specific point in time. Using this index, thus, would provide a more holistic view of the broad GPRs. Relating return dynamics in Islamic securities to GPRs is particularly interesting given that the growth in this market segment is primarily driven by sovereigns and corporations in the Middle East and Southeastern Asia (Balcilar et al. 2016c). These regions include some of the nations that have particularly been exposed to geopolitical tensions (e.g. Arab Spring, terrorism, wars)[1]. Therefore, it can be argued that geopolitical uncertainties are a significant driver of financial returns via their effects on corporate profits and investor sentiment in these markets. Geopolitical uncertainty is also expected be significantly drive the financial market volatility. Furthermore, given the global

[1] More recently, on June 5, 2017, the Qatari stock market index tumbled more than 7 percent following intensified political tensions between Qatar and its Gulfneighbours (Saudi Arabia, UAE, and Bahrain).

nature of the Islamic financial markets under consideration, we believe that the broad GPR index allows us to provide a more realistic picture of the impact of geopolitical risks on returns and volatility due to various forms of such global risks.

The methodology of the nonparametric causality-in-quantiles test used in this paper combines elements of the test for nonlinear causality of *k*-th order developed by Nishiyama *et al.* (2011) with the causality-in-quantiles test developed by Jeong *et al.* (2012). Hence, the test can be considered to be a generalization of the conditional mean-based test of Nishiyama *et al.,* (2011) to a quantile-based framework. The causality-in-quantile approach has the following three novelties: Firstly, it is robust to misspecification errors as it detects the underlying dependence structure between the examined time series, which is of tremendous importance, given that financial markets, including Islamic markets, are known to display nonlinear dynamics (Álvarez Díaz et al., 2014). Secondly, using this test, we are able to test not only for causality-in-mean (1st moment), but also for causality that may exist in the tails of the joint distribution of the variables. This is particularly important if the dependent variable has fat-tails – something again very well-established for conventional and Islamic financial markets (Muteba Mwamba et al., 2017). Finally, we are also able to investigate causality-in-variance (volatility). Such an investigation is important because during some periods causality in the conditional-mean may not exist while, at the same time, higher-order interdependencies may turn out to be significant.

The decision to focus on Islamic bond and equity markets is motivated by several considerations. First, as mentioned earlier, Balcilar et al. (2016c) note that the issuance of these securities is driven by sovereigns and corporations in the Middle East and Southeastern Asia. Considering that these regions include some of the nations that have particularly been exposed to geopolitical tensions, it can be argued that geopolitical risks serve as systematic risk factors driving economic fundamentals in these countries and to that end, Islamic stocks and bonds provide an interesting avenue for research to relate GPRs to financial returns. Furthermore, following the recent global

financial crisis that has exerted enormous negative impact on conventional markets, a need has been felt for exploring alternative financial practices that allow to reduce investment risks, increase returns, enhance financial stability, and reassure investors and financial markets. In this regard, Islamic finance, based on Sharia rules, as an approach that might offer products and instruments driven by greater social responsibility, ethical and moral values, and sustainability has experienced renewed interest, with the expectation that these instruments may better safeguard investors' portfolios against financial crises (Ben Nasr et al., 2016). Consequently, the market in Islamic bonds experienced extraordinary growth with the total issuance value growing from $5 billion in 2003 to over $130 billion in 2013, while the total value of Islamic finance assets under management is predicted to reach US $6.5 trillion by 2020 (Balcilar et al., 2015).

Though there is mixed evidence of the role played by macroeconomic and financial variables (including policy and financial market uncertainties), in predicting the movements in returns and volatility of Islamic bond and stock markets (see for example, Naifar and Mseddi (2013), Ajmi et al., (2014), Gupta et al., (2014), Nazlioglu et al., (2015), Naifar (2016), Naifar and Hammoudeh (2016), Reboredo and Naifar (2016), Bahloul et al., (2017), Naifar et al, (2017)), to the best of our knowledge, this is the first paper to analyze movements in the Islamic stock and bond markets based on GPRs. In the process, our paper also adds to the related literature of geopolitical type of news or events (for example, terror attacks) in determining movements of conventional financial market returns and volatility (see for example, Kollias et al., (2010, 2011a, b, 2013a, b); Balcilar et al., (2016b, 2017, forthcoming), Apergis et al., (2017) and Gupta et al., (2017)). In sum, researchers find that geopolitical risks (like attacks on the domestic economy and on major financial markets), though tends to affect both return and volatility of conventional markets, the effect on the latter is more dominant. Our paper can, thus, be considered as an attempt to check if we obtain similar or different results for the Islamic financial markets when compared to their conventional counterparts, in response to GPR movements. This will allow us to not only deduce if Islamic investments are indeed different from traditional instruments, and hence, can

act as instruments for diversifying risks. In addition, on one hand, financial market returns and its volatility (often associated with uncertainty) are among the most important indicators for practitioners, as its helps them in capital budgeting and portfolio management decisions as they directly reflect companies' financial health and future prospects (Apergis et al., 2017). On the other hand for academics, predictability of financial market movements challenges the idea of market efficiency, and in turn, assists in building realistic asset pricing models (Rapach and Zhou, 2013). Hence, predicting financial market returns and volatility is of paramount importance to both practitioners and academics in finance, and we aim to analyze the role played by GPR, if any, in this regard.

The only paper which is somewhat related to our work is the one by Guyot (2011). The author in this paper analyzed the role played by geopolitical events (such as that of the 11th September, 2001 attack; the Iraq invasion), on the cointegration between Islamic and conventional equities. The paper, based on recursive tests of cointegration, shows that the integration between the conventional and Islamic markets tends to deteriorate during such episodes, and suggests that the reason behind this is that geopolitical risks tend to affect Islamic markets more strongly than conventional markets. However, Guyot (2011) does not provide a formal direct test of the impact of GPR (based on an index capturing continuous set of geopolitical turmoil across the world) on not only returns, but also volatility of both Islamic equities and bonds based on a robust nonparametric causality-in-quantiles test.[2]

Our findings show that geopolitical risks impact volatility in Islamic equities, rather than returns, in line with the findings for other emerging, conventional stock markets. However, we find that geopolitical risks can predict both returns and volatility measures for Islamic bonds, while causality is found to hold over the entire conditional distributions of returns and/or volatilities, barring the extreme ends of the same. We argue that the robust results observed for Islamic

[2] Hussein and Omran (2005) suggested the existence of a geopolitical effect on demand as well as on prices of Islamic stocks, related to the behavior of Muslim investors, but they were not actually able to verify this empirically.

bonds is due to the fact that the issuance of Islamic bonds is driven by sovereigns and governments, particularly in the Gulf Arab countries, reflecting geopolitical effects on the sovereign's political situation and finances, and possibly relating GPR to the credit risk of the issuers of Islamic bonds. Overall, our results imply that Islamic financial instruments are affected by geopolitical risks just as the conventional markets. This noteworthy finding enriches the common view that Islamic financial assets are subject to less risk than conventional ones, and thus implies the need for investors and policy-makers to set plans for contingencies to address some of the implications of geopolitical uncertainty.

The rest of the paper is organized as follows: Section 2 presents the methodology, while Section 3 discusses the data and the results. Finally, Section 4 concludes.

2. Methodology

This section provides a brief description of the quantile based methodology that we use to detect nonlinear causality via a hybrid approach developed by Balcilar *et al.* (2016a). Let y_t denote stock or bond returns and x_t denote the predictor variable, in our case *GPR* (as described in detail in the next Section).

Formally, let $Y_{t-1} \equiv (y_{t-1},...,y_{t-p})$, $X_{t-1} \equiv (x_{t-1},...,x_{t-p})$, $Z_t = (X_t, Y_t)$ and $F_{y_t|Z_{t-1}}(y_t, Z_{t-1})$ and $F_{y_t|Y_{t-1}}(y_t, Y_{t-1})$ denote the conditional distribution functions of y_t given Z_{t-1} and Y_{t-1}, respectively. If we denote $Q_\theta(Z_{t-1}) \equiv Q_\theta(y_t \mid Z_{t-1})$ and $Q_\theta(Y_{t-1}) \equiv Q_\theta(y_t \mid Y_{t-1})$, we have $F_{y_t|Z_{t-1}}\{Q_\theta(Z_{t-1}) \mid Z_{t-1}\} = \theta$ with probability one. Consequently, the (non)causality in the θ-th quantile hypotheses to be tested can be specified as:

$$H_0: \quad P\{F_{y_t|Z_{t-1}}\{Q_\theta(Y_{t-1}) \mid Z_{t-1}\} = \theta\} = 1, \tag{1}$$

$$H_1: \quad P\{F_{y_t|Z_{t-1}}\{Q_\theta(Y_{t-1}) \mid Z_{t-1}\} = \theta\} < 1. \tag{2}$$

Jeong *et al.* (2012) employ the distance measure $J = \{\varepsilon_t E(\varepsilon_t \mid Z_{t-1}) f_z(Z_{t-1})\}$, where ε_t is the regression error term and $f_z(Z_{t-1})$ is the marginal density function of Z_{t-1}. The regression error ε_t emerges based on the null hypothesis in (1), which can only be true if and only if $E[1\{y_t \le Q_\theta(Y_{t-1}) \mid Z_{t-1}\}] = \theta$ or, equivalently, $1\{y_t \le Q_\theta(Y_{t-1})\} = \theta + \varepsilon_t$, where $\mathbf{1}\{\cdot\}$ is an indicator function. Jeong *et al.* (2012) show that the feasible kernel-based sample analogue of J has the following form:

$$\hat{J}_T = \frac{1}{T(T-1)h^{2p}} \sum_{t=p+1}^{T} \sum_{s=p+1, s\neq t}^{T} K\left(\frac{Z_{t-1} - Z_{s-1}}{h}\right) \hat{\varepsilon}_t \hat{\varepsilon}_s . \tag{3}$$

where $K(\cdot)$ is the kernel function with bandwidth h, T is the sample size, p is the lag order, and $\hat{\varepsilon}_t$ is the estimate of the unknown regression error, which is estimated as follows:

$$\hat{\varepsilon}_t = 1\{y_t \le Q_\theta(Y_{t-1})\} - \theta. \tag{4}$$

$\hat{Q}_\theta(Y_{t-1})$ is an estimate of the θ^{th} conditional quantile of y_t given Y_{t-1}, and we estimate $\hat{Q}_\theta(Y_{t-1})$ using the nonparametric kernel method as

$$\hat{Q}_\theta(Y_{t-1}) = \hat{F}^{-1}_{y_t|Y_{t-1}}(\theta \mid Y_{t-1}), \tag{5}$$

where $\hat{F}_{y_t|Y_{t-1}}(y_t \mid Y_{t-1})$ is the *Nadarya-Watson* kernel estimator given by

$$\hat{F}_{y_t|Y_{t-1}}(y_t \mid Y_{t-1}) = \frac{\sum_{s=p+1, s\neq t}^{T} L\left((Y_{t-1} - Y_{s-1})/h\right) 1(y_s \le y_t)}{\sum_{s=p+1, s\neq t}^{T} L\left((Y_{t-1} - Y_{s-1})/h\right)}, \tag{6}$$

with $L(\cdot)$ denoting the kernel function and h the bandwidth.

In an extension of Jeong *et al.* (2012)'s framework, Balcilar *et al.,* (2016a) also develop a test for the *second* moment. In particular, we can now test the causality running from *GPR* to volatility of stock or bond returns. Adopting the approach in Nishiyama *et al.* (2011), higher order quantile causality can be specified as:

$$H_0: \quad P\{F_{y_t^k|Z_{t-1}}\{Q_\theta(Y_{t-1})\,|\,Z_{t-1}\}=\theta\}=1 \qquad \text{for } k=1,2,...,K \tag{7}$$

$$H_1: \quad P\{F_{y_t^k|Z_{t-1}}\{Q_\theta(Y_{t-1})\,|\,Z_{t-1}\}=\theta\}<1 \qquad \text{for } k=1,2,...,K \tag{8}$$

Integrating the entire framework, we define that x_t *Granger causes* y_t *in quantile* θ *up to the* k^{th} *moment* using Eq. (7) to construct the test statistic of Eq. (3) for each k. The causality-in-variance test is then calculated by replacing y_t in Eqs. (3) and (4) with y_t^2. However, it can be shown that it is not easy to combine the different statistics for each $k=1,2,...,K$ into one statistic for the joint null because the statistics are mutually correlated (Nishiyama *et al.*, 2011). To efficiently address this issue, we include a sequential-testing method as described by Nishiyama *et al.* (2011). First, we test for the nonparametric Granger causality in the *first* moment $(i.e.\,k=1)$. Nevertheless, failure to reject the null for $k=1$ does not automatically lead to no-causality in the *second* moment. Thus, we can still construct the tests for $k=2$. Jeong *et al.* (2012) establish that the re-scaled statistics $Th^p\hat{J}_T/\hat{\sigma}_0$ is asymptotically distributed as standard normal, where $\hat{\sigma}_0=\sqrt{2\theta(1-\theta)}\sqrt{1/(T(T-1)h^{2p})}\sqrt{\sum_{t\neq s}K^2((Z_{t-1}-Z_{s-1})/h)}$. The most crucial element of the test statistics $\hat{J}_T$ is the regression error $\hat{\varepsilon}_t$. Since the regression error in under Eq. (14) is again an error in terms of the quantile, the asymptotic distribution of the test is not affected and the re-scaled statistics $Th^p\hat{J}_T/\hat{\sigma}_0$ is analogously asymptotically distributed as standard normal.

The empirical implementation of causality testing via quantiles entails specifying three important choices: the bandwidth h, the lag order p, and the kernel type for $K(\cdot)$ and $L(\cdot)$ respectively. Following the suggestions in Balcilar et al., (2016a), in this study, we make use of the Schwarz information Criterion (SIC) to determine the lag length, the leave-one-out least squares cross-validation techniques to choose the bandwidth value, and Gaussian-type kernels for $K(\cdot)$ and $L(\cdot)$.

An advantage of having high frequency (daily) data for Islamic stock and bond indices is that we are also able to compute a measure of realized volatility, which allows us to check the robustness

of our findings, especially related to the measure of market volatility (i.e., squared returns). The measure that we consider is the classical estimator of realized volatility, i.e. the sum of squared daily returns (Andersen and Bollerslev, 1998) expressed as

$$RV_t = \sum_{i=1}^{M} r_{t,i}^2 \quad (9)$$

where $r_{t,i}$ is the daily $M \times 1$ return vector and $i = 1, \ldots, M$ the number of daily returns. The obtained monthly realized volatility can now be used instead of squared returns in the quantile causality, when analyzing the impact of the monthly GPR index.

3. Data and Empirical Findings

3.1. Data

Monthly data on geopolitical risk (GPR) is downloaded from: https://www2.bc.edu/matteo-iacoviello/gpr.htm, and is based on the work of Caldara and Iacoviello (2016). This paper constructs the GPR index by counting the occurrence of words related to geopolitical tensions, derived from automated text-searches in leading 11 national and international newspapers (The Boston Globe, Chicago Tribune, The Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, Los Angeles Times, The New York Times, The Times, The Wall Street Journal, and The Washington Post). The eight phrases considered for constructing the index are: "geopolitical risk(s)", "geopolitical concern(s)", "geopolitical tension(s)", "geopolitical uncertainty(ies)", "war risk(s)" (or "risk(s) of war"), and "military threat(s)", "terrorist threat(s)", "terrorist act(s)", and "Middle East AND tensions". Then, Caladara and Iacoviello (2016) calculate the index by counting, in each of the above-mentioned 11 newspapers, the number of articles that contain the search terms above for every month starting in 1985. The index is then normalized to average a value of 100 in the 2000-2009 decade. We take logarithms of this data, and find it to be stationary in log-levels based on standard unit root tests.[3]

Both daily and monthly data on Islamic stock (Dow Jones Islamic World) and bond (Dow Jones Sukuk) price indices are obtained from Datstream of Thomson Reuters. Returns are measured in

[3] Complete details of the unit root tests are available upon request from the authors.

terms of the first-difference of the natural log of the stock and bond indices. Using returns ensures that the dependent variable is stationary, just like the GPR index – a requirement for our causality analysis.[4] Based on data availability, the starting periods for of the stocks and bonds vary, however the end date is always March, 2017 to correspond with the end point of the GPR index. The Islamic equity returns data starts in January, 1996 (255 observations); while, the Sukuk returns data begins in October, 2005 (138 observations). Realized volatility estimates are based on 2nd January, 1996 to 31st March, 2017 (5544 observations) and 3rd October, 2005 to 31st March, 2017 (3000 observations) daily observations for Islamic stocks and bonds date respectively.

3.2. Causality tests

Figures 1 and 2 provide the results of the causality-in-quantiles tests for market return, volatility (measured by squared returns), and realized volatility as described in Eq. (9) for Islamic stocks and bonds respectively. The estimations are performed over the quantile range of 0.05 to 0.95. In each figure, test statistics for alternative quantiles of the conditional distributions of returns and volatility measures are provided, and when the test statistic is above the 5 percent critical value of 1.96, we reject the null hypothesis of non-causality at that specific quantile.[5]

Examining the findings for Islamic equity returns, as captured by the Dow Jones Islamic World Equity Index, GPR is found to have no impact on returns over its entire conditional distribution.[6] This finding is in line with other emerging markets where GPR is not found to have predictive ability over equity returns (Balcilar et al., forthcoming). However, when we look at return volatility measured by the squared variance of returns, GPR is found to cause volatility over the quantile range of 0.65 to 0.80, i.e., at the moderate upper quantiles. Similarly, when we

[4] Details of the unit-root tests are available upon request from the authors.

[5] We also conducted linear Granger causality tests, but could not detect any causality running from GPR to Islamic equity and bond returns. However, with the Brock et al., (1996, BDS) test showing strong evidence of nonlinearity in the relationship between returns and GPR, the results from the misspecified linear model cannot be deemed as robust. Complete details of these results are available upon request from the authors.

[6] So, even with the correctly specified model, as with the linear Granger causality test (discussed in Footnote 4), we are unable to detect any predictability emanating from GPR to returns.

look at realized volatility, the effect of GPR is exceptionally strong, implying that GPR can predict realized volatility over the quantile range of 0.10 to .90, i.e., barring the extreme quantiles of the conditional distribution.[7] These results are similar to those reported in the literature on conventional stock markets, i.e., geopolitical risks tend to affect volatility (and especially realized volatility – a more robust measure of variance) more than returns[8] (see for example, Balcilar et al., (2016b, 2017, forthcoming), and Apergis et al., (2017)).[9] Overall, the tests on Islamic equities suggest that these securities behave similar to conventional equities in other emerging nations with regard to their causal links to geopolitical risks. The finding that the GPR effect is observed only on the volatility of returns suggests that equity markets are affected by common global economic uncertainties, driving return volatility in these markets regardless of their classification and conventional or Sharia-compliant.

Examining the impact of GPR on Islamic bonds, however, present a different story on how GPRs relate to financial returns (Figure 2). Unlike the Islamic equities, we observe that GPR can predict bond returns over the quantile range of 0.25 to 0.85, i.e., barring the extreme quantiles.[10] This implies that geopolitical risks possess predictive ability over Islamic bond returns during most market states with the exception of extreme market conditions. However, as in the case of the equities, strong evidence of predictability from GPR is found for both squared returns and realized volatility over the quantile range of 0.10 to 0.90. In other words, GPR can predict both return and volatility in the Islamic bond market barring the extreme ends of the conditional distributions of returns and volatilities, i.e., except when the market is in extreme bear and bull

[7] We also computed so-called good and bad volatilities, based on the realized volatilities obtained from (only) positive returns and negative returns respectively. Our results were qualitatively similar, and are available upon request from the authors.

[8] Besides the benchmark GPR index, Caldara and Iacoviello (2016) also provides two sub-indices namely, GPR associated with threats and GPR associated with actual Acts. We obtained qualitatively similar results when using these sub-indices, complete details of which are available upon request from the authors

[9] In fact, we confirmed these results when using the MSCI world equity index, i.e., GPR predicts volatility but not returns of the conventional equity market. Complete details of these results are available upon request from the authors.

[10] This result highlights the importance of using a nonparametric causality-in-quantiles approach over a misspecified linear Granger causality test, which as discussed in Footnote 4, could not detect causality running from GPR to bond returns.

phases.[11] Unlike, the conventional equity markets, there is very little work on the impact of geopolitical risks on returns and volatilities of conventional bond markets, though there does exist some work on the impact of terror attacks on the comovements of stocks and bonds (see for example, Kollias et al., (2013a); Gupta et al., (2017)). The two studies that we could find were that of Hempel (2016) and Schepers (2016), which tend to indicate the impact of terror attacks on conventional bond returns. Hence, our results corroborate these findings in terms of bond returns.[12]

[INSERT FIGURES 1 AND 2]

In sum, our findings generally suggest that when causality exists, it tends to hold except at the extreme quantiles of the distribution. This, in turn, could be an artifact of investors' tendency to herd during extreme bear and bull market states, underscoring the effect of lagged returns in our tests, thus rendering any additional information that could be available in the movements of the GPR index insignificant. Particularly interesting, however, is observing a difference in the impact of GPR on Islamic stocks and bonds. The geopolitical events affect both returns and volatility of bond markets, but the impact on the equity markets is restricted to only volatility.[13] One possible reason may be due to the fact that the issuance of Islamic bonds is primarily driven by sovereigns and governments, particularly in the Gulf Arab countries. Therefore, it can be argued that the effect of GPR on both return and risk for Islamic bonds is an artifact of the

[11] The results for returns and volatilities continued to hold qualitatively under the sub-indices of threats and acts, and also when we analysed good and bad volatilities. Complete details of these results are available upon request from the authors.

[12] Using the PIMCO investment grade world bond index, our quantile causality-test however showed no impact of GPR on returns, but only on volatilities – a result similar to that of the conventional equity markets. Complete details of these results are available upon request from the authors. Note that since, the works by Hempel (2016) and Schepers (2016) used conditional mean-based linear models, the obtained results from their studies could well be suffering from misspecification due to nonlinearity, and cannot be completely relied upon, even though they might be using different country-specific bond indices. As part of future research, it would be interesting to extend our current study to conventional bond markets in more detail.

[13] To ensure that the difference in results is not due to the sample period, we re-conducted the analysis for the Islamic equities over 2005:10 to 2017:03, i.e., the same sample period as that of the Islamic bonds. However, the results obtained for this shorter sample continued to be the same as that of the full-sample, i.e., GPR predicted squared returns and realized volatility (except at the extreme quantiles), but not returns. Complete details of these results are available upon request from the authors.

GPR effect on the country's political situation and finances. To that end, the impact of GPR on both risk and return may be related to the credit risk of the issuer. On the other hand, Islamic equity issuers are more diverse and thus, Islamic equities behave similar to conventional equities in other emerging markets as their volatilities are driven by the same common factor that affects all emerging market volatilities.

4. Conclusion

In the wake of the recent financial crisis, there has been a need felt for exploring alternative financial practices, and in this regard Islamic finance, believed to reduce investment risks by design, has gained prominence. In the process, a voluminous amount of work has been devoted to analyzing factors that drive Islamic instruments, just like in the case of conventional financial markets. One factor that seems to have played an important role in driving movements in conventional financial markets, amongst others, has been geopolitical risks. While there are numerous studies on the impact of such risks on conventional markets, there is virtually nothing when it comes to Islamic equity and bond markets. Against this backdrop, in this paper, we examine the effect of geopolitical uncertainty on return and volatility dynamics of Islamic equities and bonds via a nonparametric causality-in-quantiles test. We find that geopolitical risks impact return volatility in Islamic equities, rather than returns, in line with the findings for other emerging, conventional stock markets. However, we find that geopolitical risks can predict both returns and volatility measures for Islamic bonds, while causality is found to hold over the entire conditional distributions of returns and/or volatilities, barring the extreme ends of the same. We argue that the strong results observed for Islamic bonds is due to the fact that the issuance of Islamic bonds is driven by sovereigns and governments, particularly in the Gulf Arab countries, reflecting geopolitical effects on the sovereign's political situation and finances and possibly relating GPR to the credit risk of the issuers of Islamic bonds. Overall, our results imply that Islamic financial instruments are affected by geopolitical risks just as the conventional markets,

and hence, cannot be used to diversify away the uncertainties associated with geopolitical events. A corollary of this result is that Islamic equity and bond markets are weakly inefficient in relation to geopolitical events.

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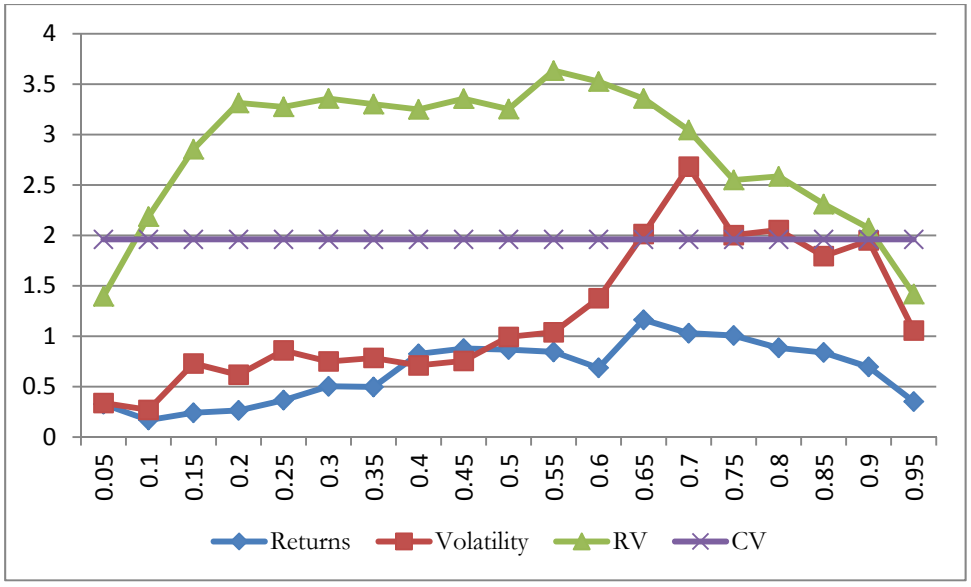
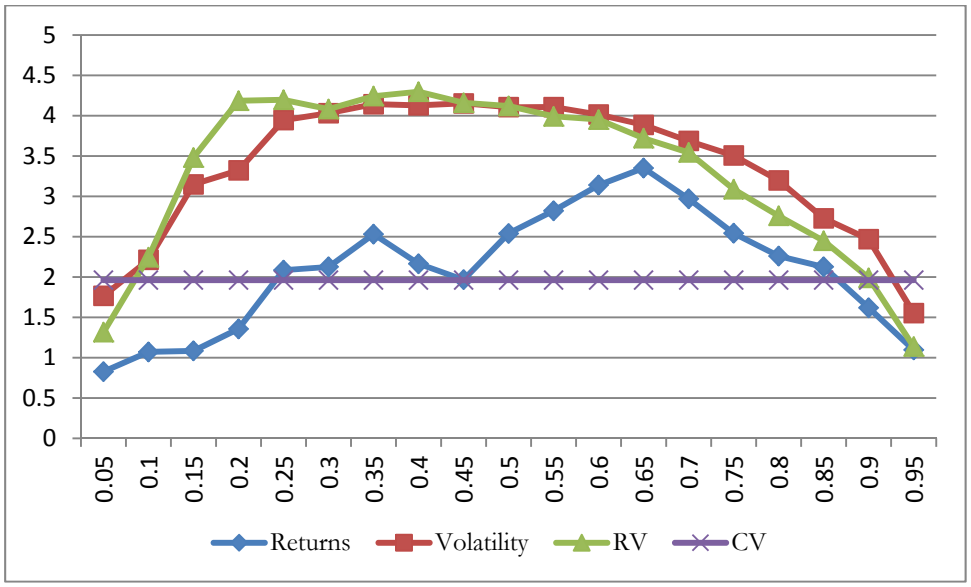
Figure 1. Causality-in-Quantiles Test for Dow Jones Islamic World Equity Index



Note: Vertical axis measures the test statistics, while the horizontal axis correspond to the quantiles of the test; Returns is the test statistic for log-returns, Volatility stands for the test statistic of squared returns, while RV is the test statistic for realized volatility; CV is the critical value of 1.96.

Figure 2. Causality-in-Quantiles Test for Dow Jones Sukuk Index



Note: See Notes to Figure 1.