DYNAMIC INTERACTIONS AND DIVERSIFICATION BENEFITS BETWEEN SUKUK AND BOND MARKETS: INTERNATIONAL EVIDENCE

BY

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ABSTRACT

There is an enormous impact of the financial subprime crisis on returns of many asset classes, questioning on the effectiveness of the portfolio theory. Post the global financial crisis, one of the major challenges for regulators and investors is to search for level of integration of financial markets in consideration that globalization and technological advancement have enhanced cross-class correlations and complicate diversification opportunities. This study attempts to examine empirically whether fixed income investors of developed and emerging countries can diversify their portfolio through investing in the global sukuk market. The first phase of the study which saw the reduction of the Value-at-Risk of hypothetical portfolios constructed with bond and sukuk indices, had motivated for further analysis be undertaken on the dynamic interaction between these two investment assets. In the second phase, this research investigates the co-movement and causality between sukuk and bond markets while in the last phase, it examines the diversification opportunities for global conventional fixed income investors through inclusion of sukuk in their portfolios. This study applies several approaches including wavelet analysis and DCC GARCH in examining the dynamic relations and diversification benefits of these two assets. In terms of data, the daily return of 14 bonds and sukuk indices covering the period from January 2010 to December 2015 are used. The findings suggest that Malaysian and global sukuk markets provide better diversification benefits for the developed and emerging market for fixed income investors. In addition to that, fixed income investors from developed countries could also gain higher diversification benefits compared to emerging market investors by considering both bond and sukuk in their portfolios. This research has demonstrated a deeper understanding of the characteristics of international sovereign bond markets from portfolio diversification perspective. Wavelet approach enriches the understanding of this dynamic behavior between sukuk and bond indices and it has significant implications for investors, regulators and portfolio managers. Information on cointegration and lead-lag relationship between sukuk and bond indices may also be useful for the regulators in terms of formulating macro stabilization policies for the countries as well as for fund managers in articulating their trading and investment activities.

ملخص

هناك أثر هائل للأزمة المالية على عوائد العديد من فئات الأصول، مما يشكك في فعالية نظرية الحافظة. وباعتبار الأزمة المالية العالمية، فإن أحد التحديات الرئيسة التي يواجهها المنظمون والمستثمرون هو البحث عن مستوى التكامل بين الأسواق المالية بالنظر إلى أن العولمة والتقدم التكنولوجي قد عززتا العلاقات المتبادلة بين الطبقات ويعقدان فرص التنويع. تحاول هذه الدراسة إجراء دراسة تجريبية ما إذا كان بإمكان مستثمري الدخل الثابت في البلدان المتقدمة والناشئة تنويع محفظتهم من خلال الاستثمار في سوق الصكوك العالمية. وقد دفعت المرحلة الأولى من الدراسة التي شهدت تخفيض القيمة الافتراضية للمخاطر التي تم إنشاؤها باستخدام مؤشرات السندات والصكوك إلى إجراء المزيد من التحليل على التفاعل الديناميكي بين هذين الأصلين الاستثماريين. وفي المرحلة الثانية، يبحث هذا البحث في الحركة المشتركة والسببية بين الصكوك وأسواق السندات، بينما يدرس في المرحلة الأخيرة فرص التنويع لمستثمري الدخل الثابت التقليدي العالمي من خلال إدراج الصكوك في محافظهم. وتطبق هذه الدراسة عدة مقاربات منها تحليل المويجات وDCC GARCH في دراسة العلاقات الديناميكية وتنويع فوائد هذين الأصلين. من حيث البيانات، تم استخدام العائد اليومي لأربعة عشر (14) سندا ومؤشر الصكوك التي تغطي الفترة من يناير 2010 إلى ديسمبر 2015. وتشير النتائج إلى أن أسواق الصكوك الماليزية والعالمية توفر منافع تنويع أفضل للأسواق المتقدمة والناشئة للمستثمرين ذوي الدخل الثابت. وبالإضافة إلى ذلك، يمكن للمستثمرين ذوي الدخل الثابت من البلدان المتقدمة أيضا الحصول على فوائد تنويع أعلى مقارنة بمستثمري الأسواق الناشئة من خلال النظر في السندات والصكوك في محافظهم. وقد أظهر هذا البحث فهما أعمق لخصائص أسواق السندات السيادية الدولية من منظور تنويع الحافظة. ويثري نهج المويجات فهم هذا السلوك الديناميكي بين الصكوك ومؤشرات السندات، وله آثار كبيرة على المستثمرين والهيئات التنظيمية ومديري المحافظ. ويمكن أيضا أن تكون المعلومات المتعلقة بالتكامل المشترك والعلاقة بين الصكوك ومؤشرات السندات مفيدة للمنظمين فيما يتعلق بصياغة سياسات تثبيت الاقتصاد الكلي للبلدان وكذلك لمديري الصناديق في توضيح أنشطتهم التجارية والاستثمارية.

APPROVAL PAGE

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TO

My beloved parents, Serajul Islam Bhuiyan, Dulari Ferdousi and my wife; Mousumi Ahsan

My dearest brother and sister, Safaiyat Ferdous, Sanjida Fardousi

DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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In the name of Allah, the most gracious and the most merciful.
"By time. Indeed, mankind is in loss. Except for those who have believed and done righteous deeds and advised each other to truth and advised each other to practice"
Surah Al-Asr

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LIST OF ABBREVIATION

ADF	Augmented Dickey-Fuller
BPAM	Bond Pricing Agency Malaysia
BNM	Bank Negara Malaysia
CWT	Continuous Wavelet Transform
DCC	Dynamic Conditional Correlation
DWT	Discrete Wavelet Transform
e.g.	*exempligratia* (for example)
et al.	*et alia* (and others)
GCC	Gulf Cooperation Council
ISRA	International Shari'ah Research Academy
MGARCH	Multivariate Generalized Autoregressive Conditional Heteroscedasticity
MODWT	Maximal Overlap Discrete Wavelet Transform
MPT	Modern Portfolio Theory
OLS	Ordinary Least Squares
SAC	Shari'ah Advisory Committee
VAR	Vector Auto Regression
VECM	Vector Error Correction Modelling
YTM	Yield to Maturity

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Understanding the co-movement among asset returns is always a critical issue in finance, as investors can minimize the risk through diversification. Co-movement has not only theoretical implications to understand the formation of asset prices but also practical implications for asset allocation and risk management (Connolly, Stivers and Sun; 2007). Due to the dynamic nature of the markets, the significance of the correlation estimation has increased in the recent situation, especially during the highly volatile period. Therefore, investors search for diversification opportunities through investing in that sort of portfolio which has negative or lower correlation among assets' return.

Some investors strive for capital appreciation while others may follow capital preservation strategy in terms of investment. Capital preservation helps investors to safeguard the capital, rather than considering the return on investments. Diversification helps investors to safeguard their capital through allotting money in different investments. Diversification can support a portfolio to boost not only when markets are prosperous but also when the returns go down in a particular sector. Investors who held 100% equity portfolios over the last few years had experienced getting very poor returns. On the other hand, the investors who diversified their portfolio through investing in bonds, property, infrastructure and hedge funds, were more likely to gain higher returns (Goldman Sachs, 2011).

Economists and financial analyst emphasize on "Market Portfolio" as the combination of all asset classes that provides the highest risk-adjusted returns. The market portfolio gives a beneficial guideline which helps to reduce risks and diversify investments in the best feasible way amongst uncorrelated assets. This diversification should not be restricted within a country while it should combine all asset classes globally.

There is an enormous impact of the recent financial subprime crisis on the returns of many asset classes, questioning on their contribution to the portfolio maximization, following the classic portfolio theory. Moreover, globalization and technological advancement enhance cross-class correlations, complicating the diversification opportunity. After the financial crisis, a major challenge for the policy makers and investors was to search the level of integration of financial markets with a perspective of gaining the benefit of diversification opportunity. As the global economy grows and developing markets enlarge their economies, both individual and institutional investors search for prospects to diversify their portfolios. As co-movements become stronger, diversification benefits become lower (Ilano and Bruneau, 2009). To avail global portfolio diversification benefit, individual and institutional investors are more interested in co-movements. A large portion of international asset markets is represented by bond markets and it is also important to understand the association between them.

Usually, investors seek diversification opportunity combining bonds and stocks in the portfolio, where stocks are a riskier investment compared to bonds, but provides a higher return than a bond. Barsky (1989) stated that the bond and stock co-movement is independent. However, a positive stock-bond correlation also observed in the financial markets is considered as a “spillover” effect which means shocks in the stock market have an impact on volatility and returns in a bond market that causes prices to fall for both assets. Another strong reason behind the positive stock-bond correlation is the “contagion” effect, which means these two assets may be affected by the macroeconomic variables in a comparable way that may cause positive correlation in bond and stock returns. Based on previous studies, it can be argued that there is negative correlation observed between these two assets. Ideally, correlation needs to shift from a positive to a negative sign to diversify a portfolio, thus enabling investors to gain decoupling benefits. Decoupling is defined as when the returns to asset shift towards opposite direction which leads to maximizing the diversification benefits for the period of market crisis because of flight-to-safety phenomena (Gulko 2002). Flight-to-safety can be defined as when the stock market plummets sharply, hence, there is a tendency among investors to shift their investments from risky to non-risky assets for example, treasury bills and bonds (Masloy & Roehner 2004).

Bonds have a significant role in an investor’s portfolio as they assist in preserving capital and offer diversification in many different market environments. After removing government barriers to the international flow of capital in major developed countries during the early 1980s, the integration of global bond markets has increased intensely in the previous two decades. The degree and the nature of association in the global bond market have significant implications on bond diversification opportunity (e.g., Clare et al., 1995). To diversify investment risk or enhance portfolio performance, investors eventually seek opportunities in the emerging global bond markets. However, there is a significant variation found in international bond market return co-movements (Clare and Lekkos, 2000). Therefore, the degree of global bond market association is importantly an issue of empirical analysis.

In relation to that, Islamic finance receives a lot of attention from the academicians, institutional investors and asset managers in the search for higher returns, lower correlation and growth potentiality. The global Islamic finance industry was valued at approximately USD1.9 trillion as of 2014 (KFH, 2015). Significant growth was observed in the Islamic finance industry at nearly 16.94% between 2009 and 2013 (KFH, 2015) and the number of investors interested in Shariah-compliant securities is expected to grow along with the industry. The Islamic financial industries are found to be insulated from crisis due to the fundamental restriction of the Shariah against Riba (Interest) and Gharar (needless uncertainty), and the impermissibility and inaccessibility of financial derivatives which may have been a vital contributor to protecting the Islamic financial system from encountering the vast effects of the crisis (Smolo and Mirakhor, 2010).

In this context, Islamic finance, specifically fixed income instruments recognized as sukuk, is now an essential part of the mainstream global financial system. The market topped US$300 billion at the end of 2014, with a remarkable growth and increasing diversification of issuers (MIFC, 2014). Sukuk complies with the Islamic law which prohibits charging or paying interest, rather payments are made based on profit or loss sharing, as well as rental or lease income. Although Muslim investors are the key buyers of sukuk instruments, however, the demand for sukuk now spread out far beyond the Islamic world. Statistics show that conventional investors may account for approximately 40% to 60% of any sukuk subscription.[1, 2] Financial engineering has designed sukuk structure in such a way which support the private and public organization to fund (Oakley, 2011). Hence, sukuk can be a lucrative option for both Islamic and non-Islamic fund managers who are looking for diversified investment portfolio.

[1] Source: Financial News, “Western Investors Warm to Sukuk,” 17 July 2012.
[2] Source: FinanceAsia, “Malaysia's Islamic Bonds Lure ‘Agnostic’ Investors,” 21 May 2014.

The global sukuk market had observed sharp growth in the previous few years as annual issuances were just about USD1172 million in 2001 to USD138 billion in 2013 (IIFM, 2014). The recent growth of the global sukuk market has been very impressive driven by key markets such as Malaysia, the United Arab Emirates (UAE) and Saudi Arabia as well as emerging frontiers such as Indonesia and Turkey. The global sukuk outstanding topped USD300 billion as of November 2014, an 11.4% increase from USD269.4 billion at the end- 2013 (MIFC, 2014). There is an increasing trend observed in Malaysia's secondary sukuk market which is fairly sizeable at approximately USD173.4 billion at the end of November 2014, 9.6% increase year-on-year. At the same time, the total GCC sukuk outstanding portfolio rise by 6.4% to USD90.8 billion compared to USD85.3 billion outstanding at the end of 2013 (MIFC, 2014). Ernst & Young a well-known global consultant, forecast that there would be a high global demand for sukuk and it may reach US$900 billion by 2017[3] . In recent times in 2014, revolutionary issuances were documented from the UK, Hong Kong, Senegal, South Africa and Luxembourg – strengthening the sukuk market's position as a sustainable and competitive source of funding. Moreover, sukuk listings have also moved to cross-border activity as sukuk is listed on many key stock exchanges specifically in Europe – such as London Stock Exchange, Irish Stock exchange, and Luxembourg Stock Exchange (MIFC, 2015). In the corporate sector, national oil and gas producer Petronas issued USD1.25 billion sukuk to raise working capital[4]. Mitsubishi UFJ, Bank of Tokyo and Goldman Sachs debuted in the global sukuk market in September 2015.

[3] Ernst & Young MENA, "Global Demand for Sukuk to Reach US$900bn by 2017," 9 September 2012.
[4] "PETRONAS begins USD 17bln bond and sukuk drive" The Star (March 2015)

It is essential to discuss the risk-return profile and relative strengths of sukuk markets compared to bond markets before discussing the diversification benefits of sukuk. Although there are many similarities between bonds and sukuk; nonetheless, these two financial instruments are different and are not duplicate tools of financing. Sukuk has a coupon, fixed term maturity and is tradable at yield price which is similar to conventional bonds (Zakaria, Isa, and Abidin, 2012). However, sukuk is issued based on shariah principals that differ from bonds, since bonds are based on ancient structure of a loan imposed with interest (RAM, 2008) while sukuk as a certificate that ensures the holder's ownership right of an underlying asset which is undivided in nature and it also claims to all rights and obligation of a tangible assets (IFSB). In line with Bey (2007) and Wahdy (2007), sukuk are more competitive in comparison with bonds. This is due to: (1) the possibility of gaining higher profit sharing than bonds, (2) secured to fund potential projects, (3) in the event of a loss, investors would still retain their assets, and (4) they are not perceived as a debt but investment letters.

Moreover, according to the empirical studies conducted by researchers claimed that the average yield to maturity and the returns of sukuk certificates are higher than conventional bonds in major sukuk issuing countries (Fathurahman and Fitriati, 2013; and Mosaid and Boutti, 2014). For instance, according to Safari el. al (2013), there is a significant difference between the mean yield of sukuk and bonds for all securities issued by Bank Negara Malaysia (BNM). The difference between means showed a positive figure which represents the yield of sukuk certificates is higher compared to the yield of bond issued by the BNM, *ceteris paribus.* In term of securities issued by a government agency such as Cagamas Berhad, there is a significant difference have found between mean yields of sukuk securities and bonds except for securities with 1 or 2 years maturity. The mean difference showed a positive figure which also highlights