ON THE DYNAMIC LINKS BETWEEN COMMODITIES AND ISLAMIC EQUITY

By: Ruslan Nagayev, Mustafa Disli, Koen Inghelbrecht, Adam Ng

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This figure illustrates the marginal effect of concentration on efficiency in dual banking systems. It shows the positive values of marginal effect of concentration on efficiency. We can see the higher magnitude for Islamic banks (the blue line) compared with conventional banks (the red line).

Introduction

Have commodities and equity become a "financialized market of one"? Is such oneness persistent? Do diversification benefits still exist? Evidence behind these enquiries offers important insights for policymakers, governments, traders and investors, and constitutes the main motivation for this paper. To assess the viability of commodities as an alternative asset class for Islamic equity investors, we present evidence on the extent to which returns in commodities and Islamic equity markets move in sync in both time and frequency domains. Our findings reveal that, throughout the January 1999-April 2015 period, correlations between commodities and Islamic equity were highly volatile and time sensitive. While there had been minimal correlation between commodities and Islamic equity prior to 2008, the relationship has strengthened since 2008, possibly attributed to the anomaly arising from the global financial crisis. Trends in the recent two years, however, suggest that the links between commodities and Islamic equity are heading towards their pre-crisis equilibrium, offering again potential diversification opportunities for investors. Divergence in correlations reveals that the behaviour of commodities is heterogeneous with varying potentials for diversification. Overall, gold, natural gas, soft commodities, grains and livestock are better portfolio diversifiers than oil and other metals. Relative to medium-to-long term investors, short-term investors gained better diversification benefits in most commodities during bullish, bearish and market recovery periods.

Tightened correlations and heightened asset volatilities suggest that commodities and equity tend to move towards a "market of one" during global economic downturns. For Islamic equity investors, this implies that diversification benefits may not be as strong when it is needed the most. In most cases, such "oneness" is persistent in the medium-to-long-term horizon. However, evidence of financialization of commodity markets in the short run remains equivocal as inferred from our analysis. Against this backdrop, our findings contribute to two strands of research: the possible existence of financialization for policy and commercial considerations in different market conditions; and the potential benefits of investment diversification across time scales.

From a traditional perspective, commodity and equity markets are inversely related and, therefore, commodities are considered to be good portfolio diversifiers (Kang, 2012). However, the increased financialization of commodity markets and the impact of financial factors on commodity price volatility have contested this interpretation. With exchange-traded derivatives on commodity markets being 20 to 30 times larger than physical production and with massive speculations on temporary price movements, the real markets are now transformed into financial markets driven by market sentiments rather than fundamentals (Domanski and Heath, 2007; Silvennoinen and Thorp, 2013). Therefore, the ensuing short-term commodity price movements cannot be fully explained by the supply and demand of commodity users (United Nations, 2012). Contemporary trends in commodity markets have cast scepticism on the diversification benefits of commodity investments. An increasing correlation across equity and commodity returns would discourage investors from choosing commodities as a refuge during periods of stress in traditional asset markets. If more investors are including commodities in their portfolios, negative news in one market, as result of a growing set of common state variables driving stochastic discount factors, may cause liquidation across several markets (Kyle and Xiong, 2001). This will generate more variation in correlation and volatility, and minimize diversification benefits for both equity and commodity portfolio managers (Kyle and Xiong, 2001; Silvennoinen and Thorp, 2013). On the other hand, studies have postulated that "real economy" factors such as the increasing demand from large developing countries and regular supply shocks are key to explaining commodity price volatility, and that the underlying factors that influence commodity prices are distinct from those that affect the value of stocks and bonds (Daskalaki and Skiadopoulos, 2011; Geman and Kharoubi, 2008). Understanding the dynamic link between commodities and equities is therefore important.

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To date, studies on the link between commodities and equities have mainly focused on mainstream conventional equity indices such as the US S&P 500 and Dow Jones global equity indices. With the launch of Islamic equity indices, Islamic funds and global sukuk in several markets since the 1990s, Islamic finance industry has been fast emerging as a viable market offering alternative asset classes. Although the industry is still a small share of global financial market with a total asset size of US$ 2 trillion in 2014, it is set to grow 15-20% annually in many of its core markets and is expected to expand the international reach of issuers and investors. Growing demands from a significant, and relatively unbanked, Muslim population (23.4% of global population in 2010) as well as faith-based and socially responsible investors have been key growth drivers of the Islamic finance industry. Within the Islamic asset allocation universe, equity funds represent one-third of Islamic funds worldwide. Islamic equity indices have proven to be valuable to Islamic fund managers, who have benefited from standardised screening methodologies and the growing number of Shariah-compliant securities, as well as to those investors searching for portfolio diversification and ethical investment opportunities (IFSB, 2014). The screening excludes businesses engaged in immoral activities (e.g., weapon, gambling, etc.) and firms that exceed a given limit of leverage and interest-bearing investments. As a result, large non-compliant firms are typically excluded from the pool of investable assets. This restricts the Shariah compliant investable universe such that the portfolio exhibits more volatile returns due to under-diversification, composition of smaller firms, and sector concentration (Hussein and Omran, 2005). Yet, some studies have shown that levered firms tend to exhibit an inverse relationship between current returns and stock volatility (Black, 1976; Christie, 1982). In particular, the low leverage and asset-backed nature of Islamic equities imply that real and financial sectors are closely linked, and that exposure to volatility spillovers is limited (Majdoub and Mansour, 2014).

Limited investment opportunities in the Islamic market render the commodities market a natural complement to Islamic investment. Tangible and spot commodities meet the requirements of non-interest-bearing transactions and ethical screening. Our study contributes to the literature by focusing on the time-varying relationship between commodities and Shariah-compliant equities. We examine whether Islamic investors could retain the opportunity to reap diversification benefits by incorporating various types of commodities into their equity portfolios across short, medium and long-term horizons under different market conditions. To the best of our knowledge, this study is the first to investigate such a relationship in both time and frequency domains. We consider 17 commodities from five categories, namely energy (crude oil and natural gas), precious metals (gold and silver), industrial metals (aluminum, copper, zinc, lead and nickel), grains and livestock (corn, soybeans, wheat and cattle), soft agriculture (cocoa, coffee, sugar and cotton). Such a variety of commodities allows us to examine whether commodities can be considered as a homogeneous asset class vis-à-vis Islamic equity.

A battery of econometric models is combined to capture the dynamic and multi-time scale nature of our research. First, the multivariate generalized autoregressive conditional heteroskedasticity dynamic conditional correlation (MGARCH-DCC) model is used to assess the evolution of volatilities and correlations between commodities and Islamic equity over time as well as their potential suitability as hedges for each other. This model has been widely used in related studies (Büyükşahin et al., 2010; Choi and Hammoudeh, 2010; Creti et al., 2013; Vacha and Barunik, 2012). Second, we apply the wavelet coherence analysis that allows for the study of time series in the time-frequency domain to uncover the dynamics of correlations between commodities and equity. The application of wavelets uncovers complex price-correlation patterns without resorting to ad-hoc specified time or frequency frameworks. This model has, amongst others, been used by Madaleno and Pinho (2014) (oil and stock interactions), Vacha and Barunik (2012) (co-movement of energy

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commodities), and Dewandaru et al. (2014) (Islamic and conventional equity markets). Specifically, we first use MGARCH-DCC because variations in correlations and volatilities at higher frequency levels are richer and, subsequently, to have a more complete picture, we employ wavelet coherence to assess the co-movement between the assets on medium and high scales. Since commodity and equity markets are complex systems of interacting agents with varying term objectives and heterogeneous risk tolerance, these models collectively provide a more in-depth and robust analysis that seeks to reinforce the understanding of the subject matter.

Conclusion and research implications

Islamic equity index investors are relatively under-diversified since they are subject to religious constraints. From this perspective, it is important to verify whether alternative markets could reduce their market exposure to risk and provide diversification opportunities. The commodity market is a natural choice since spot trading is permissible according to the principles of Shariah. Applying MGARCH-DCC and Wavelet Coherence analyses, we examine the extent to which the commodities market co-moves with Islamic equity market. Our findings reveal that, throughout the January 1999-April 2015 period, the return correlations are time-varying, i.e., vary over different phases, suggesting that not all commodities make equally good diversifiers at all times. Gold, natural gas, agriculture, grains and livestock offer good diversification opportunity for short-term investors (below 32 days horizon) relative to oil and other metals before the 2008 financial crisis. Natural gas is the best diversifier in the short run during and after the crisis. Compared to short-term investors, medium-to-long term investors (32-256 days horizon) generally do not gain substantially more diversification benefits (except for sugar during the crisis) across different market conditions. Except for cotton, sugar, cocoa and soybean, long-term investors (more than 256 days) share

Unlike mainstream wealth management practices, IWM is bound by restrictions to ensure it serves its objectives.

similar benefits from investing in the types of commodities like short-term investors.

The time varying dimensions could be captured by investment managers in their rebalancing activity in both passive and active investment approaches, allowing risk and return to be managed appropriately in accordance with investors' specific objectives. Our results offer insights into a blend of passive and active investment approaches in a multi-asset portfolio. Different market environments tend to suit active or passive approaches. The 2008 global financial crisis is a prime example that underscores the need to be scrupulous about the management of investment risks. Passive Islamic investment managers can include both Islamic equity index and selected commodities indices into passive Islamic exchange-traded funds when the asset classes are not highly correlated. For Islamic investors seeking to outperform index benchmarks and to optimise from forces of change in financial markets, active and value-oriented investment strategies would stand to benefit from the dynamic assessment of the link between different commodities and Islamic equity index. While passive index investment may introduce significant concentration and benchmark risks, active investment management is capable of generating outperformance (alphas) and managing the risks inherent in the adoption of a benchmark (beta of a portfolio's performance). This could plausibly explain why short-term investors, who are attuned to more active management, gained better diversification benefits than medium-to-long term investors during the 2008 crisis.

In our view, high correlation in some of the commodity-equity series in long-term may not necessarily imply the existence of financialized markets. It is, therefore, important to have a balanced approach in both regulations and in investment. For regulators, it is important to ensure that markets are robust to derive the full benefits of wider participation of investors. Pure financial trading products can be monitored within the framework of financial stability (see, for example, recommendations from IOSCO on regulation and supervision of commodity derivatives markets). Principles and lessons from Islamic finance can be drawn to enrich such framework.

While demand for commodity may be influenced by similar factors driving the demand for equity, the supply profile of commodities differs from equity. Commodities' supply is relatively inflexible over the short horizon, suggesting that periods of correlation with equity are typically short-lived. Unlike other financial assets, commodities are tangible assets that will eventually be driven by the demand and supply of goods (Bain, 2014). In the spirit of Baele et al. (2010), future research assessing the supply and demand determinants would shed more light on commodity and Islamic equity return co-movements. Although correlations have now abated over the short-term horizon especially in recent years, the market is still in the state of flux. Tendency of a potential re-financialisation can again result in ineffective diversification. Such concern warrants the need to have well-functioning markets as proposed by the G20 Study Group on Commodities (2011) and United Nations (2012).

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