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SERIES EDITOR’S INTRODUCTION


An analysis of the existence of volatility spillover between the conventional stock index and participation-30 index based on the indexes in the Turkish Capital Markets BIST-30 and the Participation-30 indexes is carried out in Chapter 1. They find a strong correlation between the BIST-30 and Participation-30, which are affected by the same shocks, causality and volatility in both directions.

The authors of Chapter 2 identify models for carrying out bankruptcy risk analysis that have as variables relevant performance indicators to examine the bankruptcy risk of the Romanian industrial companies, to determine its predictability and significance, in order to avoid their potential bankruptcy.

In Chapter 3, the authors aim to support the employment of the female labour force and to show its share in the development and growth in the member countries of the Organisation of Islamic Cooperation (OIC). They find that female employment has a positive impact on economic growth for the selected OIC countries.

The author of Chapter 4 investigates the volatility spillover from oil to precious metals under high volatility and low volatility regimes. Accordingly, results showed that there were volatility spillovers from oil to palladium and platinum in low volatility regimes and from oil to platinum in high volatility regimes.

In Chapter 5, the authors reveal knowledge, report on perception level and look at the evaluation of exchange rate risk management techniques of enterprises registered to Afyonkarahisar Chamber of Commerce and Industry. The most important finding of this study is that the majority of the companies, which are operating in a competitive environment, are intensely exposed to foreign exchange risk but try to overcome the foreign exchange risk using traditional internal firm-level hedging methods instead of well-reputed external hedging methods or derivative instruments.

The authors of Chapter 6 demonstrate the effect of the CAMLS (C represents capital adequacy; A, asset quality; M, management adequacy; E, earnings; L, liquidity; and S, sensitivity to market risks) variables on the variable E. The study revealed the importance of the capital, management and liquidity variables, which are internal factors, in increasing the profitability of banks.

In the Chapter 7, the authors examine the interaction between experience, satisfaction and positive word of mouth within the context of city marketing. The findings of the study exposed an interaction between experience, satisfaction and positive word of mouth regarding a city. Additionally, it showed the mediator role of satisfaction on the relationship between experience and positive word of mouth.
The author of Chapter 8 aimed to determine the pros and cons of the Crowdsourcing concept through new media applications in the form of critical evaluations by examining sample case studies that use the Crowdsourcing concept. The study demonstrated that Crowdsourcing is becoming a worldwide business model and allows anyone with free time and internet connection to contribute to the economic productivity.

In Chapter 9, the authors analyse the effect of motivation factors on the performance of the salesperson and found that the dimensions of image and relations among five dimensions namely satisfaction, image, relations, knowledge of product and service and advertisement related to motivation factors have a significant effect on the task performance of salesperson.

The author of Chapter 10 focused on combining positive psychological capital and its assurances with seven different sources of motivation, as categorised in Allen and Fabian, in 2019. Based on input from managers of human resources department employees, job search behaviour was found to be high. The inability to optimise the skills of individuals and limited career opportunities in the institutions they work for are examples of factors that affect job search behaviour.

In Chapter 11, the author discussed tax as a tool for solving the issue of climate change. The author noted that a multidimensional policy instead of a one-dimensional policy, an environmentally conscious society and state, and cooperation of policy actors on a global scale are the basic elements, which can play an important role in the solution of the climate change problem.

In Chapter 12, the author discussed the concepts of community media, sustainability and female-oriented non-governmental organisations (NGOs), and then explained the media usage habits and the factors that affect the sustainability of the preferred channels of the female-oriented NGOs. Conclusions show that the financial, content production related, technical, and legal factors affect the sustainability of community media.

The author of Chapter 13 investigates the EU’s anti-discrimination policy for sports (i.e. the Treaty of Lisbon (2009)). In this study, the author raises awareness of this crucial and unending discrimination problem in sports.

In Chapter 14, the authors measure efficiency of national innovation systems (NIS) using the data envelopment analysis (DEA) method. This method is used on country samples of 18 Eastern European and Central Asian countries (EECA) and Turkey. Based on the key findings one can note that Kazakhstan, Turkey, Latvia and Uzbekistan are more efficient in innovation performance when compared to other EECA countries.

In Chapter 15, the authors investigate whether the BIST30 index acted in accordance with the overreaction hypothesis against the return changes in the Dow Jones Industrial Average (DJIA) index during the 2008 global financial crisis. Findings obtained using the CAR analysis show that the BIST30 index did not generally act in accordance with the overreaction hypothesis against the DJIA.

The last chapter (16) relates to the determinants of the Bank’s Stability in Latvia post-transition. The authors confirm the results of other studies on bank stability of small economies, with some exceptions due to the unique situation in term bank business models applied by Latvian banks.
CHAPTER 1

VOLATILITY SPILLOVER BETWEEN CONVENTIONAL STOCK INDEX AND PARTICIPATION INDEX: THE TURKISH CASE

Sezer Bozkuş Kahyaoğlu and Hilmi Tunahan Akkuş

ABSTRACT

Introduction – The rapid flow of information between the markets eliminates the possibility of diversifying the portfolio by bringing the markets closer, and may cause the volatility in a market to spread to another market. In this context, revealing the relationships between conventional and participation markets or financial assets is important in terms of portfolio diversification and risk management.

Purpose – The major aim of this work is to analyse the existence of volatility spillover between conventional stock index and participation index based on the indexes in Turkish Capital Markets. BIST-30 and Katılım-30 indexes are used as the representatives of conventional stock index and participation index, respectively.

Methodology – Firstly, the univariate HYGARCH (1,d,1) parameters are calculated, and secondly, the dynamic equicorrelation (DECO) methodology is applied. DECO model is proposed to simplify structural assumptions by introducing a structure in which all twosomes of returns take the same correlation for a given time period. In this way, DECO model enables to have an optimal portfolio selection in comparison to an unrestricted time varying-dynamic
correlation approaches and gives more advanced forecasting ability for the duration of the financial crisis periods compared to the various portfolios.

**Findings** – There is a strong correlation between BIST-30 and Katılım-30. They are affected by the same shocks. We expect to see different investor behaviours for Katılım-30 and BIST-30. However, they seem to have almost the same investor profile. In addition, there is a causality in both ways and volatility spillover between them.

**Keywords:** Participation index; volatility spillover; Dynamic Equicorrelation (DECO) model; HYGARCH model; Non-linear causality; Islamic stock index; Sharia-compliant equity; Islamic finance; conventional stock index

**JEL classification:** C58; G11; G32

### 1. INTRODUCTION

The financial deregulation and foreign openness process, which accelerated in the late twentieth century, increased trade relations between countries. Especially, the market collapse (Black Monday) in October 1987 and the ‘Asian Financial Crisis’ in 1997 made the integration of international stock exchanges more important (Kılıç & Buğan, 2016, p. 167). Along with technological developments, financial liberalisation accelerates the flow of information between markets and offers different investment opportunities in different geographical regions. However, the rapid flow of information between the markets eliminates the possibility of diversifying the portfolio by bringing the markets closer, and may cause the volatility in a market to spread to another market. In this context, revealing the relationships between markets or financial assets is important regarding the portfolio diversification and risk management.

Some of the new improvements in the global financial system are the establishment of Islamic banks, Islamic equities and bond markets, which are different from their counterparts (Ajmi, Hammoudeh, Nguyen, & Sarafrazi, 2014, p. 214). The Islamic financial system shows significant differences from the traditional financial system in terms of both principles and financial products (Hammoudeh, Mensi, Reboredo, & Nguyen, 2014, p. 190). The Islamic financial system requires all financial transactions to be made based on real assets, as well as sharing the profit and loss of the parties in the contracts (Rejeb, 2016, p. 2). Islamic law constitutes the basis of Islamic finance. In this context, the Islamic finance prohibits interest (riba) to be received and paid; performing overly ambiguous transactions (garar); gambling (maysir) including derivative transactions, which are not based on short sales, real transactions and speculation. In addition to these, Islamic finance is an asset-based financial system that differs from the interest-based conventional system and it establishes a principle to share profit and loss in the transactions (Hammoudeh et al., 2014, pp. 189–190; Shahzad, Ferrer, Ballester, & Umar, 2017, pp. 9–10). Islamic finance is identified with the concept of interest-free finance. Aydin (2012) stated that the compound interest rate in conventional finance is considered to be the eighth wonder of the world (p. 61).
Islamic stocks, one of the broadest range of investment products provided by the Islamic finance industry, have attracted the attention of international investors over the past few years. Portfolio managers and investors are increasingly interested in Islamic stocks that have different characteristics based on Islamic ethical values (Mensi, Hammoudeh, Sensoy, & Yoon, 2016, p. 2457). Stock markets definitely contain the risk-sharing component (Masih, Kamil, & Bacha, 2018, p. 1). Islamic stock indices comprise the shares of enterprises that meet the qualitative and quantitative criteria. However, these qualitative and quantitative criteria may differ between countries (Buğan, 2016, pp. 251–254). There is a difference between the criteria of the Kuala Lumpur Syariah Index (KLSI) Islamic indices in Malaysia and the criteria for the DJIMI and FTSEGII Islamic indices. While the income approach is preferred as the monitoring criteria rather than the activity approach in the DJIMI and FTSEGII Islamic indices, the situation for the KLSI indices is the opposite. According to the activity approach, the activities of the enterprises to be included in the Islamic index should be in accordance with the Islamic rules (Albaity & Ahmad, 2011, p. 163). However, as in the conventional finance system, the index selection for investments in Islamic finance is becoming more important as the global economic structure develops (Dania & Malhotra, 2013, p. 66).

The Islamic financial sector has improved significantly in recent years and it is foreseen that this development will not stop. According to the ICD-Thomson Reuters-published Islamic Finance Development Report-2018, it is estimated that, at the end of 2017, the total amount of global Islamic financial assets reached $ 2,438 billion and it will have reached $ 3,809 trillion by 2023 (ICD-Thomson Reuters, 2018). According to the report, the total Islamic financial assets in the world is dispersed as 71% Islamic banking, 17% sukuk, 6% other financial institutions, 4% Islamic funds and 2% takaful.

It is claimed that Islamic stocks represent a unique class of investment which is called as ‘decoupling hypothesis’, related to Islamic stocks and different from conventional stocks (Masih et al., 2018, p. 5). It is important to know how the investors in the market have differentiated from the conventional investors in terms of their investment preferences for portfolio diversification and risk management. Majdoub and Sassi (2017) stated that individual or institutional Islamic investor behaviour has an impact on market behaviour (Majdoub & Sassi, 2017, p. 16). It is thought that this effect may create different results on the volatility spillover in Islamic markets. Although there are various reasons behind the volatility spillover and the transmission of shocks between the markets, the Islamic financial sector brings different explanations to this situation. Indeed, this connection is expected to disappear as companies in ‘Islamic stock exchange indexes’ are assumed to contain low interest rates and low leverage ratios. In addition, the asset-supported financing rule, one of the basic principles of Islamic finance, provides that the real sector and financial sectors are interconnected, and this situation does not lead Islamic emerging markets to have volatility spillover in the US market (Majdoub & Mansour, 2014, p. 453). Due to the unique and conservative nature of Islamic investments, there is a common perception that ‘Islamic financial assets’ may provide a specific safeguard against the increased risk and instability in international financial markets. In addition, Islamic investment tools should be less sensitive to
external shocks in comparison to their conventional counterparts due to low ‘lever-
age ratios’, investable sectors and restrictions on speculative activities (Shahzad et al., 2017, pp. 9–10). Within the scope of these explanations, theoretically, we do not expect any volatility spillover between both of these two Islamic and conventional indexes.

The volatility spillover, which can be expressed as the effect of volatility in a financial market or asset on a volatility of a different market or asset, is the fact that new information on a market or asset can be effective on another market or asset. Therefore, the volatility spillover is the assimilation of news in a market by another market (Gebka & Serwa, 2007, p. 204). Volatility spillover can be divided into two as contemporaneous and dynamic volatility spillover. The contemporaneous volatility spillover is the spread of volatility that very same day, which usually occurs between the markets in the same region. The dynamic volatility spillover occurs usually between capital markets in different regions. In this case, the information in a capital market will affect other markets the next trading day, that is, the volatility spread may occur the next day (Mulyadi, 2009, p. 5).

In this study, whether there is volatility spillover between the indices in the same market is investigated. For this purpose, Katılım-30 participation index and BİST-30 conventional index in Turkey were included. Thus, it will be revealed whether these indices can be put in the same basket for portfolio diversification or not. In addition, conventional and Islamic stock investors in Turkey will have information regarding the risk sources of stock indices that they are investing. In earlier studies on volatility spillover, no study was found on conventional and Islamic indices in Turkey. This issue demonstrates the authenticity of the study. In addition, dynamic equicorrelation (DECO) method developed by Engle and Kelly (2012) will be used in this study. The method is one of the newest methods developed in recent years.

In the second part of the study, the literature review will be included. In the third part, the method of the study will be explained. The data and preliminary statistics about the data will be explained in the fourth section. Empirical findings will be included in the fifth part of the study. The general conclusions of the study will be explained in the sixth and last sections.

2. LITERATURE REVIEW

Various studies have been carried out on the risk and return structure of Islamic and conventional investment tools and indicators (Dewandaru, Bacha, Masih, & Masih, 2015). However, the issue of volatility spillover is studied in many ways due to its importance in terms of risk management. However, evidence for volatility spillover from developed markets to emerging markets has usually been investigated in those studies. Similarly, there are various empirical works on the volatility spillover between ‘Islamic and conventional markets’. Those studies were generally based on US markets, and the studies were carried out by linking US conventional markets with US Islamic markets (DJIM and MSCI Islamic indices). In our study, the effects of volatility spillover between ‘Islamic and
conventional stock indices’ in the same market are investigated. For this purpose, the literature on the volatility spillover between Islamic markets and conventional markets is summarised in the following.

**Mulyadi (2009)** investigated the volatility spillover between capital markets in Indonesia, the USA and Japan. As a result of the study, one-way volatility spillover from the US market to Indonesian market and two-way volatility spillover between Indonesian and Japanese markets were determined.

**Albaity and Ahmad (2011)** investigated the return and volatility behaviours of three Islamic stock market indices (DJIMI, FTSEGI and KLSI) in three different countries (USA, UK and Malaysia). According to EGARCH and TARCH model results, one-way volatility spillover from the DJIMI and FTSEGI Islamic indices to the KLSI Islamic index was determined. In addition, while the leverage effect was determined in the DJIMI and FTSEGI Islamic indices, no effect was found in the KLSI Islamic index.

**Dania and Malhotra (2013)** investigated the dependence between the four global Islamic indices (North America, EU, Far East, Pacific Region) and the conventional indices in the same region. As a result of the study, ‘positive and significant volatility spillover from conventional indices to Islamic indices’ was determined. There was also an evidence of the asymmetric volatility transition between the relevant markets.

**Hammoudeh et al. (2014)** examined the dependence between DJIM index, ‘three indexes of the global conventional stock exchanges’ (Asia, Europe, USA) and global factors (oil prices, VIX, US 10-year treasury interest rates, 10-year European monetary union government bonds). The empirical findings showed that there is dependence between the Islamic market (DJIM) and the conventional markets and risk factors. Accordingly, the ‘dissociation hypothesis’, which shows differences between Islamic markets and conventional markets, is rejected.

In their study investigating the volatility spillover between US stock markets and five MSCI Islamic indices (Indonesia, Malaysia, Pakistan, Qatar, Turkey), **Majdoub and Mansour (2014)** have implemented three models including ‘the multivariate GARCH-BEKK, DCC and CCC’. As a result of the study, conditional correlation estimations were found to be statistically significant in almost all cases, but it was determined that they were very low, that is, the shock transfers between these markets were not significant.

**Nazlioglu, Hammoudeh, and Gupta (2015)** examined whether there was volatility/risk transmission between ‘the Dow Jones Islamic stock markets and the three conventional markets (the US, Europe and Asia)’ before, during and after the 2008 global financial crisis. The study also explored the volatility spillover dynamics between the aforementioned markets and the US economic policy uncertainty index, oil prices, VIX and federal funding rate. As a result of the study, the presence of significant volatility spillover between ‘Islamic and conventional indices’ was determined.

In their study including ‘three sub-periods as pre-crisis, crisis and post-crisis’, **Saadaoui and Boujelbene (2015)** investigated the volatility spillover between ‘the Dow Jones stock indices and six Dow Jones emerging Islamic stock indices (Hungary, Malaysia, Mexico, Peru, Poland, Turkey)’. As a result of the study, it
was concluded that there was a spillover especially during the crisis period and the crisis affected all financial assets, whether Islamic or not.

Kılıç and Buğan (2016) investigated the spillover effects between the USA S & P-500 index and six Dow Jones regional indices (E1DOW, DJIEU, DJGCC, DJIGCC, DWAP, DJIAP). As a result of the study, apart from the relationship between Europe and Asia-Pacific regions, it was seen that there was a financial spillover effect in all relations between ‘Islamic and conventional markets’. The findings also show that there is a high correlation between their returns. In the crisis period, this relationship is not persistently decreasing and reactions to shocks occur at different times. The overall result of the empirical work was that Islamic markets did not respond differently to financial shocks emerging from conventional markets and there were no safe zones for investors during the financial crisis.

Mensi et al. (2016) carried out their study on 10 ‘Dow Jones Islamic and conventional sector index’ pairs (‘basic products, consumer goods, consumer services, finance, health services, industrialists, energy, technology, telecommunications and public services’). As a result of the study, the Islamic-conventional financial sector index pairs were found to be related to the period from 2001 to 2015 despite the prohibitions of Islamic principles.

Rejeb (2016) investigated the existence of volatility spillover for crisis period and calm period between 10 conventional market indices (‘developing markets’, ‘Arabian markets’, ‘Arabian markets except S. Arabia’, ‘GCC’, ‘Canada’, ‘UK’, ‘USA’, ‘Europe’, ‘Asia-Pacific’, ‘World market’) and eight Islamic market indices (‘developing Islamic market’, ‘general Islamic market’, ‘Canada Islamic’, ‘England Islamic’, ‘USA Islamic’, ‘Europe Islamic’, ‘Asia-Pacific Islamic’, ‘World Islamic’). As a result of the study, it was determined that Islamic markets were sensitive to financial crises, there was a strong dependence on Islamic markets from conventional markets and this dependence spreads among Islamic markets. These results show that the Islamic finance industry has failed to provide a strong safeguard against economic and financial shocks affecting conventional markets.

Majdoub and Sassi (2017) examined the volatility spillover and hedging effectiveness between China and Asian Islamic stock indices. As a result of the study, there was a significant positive and negative return on the Asian Islamic stock markets selected from China and a two-way volatility spillover between China, Korea and Thailand Islamic markets existed. This shows evidence of short-term predictability on Chinese Islamic stock market movements. However, there is no short-term volatility permanence in India, Indonesia and Malaysia.

In their study, Shahzad et al. (2017) contributed to the current debates on the empirical evidence of the hypothesis of the separation of Islamic stock markets from their basic peers. For this purpose, they investigated return and volatility spillover between three ‘conventional stock markets (USA, UK and Japan)’, the ‘global Islamic stock index (DJIM)’ and a number of important macroeconomic and financial variables (‘VIX index’, the ‘US stock market uncertainty index’, ‘US 10-year Treasury bond yields’ and ‘crude oil prices’). As a result of the study, strong interactions between ‘global Islamic stock market’, ‘conventional stock exchanges’ and significant risk factors have been determined. This shows that the ‘Islamic and conventional stock markets’ are not decomposed.
Celik, Ozdemir, and Gulbahar (2018) examined the existence of return and volatility spillover through VAR-EGARCH model between the ‘US and MSCI emerging markets’ and ‘Islamic stock index (Indonesia, Malaysia and Turkey)’. As a result of the study, it was found out that there was an asymmetric and multifaceted return and volatility spillover between developed countries and developing countries in terms of Islamic indices.

When the summary of the literature is examined, the studies on the volatility spillover between Islamic markets and conventional markets show that there is no differentiation between the markets. Only Majdoub and Mansour (2014) found a very low level of volatility relationship between Islamic markets and conventional markets, but evidence for strong volatility was found in other studies. Moreover, another point that is noteworthy in the literature is to explore the relationship between Islamic indices and developed markets such as the USA, Japan and European countries.

3. RESEARCH METHODOLOGY

It is a fact that the volatility of an asset is not directly observable so it is necessary to construct a model. The volatility is used as a measure of uncertainty or risk which plays an important role in financial market analysis. Hence, by means of a constructed model, the volatility can be easily measured and predicted. In the financial analysis literature, there are various volatility models which have been suggested to evaluate the characteristics of return for an asset. When the major characteristics of the high-frequency time series data are considered:

1. The volatility changes over-time in a continuous style.
2. The volatility clustering is the most common attribute with the periods of big changes in prices alternate with the periods during which small price changes or almost no changes occur. This leads to an asymmetric feature in the volatility.
3. In addition, excess kurtosis or fat-tailed feature is frequently observed.

The major aim of this work is to analyse the existence of volatility spillover between conventional stock index and participation index based on the indexes in Turkish Capital Markets, namely BIST-30, against Katılım-30 Participation Indexes. In this chapter, DECO approach is applied to capture the volatility of indexes. Based on the theoretical and conceptual framework, data and the empirical findings are discussed in the following and policy recommendations are made to contribute relevant literature.

3.1. Data

BIST-30 and Katılım-30 indexes are used as the representatives of conventional stock index and participation index, respectively. The daily return series of BIST-30 and Katılım-30 stock indexes are used for the period July 2014–October 2018.
The previous empirical literature examines the comparative behaviour of the Islamic financial markets and conventional markets (e.g., Al-Khazali, Lean, & Samet, 2014; Beck, Demirguc-Kunt, & Merrouche, 2013; Hayat & Kraussl, 2011; Jawadi, Jawadi, & Louhichi, 2014; Milly & Sultan, 2012) In this context, there are two major types of investor profiles, that is, faith-based stock investors and conventional-based stock investors (Umar, 2017). Faith-based investors only buy shares in Sharia-compliant equity and keep out traditional equities from their asset portfolio. On the contrary, the conventional investors’ portfolio contains both Islamic and traditional equities. This information is critical for the interpretations of the empirical findings in the following sections.

3.2. Methodology

The major steps of modelling BIST-30 and Katılım-30 are given in Fig. 1 such that the first and second steps start with calculation of the descriptive statistics and the routine stationarity tests are applied. Third step is the estimation for univariate model by using HYGARCH (1, \(d\), 1). As the fourth step, DECO model is estimated for pairwise return series. Afterwards, robustness test is implemented to ensure the reliability of DECO model in the fifth step. Finally, the existence of relationship between BIST-30 and Katılım-30 are tested and also the direction of this relationship is investigated by using the nonlinear Granger Causality tests.

3.3. Descriptive Statistics

Both of the return series are not normally distributed and they are skewed to the right. The graphs of BIST-30 and Katılım-30 are shown in Fig. 2a and 2b, respectively.

3.4. Stationarity Tests

The time series analysis starts with testing the normality and stationarity of the data to proceed to the next steps. The ‘Augmented Dickey Fuller (ADF) test’ and ‘Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test’ results of BIST30 and Katılım-30 are shown in Tables 1–4, respectively. It should be noted that the null