WHICH COMMODITY GROUP IS THE SAFE HAVEN FOR ISLAMIC STOCK MARKETS?

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ABSTRACT

This study analyzes which commodity group has hedging or safe haven characteristics for the Islamic Stock Markets. The spot prices of the S&P GSCI; Industrial Metals, Energy, Precious Metals, Agriculture, and Softs indices were used for the commodity groups analyzed in the study. The research was conducted with 2477 daily data set between March 31st, 2008 and March 29th, 2018 using the Baur and McDermott (2010) model. According to the findings, all commodity groups are safe havens for Islamic Stock Markets. Only the precious metals, however, have both safe haven and risk aversion characteristics. According to these obtained results, both theoreticians and practitioners may develop new investment strategies. In addition, they may offer new investment funds that can be pooled by including the commodities analyzed within the study in different weights.

JEL Classifications: G11, G14, G15

Key words: Commodity markets, Safe haven, Hedging, Islamic stock markets

1. INTRODUCTION

Investors need to know what roles financial instruments play in portfolio diversification to maximize returns and minimize risks. Investors would like financial products to be included in their portfolios as a safe haven, hedging or diversification instrument. These three concepts differ from each other. Not only do financial instruments with safe haven characteristics reduce the total portfolio

risk, they also aim at reducing the losses in adverse market conditions as well. The purpose of including the relevant asset in the portfolio in hedging is to reduce the total portfolio risk. There is no objective such as reducing losses in adverse market conditions. The purpose of the financial instrument which is an effective diversification instrument is to reduce total risk. Here, asset pairs with low positive correlations are preferred although the assets with null or negative correlations are preferred in hedging. Therefore, , it is aimed to optimize the number of stocks in the portfolio.

A safe haven investment instrument is defined as an asset with a null or negative correlation with another asset or a portfolio in a stressful or chaotic period in the market. At the same time, a safe investment instrument is also defined as an investment instrument that an investor desires to have in the portfolio in adverse market conditions. The safe haven characteristics of investment instruments are separated into two groups (strong and weak). While the strong safe haven characteristic means an asset has negative relationship with another asset or portfolio in crisis period in the market, weak safe haven characteristic means the asset or portfolio is without relationship with another asset (Baur and McDermott, 2010).

If a safe haven investment instrument is negatively related with another asset or portfolio in crisis periods, it reduces the losses because the price of the safe investment instrument increases when the price of the other asset or portfolio decreases (Baur and McDermott, 2010). In hedging it is expected that the investment instrument has a null or negative correlation on average with other asset groups. Hedging is divided into two groups (strong and weak) for assets or portfolios . An asset with strong hedging level is defined as having a negative relationship with another asset or portfolio on average. However, an asset with weak hedging level is defined as an asset having no relationship with another asset or portfolio on average. A hedging asset has no effect on reducing losses in crisis periods (Baur and Lucey, 2010).

Being a hedging instrument or a safe haven of an asset depends on the length of effects. The main purpose of an effective hedging instrument is to reduce the total portfolio risk. However, the relevant asset with safe haven characteristics is invested because of its negative relationship with other asset groups in crisis periods. The hedging asset does not reduce the losses of the investors in crisis periods (Baur and McDermott, 2010). In order to appreciate a financial asset as an efficient diversification instrument it is required to have a

low positive correlation with other financial assets in the portfolio. It is aimed at reducing the total risk by including the financial asset pairs with these characteristics in the same portfolio. It is not necessary to sort out the periods such as normal or falling market in order to determine the effective diversification. The main purpose is to pair up the financial instruments which make the lowest total portfolio risk in the same portfolio. The assets providing diversification also have no characteristics to reduce losses in crisis periods (Baur and McDermott, 2010).

The 2008 Global Financial Crisis was a turning point in the rise of Islamic Financial Markets. Through the Islamic Financial System, which was considered as a way out of the crisis, new financial products based on the Shariah Rules were presented to the market. Along with these new financial products arising as the alternative to traditional investment instruments, Islamic Stock Markets, which started to emerge after the 1990s, became a new option for all investors who wanted to avoid inflation effects (Hussin and Borhan, 2009). In addition, high diversification advantage of the Islamic financial products increased investments in these instruments with the beginning of the latest financial crisis (Mensi, Hammoudeh, and Kang, 2015).

Islamic financial products, however, are not the investment instruments that a company can export. A company needs to pay attention to some elements in order to present to the market a financial instrument compliant with Islamic rules. The company exporting the Islamic stock is required to not be involved in any activities forbidden in Islam such as alcohol or interest. The main reason for it is the prohibition by the Shariah Rules on these activities. For that reason, those who wish to make investments in accordance with the Shariah Laws want to evaluate their capital through the investment instruments that comply with their religious beliefs (Derigs and Marzban, 2008). Besides that, speculative transactions are also prohibited in the Islamic financial system; this in turn limits investment opportunities in the Islamic Stock Markets. In terms of these rules regarding Islamic stock investments, commodities are important diversification instruments to meet the requirements of interest-free transactions and ethical rules (Nagayev et al., 2016). The existence of spot trading in commodity markets is also appropriate for the Shariah Rules. At this point, commodity groups become the center of interest as investment instruments that can be used as important hedging, safe haven or

diversification instruments in the financial markets without contravening the Shariah Rules.

The answer to the question of "What is the investment instrument which has the hedging/safe haven characteristics for Islamic Stock Markets?" is investigated in this study. A great majority of the studies in the current literature analyze the interaction between certain commodities such as gold and oil with conventional stock markets. This is a major problem in generalizing the findings obtained in the literature. Moreover, the fact that the analyzed commodity groups were not analyzed for the Islamic Stock Markets is a major gap in the literature. The fact that we could not find any study analyzing the hedging and safe haven characteristics of the commodity groups in the Islamic stock markets in the conducted studies reveals the existence of a gap in the literature. This also underscores that the relationship between Islamic financial markets and commodity groups is not well known. Considering that efficiently diversified portfolio options can be created through new investment strategies based on the results obtained from this study distinguishes it from existing studies in the literature.

This study is aimed at empirically analyzing safe haven and hedging characteristics of agriculture, precious metals, industrial metals, softs, energy commodity groups for Islamic Stock Markets and filling the gap in the literature. Also, utilizing the S&P Global BMI Shariah Index, used for representing the Islamic Stock Markets is an important quality that differentiates this study. This index is important because it is the first and most general information source for the Islamic Stock Markets in the world. Considering the increasing importance and share of the Islamic Stock Markets in the global market, the obtained results are expected to attract both theoreticians and practitioners. While the findings are important for theoreticians in terms of creating different financial products such as new investment funds, they are important for practitioners from the perspective of developing effective investment strategies. Moreover, given that the analyzed period is 2008-2018, it is also important to determine the effect of the global financial crisis on investor preferences.

The study was conducted using the Baur and McDermott (2010) methodology and the daily data set between March 31st, 2008 and March 29th, 2018. The S&P Global BMI Shariah Index was used as proxy for the Islamic Stock Markets. The S&P GSCI Industrial Metals, S&P GSCI Energy, S&P GSCI Precious Metals, S&P GSCI Agriculture and S&P GSCI Softs Indices were used to represent the

commodity groups. The S&P WCI was used to represent the world commodity prices.

According to the results of this study, commodities are a safe haven for Islamic Stock Markets. However, precious metals are both important hedging instruments and safe haven in these markets. This can be regarded as an indicator that this commodity group could be used in Islamic financial products to be developed in future.

This article is organized as follows. In the second chapter, a general literature review is included. In the third chapter, data and basic statistical values are included. Methodology and analysis results are included in the fourth chapter and in the fifth chapter conclusion and evaluations are presented.

2. LITERATURE REVIEW

Many studies have analyzed the interaction among commodity prices, macroeconomic indicators and stock markets. The findings obtained showed existence of relationship between the analyzed variables and the commodity prices sometimes in the same and sometimes in the opposite directions. Kang (2012) states that stock and commodity markets have a negative relationship and therefore they are good portfolio diversification instruments.

According to the literature, conventional and Islamic stock markets have long-term relationships with the oil, precious metal, non-metal commodity groups (Ajmi et al.,2014; Hussin et al., 2013; Khan et al.,2015; Mensi, Hammoudeh, and Kang, 2015). According to this result, it is necessary to be careful about using these com modity groups as hedging instruments in effective portfolio diversification. According to some studies , Islamic stock markets show higher performance in both crisis and normal conditions than the conventional markets (Al-Khazali et al., 2014; Ashraf and Mohammad, 2014;, Hammoudeh et al., 2014; Mensi et al., 2017; Rizvi, Arshad, and Alam, 2015).

However, Al-Kahazali et al.(2014), in their study, found that conventional markets show higher performance. Gold from the precious metal group is an efficient hedging instrument and a safe port in many economies for financial markets in the analyzed literature (Arouri, Lahiani, and Nguyen, 2015; Baur and Lucey, 2010; Baur and McDermott, 2010; Chen and Lin, 2014; Choudhry, 2015; Ciner, Gurdgıev, and Lucey, 2013; Ibrahim,2012;, Ghazali, Lean, and Baharı, 2013; Hoang, 2011; Khan et al., 2015; Mensi, Hammoudeh,

and Kang, 2015; Reboredo and Rivera-Castro,2014).   However, hedging and safe haven characteristics of gold are not valid for all economies (Baur and McDermott, 2010; Chen and Lin, 2014; Choudhry, 2015; Wai, Lahiani, and Nguyen, 2014). Hedging and safe haven characteristics of the precious metals other than gold are valid for some analyzed economies (Baur and McDermott, 2010); Chen and Lin, 2014; Choudhry, 2015; Wai et al.,2014).

In the studies analyzing the hedging and safe haven characteristics of precious metals other than gold it is indicated that these metals also portray these characteristics in the analyzed economies and they can be effectively used by investors for these purposes (Baur and McDermott, 2010; Chen and Lin, 2014; Choudhry, 2015; Wai et al., 2014).

General literature review shows that gold and precious metals are widely used as hedging and safe haven instruments in financial markets. Johnson and Soenen (2009), Rossi (2012), Zapata, Detre, and Hanabuchi (2012), Mensi et al. (2013), Azar and Chopurian (2018) are among the researchers analyzing the relationship between commodity prices and stock indices. Johnson and Soenen (2009) analyzed whether the South African Stock Market was influenced by commodity prices or not.

According to their study results, commodity prices in Brazil, Argentina, and Peru are generally effective on stock markets. According to Rossi (2012), commodity prices and stock prices have positive correlation, while stock markets of Australia, New Zealand, Canada, Chile and South Africa are the granger reason for future commodity prices. Mensi et al. (2013) state that portfolio risk-revenue level can be managed more effectively by adding commodities to investor portfolios. Therefore, they emphasize that the commodities are included in the portfolios so that investors get the target risk revenue level with these effective diversification instruments. Zapata et al. (2012) determined that agricultural products played an important role in portfolios for the hedging investors.

Because agricultural products are low volatility assets especially in economic crisis periods, they are one of the commodity groups that the hedging investors prefer most in a crisis. According to Azar and Chopurian (2018), commodity markets are the investment instruments with strong hedging and safe haven characteristics in the GCC (Gulf Cooperation Council) Stock Prices. Büyükşahin, Haigh, and Robe (2009) concluded that there is no rising trend for the correlation between investable commodity indices and stock markets

for the period 1991-2008. However, Büyükşahin and Robe (2011) and Slvennoinen and Thorp (2013) obtained opposite results. In other words, there is an increasing correlation between stock market indices and commodity price indices. Öztek and Öcal (2017) suggested a model for the correlation between commodity and stock indices. In this context, precious metal and agricultural product indices were focused.

According to the study results, effective diversification opportunities are presented to investors due to the commodity market structure.As the literature indicates, the studies analyzing the role of commodity groups in Islamic stock markets are very limited. Often the commodity examined is limited to gold or oil. Hence the content and analysis of this study will make significant contribution to the literature.

3. DATA

The S&P Global BMI Shariah Index was used to represent the Islamic Securities Markets in this study. The S&P GSCI Industrial Metals, S&P GSCI Energy, S&P GSCI Precious Metals, S&P GSCI Agriculture and S&P GSCI Softs Indices were used to represent the commodity groups, while the   S&P WCI was used to represent world commodity prices. Spot prices of all indices were used. Commodities are investment instruments without constraint for Islamic Stock Markets. All data sets were obtained from https://us.spindices.com/ indices/equity/sp-global-bmi-shariah-us-dollar. Logarithmic revenue values were calculated utilizing the spot prices of all indices. All the analyses were conducted using the Baur and McDermott (2010) methodology on 2477 daily data sets between March 31st, 2008 and March 29th, 2018.

The most important reason for using the daily data set is the search of investors for a safe haven for short term as stated by Baur and Lucey (2010). The study was started after 2008 because the relationship between commodity groups and Islamic Stock Markets was weak before this period and very strong after this period as mentioned in the study of Nagayev et al. (2016). By taking advantage of all the spot values of indices, logarithmic return values have been calculated.

Descriptive statistical values of the data set used in the scope of the study are as in Table 1. According to the basic statistical values in Table 1, the returns of all commodity groups and Islamic Stock

Indices have a standard deviation that can be considered as low. According to the average revenue values belonging to each commodity group for the analyzed period only precious metals, grains and the products of the Islamic Stock Market provide positive returns for investors. All commodity groups except for those have negative returns. According to the Jarque Bera test statistic, series of all index values do not demonstrate normal distribution properties.

TABLE 1
Basic Statistical Values of Variables

	COMMODITY GROUPS						
	Agriculture	Energy	Industrial Metals	Precious Metals	Shariah Stock	Soft	WCI
Mean	-0.0001	-0.0002	-0.0001	0.0002	0.0002	3.04e-05	-0.0002
Median	-0.0002	0.0004	-0.0002	0.0003	0.0006	-9.22E-05	0.0000
Maximum	0.0902	0.0981	0.0750	0.0825	0.0904	0.0639	0.0712
Minimum	-0.1133	-0.0935	-0.0772	-0.1000	-0.0778	-0.0749	-0.0750
Std. Dev.	0.0156	0.0201	0.0150	0.0121	0.0106	0.0138	0.0148
Skewness	-0.2858	-0.0827	-0.2033	-0.2006	-0.5514	-0.1484	-0.1265
Kurtosis	6.6534	6.1688	5.3967	8.7798	12.5034	4.6562	6.0588
Jarque-bera	1411.260	1039.183	609.8957	3464.355	9446.719	292.2016	972.2243
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Figure 1 indicates the price level values of Islamic Stock Market and the commodity groups. According to Figure 1, prices of industrial metals generally have higher values than the world commodity price index. However, the general energy, precious metal, grain and agricultural product price levels are generally lower than the world commodity price index.

As can be seen from Figure 1, commodity prices are generally in parallel with each other. However, Islamic Stock prices generally tend to rise after 2008. ADF and PP unit root tests were applied to all series before starting to test whether the selected commodity groups had safe haven or hedging characteristics for the Islamic Stock Markets or not. According to the analysis results, all the series have unit roots for level values. However, when the first differences of the series was taken, all of them became stationary at the 1% significance level. One can communicate with the author/authors in order to get the stationary test results.

FIGURE 1
Shariah Stock Market and Commodity Prices
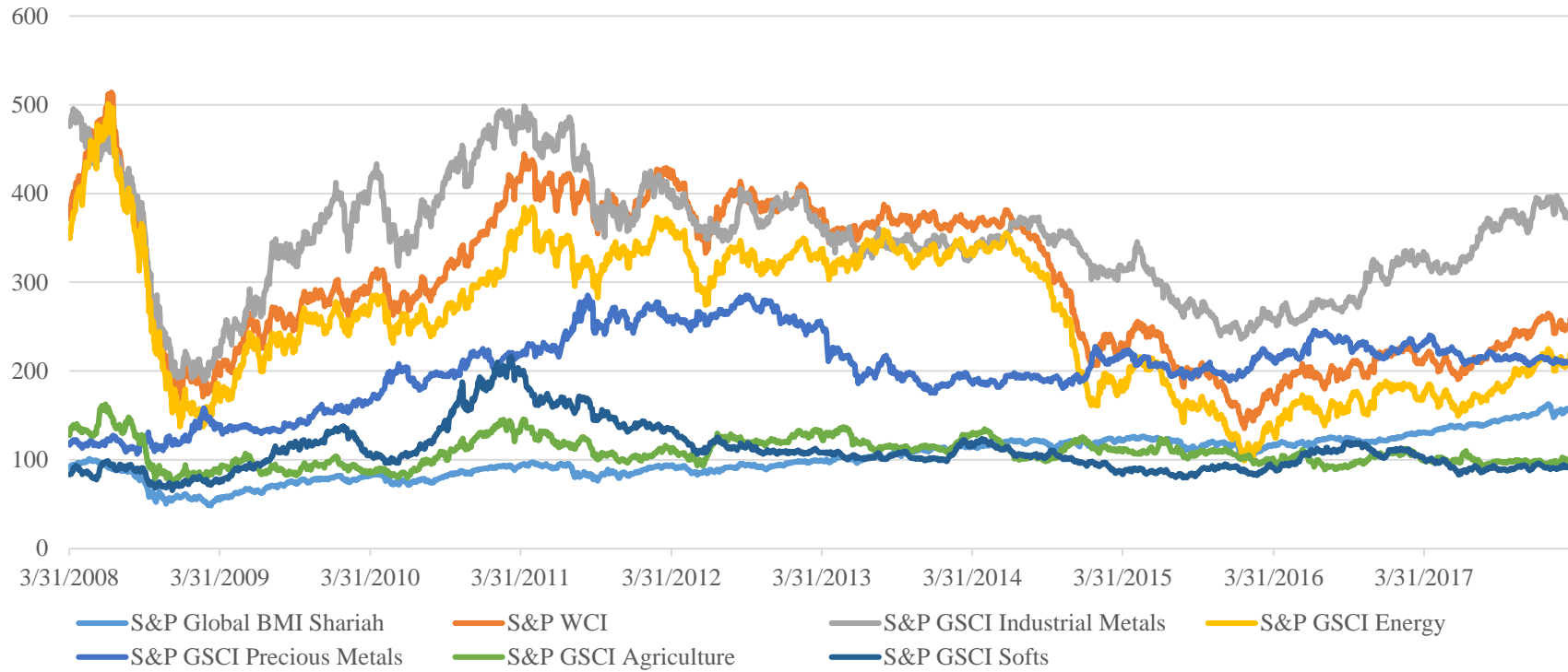
4. METHODOLOGY AND EMPIRICAL RESULTS

4.1 METHODOLOGY

Hedging and safe haven characteristics of the selected commodity groups are analyzed for the Islamic Stock Markets. For that purpose, the Baur and McDermott (2010) model was used as the research model. Accordingly;

(1) $R_{Commodity,t} = a + b_t r_{IslamicStockMarket,t}$

(2) $b_t = c_0 + c_1 D(r_{Commodity} q_{10}) + c_2 D(_{Commodity} q_5) + c_3 D(r_{Commodity} q_1)$

(3) $h_t = \pi + a e_{t-1}^2 + \beta h_{t-1}$

b_t in the model is a dynamic process; c_0, c_1, c_2 and c_3 are estimated through Equation (2). D dummy variables take the value of 1 when the revenue values in 10%, 5% and 1% quantiles exceed these thresholds.

If c_0, c_1, c_2 and c_3 are negative, the relevant commodity is a weak safe haven. If these parameters are negative and statistically significant, the commodity is a strong safe haven. If c_0 is zero or negative, it is called weak or strong hedging.

If one of the c_1, c_0, or c_3 parameters is statistically different from null, a non-linear relationship between stock prices can be mentioned. If the parameters including c_0 are not positive, the relevant commodity in this market acts as a weak safe haven. If the parameters are negative and statistically different from null, the commodity is a strong safe haven. If c_0 is null, it is a weak hedging instrument; if it is negative, it is a strong hedging instrument. Also, when the coefficients from c_1 to c_3 are added to c_0, they should not be positive. For Equation (3), the GARCH (1,1) model was used. Thus, the problem of heteroscedasticity in the data set was also addressed.

4.2.   EMPIRICAL RESULTS

The obtained results according to the analyses in order to determine the role of commodity prices in the Islamic Stock Markets are as in Table 2.

TABLE 2
Model Results for Islamic Stock Market and Commodity Groups

Commodity Groups	Hedge		1%		5%		10%	
Agriculture	0.770***	(0.000)	-0.287***	(0.001)	-0.123	(0.187)	0.092	(0.303)
Energy	1.095***	(0.000)	-0.210	(0.118)	-0.096	(0.285)	0.072	(0.414)
Industrial Metals	0.611***	(0.000)	0.153**	(0.016)	-0.207***	(0.008)	0.200	(0.009)
Precious Metals	-0.156***	(0.000)	0.200***	(0.000)	-0.098	(0.127)	0.106	(0.118)
Softs	0.515***	(0.000)	-0.072	(0.359)	-0.205**	(0.022)	0.163*	(0.052)
WCI	0.830***	(0.000)	-0.098	(0.294)	-0.073	(0.285)	0.055	(0.404)

Note: *p*-values are in in parentheses. ***, **, *, indicate the significance levels at 1%, 5%, 10% levels respectively.

According to the results obtained for WCI in Table 2, commodities are the assets with weak safe haven characteristics at the 1% and 5% significance level for the Islamic Stock Markets. However, they have no hedging characteristics in general. This result supports the results of Zapata et al. (2012) and Öztek and Öcal (2017) conducted for the conventional stock markets. However, while agricultural products have strong safe haven characteristics at the 1% significance level, they have weak safe haven characteristics at the 5% significance level. Energy Group commodities have no hedging characteristics in the Islamic Stock Markets. The commodities in this group have weak safe haven characteristics at the 5% significance level. The industrial metals also have no hedging characteristics, but have a strong safe haven characteristics at the 5% significance level. The Soft commodity group, like other commodity groups, does not have the hedging characteristics, but has strong safe haven characteristics at the 5% significance level. Unlike other analyzed commodity groups, only precious metals have strong hedging characteristics for the Islamic Stock Markets, but have the weak safe haven characteristics at the 5% significance level. This supports the study result by Tuna (2019).

5. CONCLUSION

In this article, whether the selected commodity groups have hedging/safe haven characteristics or not was analyzed for the Islamic Stock Markets. According to the study, the analyzed commodities have safe haven characteristics for the Islamic Stock Markets.

However, only precious metals have hedging characteristics for the Islamic Stock Markets.

According to the study results, all the selected commodity groups can be included in portfolios as investment instruments with safe haven characteristics if investors act with the limitations of trading only in the Islamic Stock Markets. In other words, the investors preferring to invest in the Islamic Stock Markets may choose all commodity groups selected in order to get rid of the unexpected financial stress situations that they experience. Therefore the investors manage to protect the value of their portfolio in the Islamic Stock Markets. The main factor for this situation is that these commodity groups with safe haven characteristics are included in the portfolio.

If the investors aim at hedging, however, the commodity that they initially need to select in this case is the precious metals group. In other words, precious metals are the commodity group that the investors can initially prefer in the Islamic Stock Markets in order to both reduce the portfolio risk and the potential losses during financial stress situations.

With regard to the studies analyzing the relationship between commodity groups in the Islamic Stock Markets, this study provides information about how to use commodity groups in creating optimal portfolios. Also this study can be evaluated in detail for the crisis, pre-crisis and post-crisis periods by expanding the data set in future studies on how commodity markets can be used in portfolio options.

One of the important limitations of this study is that the commodity groups are prepared only for the Islamic Stock Markets. When it is considered that limited number of investors in financial markets trade in the Islamic Stock Markets only, including the conventional financial markets in the study is important for obtaining comparative results results.

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