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Islamic stock indices and traditional safe-haven assets: evidence from Covid-19 and global financial crises

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Master of Science in Islamic Banking & Finance

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**ISLAMIC STOCK INDICES AND TRADITIONAL
SAFE-HAVEN ASSETS: EVIDENCE FROM COVID-19
AND GLOBAL FINANCIAL CRISES**

This Research Project is submitted to the Department of Finance as partial fulfillment of
Master of Science Degree in Islamic Banking and Finance

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Fall Semester 2021

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Abstract

This study analyzes the performance of safe haven assets (gold and oil) whether they can be used as hedge against Islamic Equity Indices. The study assessed the performance in the times of the Global Financial Crises 2008 and COVID-19 Pandemic. Our analysis of safe haven assets against seven Islamic equity indices shows that both gold and oil partially performed as hedge during GFC but not in COVID-19. The result of gold was contrary to earlier held belief that it acts as hedge during stressful time. Apparently, investors have lost trust in gold. It is suggested that investors may consider other assets for investment hedging and diversification.

Keywords: Gold, Oil, Islamic equity, financial crisis, Covid-19

Chapter 1

Introduction

Do the capital markets and safe haven assets tend to be in sync with each other? Does Islamic Equity move along or opposite to safe haven assets? Is the option of diversification in Islamic Equity markets and safe haven assets still valid or they both have synchronized into the same thing? Investors are now more interested to investigate such queries more than ever before.

An important question is which investment avenue is inversely correlated with stocks (act as hedge) or safe haven (inversely linked to stocks in extreme shocks) in various instances of share market uncertainty. To assess the viability of their diversification and synchronization, the existing literature has been thoroughly explored. We began with oil and gold as they get more attention in news and discussions.

Traditional rationale shows that assets such as gold and oil are safe havens in troubling times (Baur and McDermott, 2010). Despite the fact that gold is very often referred as a safe asset since a long time, but the hypothesis has been tested only in near past. By using daily data from 1995 to 2005, Baur and Lucy (2010) investigated if gold is a hedge/safe asset. They concluded that it is safe for equities in some jurisdictions such as in Germany, USA, and United Kingdom on average basis, however, no such evidence could be found for bonds in any of markets in above jurisdictions. They further noted that gold can (usually do) act as safe asset for a short time such as 15 days or so, inferring that investor hold it only in extreme situations.

The addition of gold to various portfolios had a potential to mushroom returns (Jaffe, 1989). Hillier, Draper, and Faff (2006) noticed that metal assets are safe assets in bad times as they perform well in these times relative to others. Christie (1982) in his seminal paper investigated the asymmetry between volatility in stocks and returns and conditional volatility. He concluded that a decrease in the value of return increases the financial leverage making the stock riskier thus increasing the underlying volatility.

Developing on the documented empirical evidence, we included volatility into our study to see whether it serves as a hedge and/or safe haven. Volatility may be defined as a measurement of dispersion of results for a particular security or a market index as a whole. Conover et al. (2009) observed that investors could significantly enhance the portfolio performance by including equities of safe-haven assets in their portfolios. Riley (2010) noted that gold and other precious metal equities have better-expected returns relative to other asset classes. Besides gold, we also added oil in our study to see how it shows performance as another safe-haven asset.

The significance of the relationship of Islamic equity with that of our subject assets (oil/gold) has been noted to be varying after GFC 2008. After the outbreak of COVID-19, the markets once again tended to show reproduce situations similar to GFC. In this study, we attempted to study whether the Islamic Equity can now be hedged against safe-haven assets, which is a widely perceived characteristic of Islamic indices.

The rest of the paper has been structured as follows. In Section 2 we look into the literature on the correlation of Islamic markets and safe-haven assets, especially during crises, and describe our expected results. In Section 3 we describe the sample built for empirical testing. In Section 4 we detailed our methodological approach, while in Section 5 we analyze our findings, with the conclusion in Section 6. Finally, Section 7 shows references.

Chapter 2

Literature Review

Financial markets have been increasingly connected by international investment and lending for many years now. Such a connection where brings benefits for stakeholders, it also exposes them to the vulnerability of shocks transmission across the borders. This risk motivates the investors to tweak their portfolio in way to accommodate safe haven assets in their investments.

In such a situation gold and oil are usually the assets which receive the attention of investors when diversifying their portfolios other than equities. We explored the literature of earlier studies which were conducted to ascertain any possible relationship among returns of Islamic Equity and that of commodities especially safe haven assets such as gold and oil.

Conventional rationality shows that equity and safe haven assets don't move along in the same pattern and have an inverse relationship (Fama 1981; Rosansky and Bodie, 1980; Bodie 1976). Gorton and Rouwenhorst (2006) observed that commodity market including oil and gold has been hosting portfolio diversification during the period of 1959-2004 which confirms the returns of commodity returns over long term. For the period of 1972- 2012).

The possible factors that drive them such an inverse relationship may include varying propensities and behaviors of different commodities over different phases of business cycles. Büyüksahin et al., (2010) documented those commodities and equities have the potential of showing strong relationships which may range from 0.40 to 0.45, featuring energy and non-energy commodities. Returns of equities of several sectors and prices of oil had shown a dubious relationship for almost and at least two decades (1992-2012), showing that equity sector has been the leading variable for most of the time (Madaleno and Pinho, 2014).

Baur and McDermott, (2010) found that in times of plummeting stock prices, gold be a safe investment avenue. In an attempt to study the relationship between various agricultural commodities (crops) and US Stock Exchange, it was found that coffee and cocoa have some type of speculation phenomenal relationship with respect to US Stock Exchange, however, no such link was observed in case of sugar (Creti et al., 2013).

Jones and Kaul (1996) observed a substantial inverse impact of oil price shocks on US and Canadian quarterly stock prices in the postwar period. For the purpose of this study, they used standard cash-flow dividend valuation model.

An investigation of relationship among S&P returns, industrial production, short term interest rate, and monthly oil prices was conducted for the period of 1947-1996 through unrestricted VAR model. Results have shown that both oil prices and their volatility have a

pivotal role in impacting the stock returns of S&P 500 (Sadorsky, 1999). They found that commodity interconnectedness have ascended manifold since 2003, restricting the hedging substitutability in several portfolios.

Tang and Xiong (2012) conducted an analysis and concluded that prices of non-energy futures in USA correlated with oil prices more strongly than ever. These results show the financialization of the commodity market and facilitate to get a justified reason of sharp increase in price volatility of commodities (non-energy) around the crises period (2008). Bain (2014) investigates and states the traditional rationality suggests that the very high correlation between commodity and equity price changes during 2009-12 was an anomaly shaped by the global financial crisis and its corollaries.

They disagree with that belief. Instead, their opinion is that the financialization of commodity markets will thwart the long-run correlation between commodities and equities returning top re-crisis lows.

They further concluded this during studying whether precious metals are safe investment in USA for investors during period of 1983-2013. It was evidenced by Guyot (2012) where he compared the performance of many DJ indexes and their regional counterparts. The analysis indicated that Islamic equity turned out to be more sensitive to geopolitical issue such as 9-11 incident.

Further research shows an inverse link between returns of Islamic equity and conventional firms in Saudi Arabia. This was observed during a study by Merdad et al., (2015). Charles et al., (2015) corroborate that Islamic portfolio perform higher than traditional ones in the crisis time. Different yet similar literature, by employing the dynamic conditional beta method, it was observed that Islamic shares tend to show a smaller distress risk than that of conventional ones particularly in short term, keeping the same the levels of systemic risk in the Global Financial Crises (Ahmet, 2015).

Islamic equity tends to establish the notion that it works on the principle of risk sharing. However, its performance as an alternate to conventional equities can be an interesting topic of debate. Though studies could not reach to any conclusive points, however, various observations have emerged showing mixed performance tendencies of Islamic equities in recent years. It was found that performance of Islamic equity was almost same as that of FTSE All-World index during the period of 1996-2003 (Hussein, 2004).

No compelling difference with respect to performance was observed between Islamic Equity (Girard and Hassan,.2008). Moreover, after controlling for market risk, size, book-to-market, momentum, and local and global factors, it was concluded that the difference in return

between Islamic and conventional indices is not significant. A comprehensive study states that Islamic indexes delivered investors with positive unusual returns over 1996-2003, however they underperformed over the bear market (Hussein and Omran, 2005). It was noted that Islamic indices performed better than their conventional indices during periods of crisis, however results are indecisive for the non-crisis periods.

The underlying reasoning can be orthodox nature of Shari'ah-compliant investments extending to investors lucrative investment alternative during crisis (Ho et. al, 2014). Al Khazali, Lean and Samet (2014) noted that Islamic indices of US, European, and that of global have outperformed conventional counterparts during 2007-2012. It is worthy to mentioned here that conventional equities dominated Islamic ones in second and third orders in almost all markets with the exception of European one. They further documented that, with regard to volatility spillover, it was evidenced that a substantial spillover took place from conventional to Islamic indices.

Frequently, the correlations between commodity returns and Islamic equity plummeted continuously since 2012 (Terazono, 2015). Mustafa et al., (2016) discovered that both oil and gas show a similar degree of correlation with Islamic equity for the period of 1999-2007.

Chapter 3

Sample

We collected our dataset by extracting data from Bloomberg Professional services for famous Islamic Equity indices and safe haven assets such as gold and oil, shared by Dow Johns (DJ) covering the period of January 2004 to August 2020 (last available at the time of data collection).

The chosen indices pertain to following geographical locations: World, Europe, United States of America, Gulf Countries, Asia Pacific

Table 1: Selected leading Islamic indices

| Islamic index | Ticker |
|---|--------|
| Dow Jones Islamic Market World Index (DJ World Islamic) | DJIM |
| Dow Jones Islamic Market Asia-Pacific (DJ Asia Islamic) | DJIAP |
| Dow Jones Islamic Market Europe (DJ EU Islamic) | DJIEU |
| Dow Jones Islamic Market GCC (DJ GCC Islamic) | DJIGCC |
| Dow Jones Islamic Market US index (DJ US Islamic) | IMUS |
| S&P Shariah Index | SHX |

Subsequently the daily return of chosen indices was calculated as follows:

$$R_d = \ln \frac{P_d}{P_{d-1}}$$

In the above equation R_d denotes the return on day d , whereas P_d stands for price at day d . To consider and describe all possible interactions, daily returns were used, as it was also employed in Scip et al. (2016). We used a long time period (2004-2020) for our data which includes Global Financial Crises and Covid-19 Pandemic, for testing our hypothesis.

Chapter 4

Econometric Methodology

Following the traditional literature (such as Baur and McDermott, 2010), we also employed estimated model as:

$$RA_{i,t} = \beta_0 + \beta_1 * RS_{j,t} + \beta_2 * GFC * RS_{j,t} + \beta_3 * COVID * RS_{j,t} + \varepsilon_{i,t} \quad (1)$$

$$\sigma_{i,t}^2 = \omega_i + (\alpha + \gamma l_{i,t-1}) \varepsilon_{i,t-1}^2 + \beta \sigma_{i,t-1}^2 \quad (2)$$

In above equation (1) RA_i shows the log return of all the included asset i . RS_j denotes the daily log returns in US dollars of a stock market index j in time t . GFC (Global Financial Crises) being a dummy variable, having value of 1 from the assigned time phase Dec 2007 to June 2009 GFC, and 0 for other time periods. The other dummy variable, $COVID-19$ (December 2019 to August 2020(available data)), is constructed similar to the GFC . ε_{it} (known as the residual term) is explained T-ARCH as defined in Equation (2). A simple ARCH has a restriction that it considers only magnitude of lagged error i.e., it squares them, and the impact of sign is ignored. However, it is believed that negative shocks produce more rigorous impacts on returns than those of positive ones. Therefore, the introduction of an extension T-ARCH appears reasonable. The γl_{t-1} is a signal function that takes the value one if the corresponding lagged unconditional SD is below zero, and 0 in other cases. As the returns are volatile and do not show a linear pattern, therefore, Ordinary Least Squares (OLS) method was not used. So, when there is heteroskedasticity, results appear to make a clutter rather showing a linear pattern.

The understanding of above Equations to confirm if the asset i (gold and oil) behaves as a safe haven in stressful times, as follows. β_1 is the safe-haven asset's (gold/oil) normal line beta (excluding the period of both GFC and COVID-19) considering the market. If β_2 (including β_1) is non-positive and statistically significant/(insignificant), then the relevant (gold/oil) acts as a strong (weak) asset from stock index market losses in financial crises period. Similarly, β_3 (including β_1 not necessarily β_2) is non-positive and statistically significant/(insignificant) then asset i performs as a strong (weak) asset from stock index losses in the pandemic.

Chapter 5

Empirical results

5.1 Descriptive Statistics

Table 1 demonstrates the descriptive statistics of daily returns of the analysis. The mean of all (except oil) is positive ranging from 0.0002 to 0.0004. The mean of oil (-0.0004) is far below than others. The means of gold and oil have equal yet opposite values. Among stock indices, DJ Dow Jones Islamic Market GCC (DJ GCC Islamic) has the lowest value (0.0002) and the maximum value of (0.0004) is shared by the Dow Jones Islamic Market US index (DJ US Islamic) and S&P Shariah Index. The negative skewness of gold and oil counter the expected characteristic of being safe-haven assets, in fact, they turned out to be more risky ones. Surprisingly all index have negative skewness coupled with a significantly high kurtosis which indicates a reasonably large crash risk

Table 2: Descriptive Statistics

| Descriptive Statistics | | | | | | | |
|-----------------------------|------|----------|--------|----------|---------|-----------|------------|
| Variable | N | Mean | Median | Minimum | Std Dev | Skewness | Kurtosis |
| Safe Haven Assets | | | | | | | |
| Gold | 4344 | 0.0004 | 0.0004 | (0.0966) | 0.0111 | (0.3482) | 5.4172 |
| Oil | 4344 | (0.0004) | 0.0009 | (3.0597) | 0.0570 | (37.8378) | 1,963.1614 |
| Stock Market Returns | | | | | | | |
| DJIM | 4345 | 0.0003 | 0.0006 | (0.0919) | 0.0100 | (0.4692) | 13.4298 |
| DJAP | 4345 | 0.0003 | 0.0008 | (0.0923) | 0.0109 | (0.3784) | 7.6242 |
| DJEU | 4345 | 0.0003 | 0.0005 | (0.1111) | 0.0128 | (0.0000) | 10.9161 |
| DJIEM | 4345 | 0.0003 | 0.0008 | (0.0876) | 0.0115 | (0.4205) | 8.4963 |
| DJIGCC | 4345 | 0.0002 | 0.0000 | (0.1431) | 0.0123 | (1.4271) | 24.2749 |
| IMUS | 4345 | 0.0004 | 0.0005 | (0.1209) | 0.0118 | (0.1371) | 14.9416 |
| SHX | 4345 | 0.0004 | 0.0004 | (0.1212) | 0.0116 | (0.0868) | 16.0587 |

5.2 Correlation Matrix

Table 2 below shows that correlation matrix among safe haven assets and different stock indices. As expected, gold and oil have positive correlation (0.0812) which indicates these assets move in tandem.

Table 3: Correlation Matrix

| | <i>DJIM</i> | <i>DJAP</i> | <i>DJEU</i> | <i>DJIEM</i> | <i>DJIGCC</i> | <i>IMUS</i> | <i>SHX</i> | <i>Gold</i> | <i>OIL</i> |
|--------|-------------|-------------|-------------|--------------|---------------|-------------|------------|-------------|------------|
| DJIM | 1.0000 | | | | | | | | |
| DJAP | 0.5155 | 1.0000 | | | | | | | |
| DJEU | 0.7977 | 0.4961 | 1.0000 | | | | | | |
| DJIEM | 0.7068 | 0.8239 | 0.6821 | 1.0000 | | | | | |
| DJIGCC | 0.1891 | 0.2252 | 0.1689 | 0.2452 | 1.0000 | | | | |
| IMUS | 0.9227 | 0.2423 | 0.5578 | 0.4667 | 0.1281 | 1.0000 | | | |
| SHX | 0.9179 | 0.2369 | 0.5525 | 0.4573 | 0.1289 | 0.9976 | 1.0000 | | |
| GOLD | 0.1428 | 0.2035 | 0.2172 | 0.1947 | (0.0494) | 0.0259 | 0.0204 | 1.0000 | |
| OIL | 0.1895 | 0.0962 | 0.1458 | 0.1396 | 0.0642 | 0.1664 | 0.1667 | 0.0812 | 1.0000 |

Contrary to our expectations correlation of both gold and oil with stock indices is positive with only one exception. The correlations are range from a minimal amount of 0.0962 (Oil/DJ Asia Pacific) to a large correlation of 0.9179 (SHX/JIM) The positive correlation means that they cannot be hedged against each other and move in tandem. Gold is negatively correlated with (DJ GCC Islamic) which can be used as a potential hedge

5.3 Maximum Negative Results in the period of Global Financial Crises and COVID-19

In this part, the performance of safe haven assets has been analyzed during extreme losses during the period of Global Financial Crises (GFC) and COVID-19. We used the DJ Islamic World index as a proxy of indices and tested safe haven assets performance against it. In Table 3, we gathered data for extreme losses in DJIM (highlighted below). We expected that safe asse should have positive returns or at least close returns during extreme losses of stocks to be retain the characteristics of being haven assets.

Gold has shown losses in five out of 10 occurrences and moved along with DJIM. However, the magnitude of its losses was less intense than those of DJIM. At four instances it

did should show positive returns and zero at one instance. It can be argued that gold has partially shown characteristics of being a haven asset during GFC. On the other hand, oil had experienced similar results to those of DJIM and even its losses at some instances were greater than those of DJIM (see November 6/20, 2020) below. Oil did not perform as a hedge in the said period

Table 4: Extreme Negative Returns During Global Crises 2008

| Extreme Negative Returns During Global Crises 2008 | | | | | | | | | |
|--|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Dates | DJIM | DJAP | DJEU | DJIEM | DJIGCC | IMUS | SHX | Gold | Oil |
| 15-Oct-08 | -0.08 | -0.02 | -0.07 | -0.06 | -0.01 | -0.09 | -0.09 | 0.01 | -0.05 |
| 1-Dec-08 | -0.07 | 0.00 | -0.07 | -0.03 | 0.08 | -0.08 | -0.08 | -0.05 | -0.01 |
| 22-Oct-08 | -0.07 | -0.05 | -0.07 | -0.07 | -0.04 | -0.06 | -0.06 | -0.03 | -0.07 |
| 29-Sep-08 | -0.07 | -0.02 | -0.06 | -0.05 | 0.04 | -0.08 | -0.07 | 0.01 | -0.10 |
| 20-Nov-08 | -0.06 | -0.05 | -0.05 | -0.06 | 0.00 | -0.06 | -0.06 | 0.00 | -0.07 |
| 6-Nov-08 | -0.06 | -0.06 | -0.08 | -0.07 | -0.01 | -0.05 | -0.05 | -0.01 | -0.07 |
| 6-Oct-08 | -0.06 | -0.04 | -0.09 | -0.08 | -0.10 | -0.04 | -0.04 | 0.03 | -0.06 |
| 10-Oct-08 | -0.05 | -0.06 | -0.08 | -0.03 | 0.00 | -0.03 | -0.03 | 0.00 | -0.10 |
| 9-Oct-08 | -0.04 | 0.01 | -0.02 | 0.02 | 0.02 | -0.07 | -0.07 | -0.02 | -0.03 |
| 19-Nov-08 | -0.04 | -0.01 | -0.04 | -0.02 | -0.01 | -0.05 | -0.05 | 0.01 | -0.01 |
| 2-Oct-08 | -0.04 | -0.02 | -0.04 | -0.05 | 0.00 | -0.04 | -0.04 | -0.04 | -0.05 |

Table 4 shows a similar analysis for the Covid-19 period (Jan-July 2020). We see almost a replica of what we observed in GFC analysis. Gold has mixed (positive and negative) returns during the ten worst performing days of DJIM. Oil once again moved in tandem with DJIM and showed extreme losses even greater than those of DJIM. It can be stated that Gold has partially performed well but the oil may not be considered as a safe haven asset against bad days of DJIM.

Although we analyzed them in comparison with DJIM, however, the corresponding returns of other indices have also been mentioned in Table 3 and Table 4 for a general idea of performance in relevant periods

Table 5: Extreme Negative Returns During COVID-19 Pandemic

| Extreme Negative Returns During COVID-19 Pandemic | | | | | | | | | |
|---|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Dates | DJIM | DJAP | DJEU | DJIEM | DJIGCC | IMUS | SHX | Gold | Oil |
| 16-Mar-20 | -0.09 | -0.05 | -0.02 | -0.07 | -0.05 | -0.12 | -0.12 | -0.02 | -0.09 |
| 12-Mar-20 | -0.09 | -0.06 | -0.11 | -0.06 | -0.03 | -0.09 | -0.09 | -0.05 | -0.04 |
| 9-Mar-20 | -0.06 | -0.04 | -0.05 | -0.06 | -0.14 | -0.07 | -0.07 | 0.00 | -0.32 |
| 11-Jun-20 | -0.04 | -0.02 | -0.03 | -0.02 | 0.00 | -0.06 | -0.06 | 0.01 | -0.08 |
| 18-Mar-20 | -0.04 | -0.03 | -0.04 | -0.04 | 0.01 | -0.05 | -0.04 | -0.03 | -0.24 |
| 11-Mar-20 | -0.04 | -0.02 | -0.02 | -0.02 | -0.02 | -0.05 | -0.05 | 0.00 | -0.04 |
| 1-Apr-20 | -0.04 | -0.02 | -0.03 | -0.02 | 0.00 | -0.04 | -0.04 | -0.02 | -0.01 |
| 27-Feb-20 | -0.03 | -0.01 | -0.02 | -0.01 | -0.01 | -0.04 | -0.05 | 0.01 | -0.03 |
| 24-Feb-20 | -0.03 | -0.01 | -0.04 | -0.02 | -0.03 | -0.03 | -0.03 | 0.02 | -0.05 |
| 21-Apr-20 | -0.03 | -0.02 | -0.03 | -0.02 | -0.02 | -0.03 | -0.03 | -0.01 | -1.24 |

5.4 Estimated Observations for Oil, and Gold

In this section of our study, we studied the relationship of safe haven assets (gold and oil) with Islamic Equity indices using regression model as presented in Equation (1) and (2) above. The results have been presented in two separate tables below for Oil and Gold. The tables have parameters betas (β_0) (β_1) (β_2) and (β_3). (β_1) is hedge when no impact of GFC and COVID is considered, (β_2) reflects the impact in GFC (includes β_{11}) and (β_3) shows the relationship in COVID-19 (includes b_1). Table 5 Table 6 present the results of the estimation for oil and gold respectively.

Beginning with oil, Table 5 shows the parameters estimates, we see β_1 (hedge) is positive for all the seven indices and statistically significant for almost all of them. It demonstrates that the oil does not a serve as hedge against these listed stock indices. These results are in line with earlier studies e.g., Low et. al.(2016). However, β_2 (GFC) shows a negative relation for all stock indices showing characteristics of safe haven assets for oil, though the relationship seems to be weaker for all the indices and may need further sensitivity analysis. Lastly, β_3 (COVID-19) shows a positive yet weak relationship. It indicates oil cannot be used as a hedge against these stock indices during COVID-19 times

Table 6: Estimation results for Oil as a haven asset during the 2008 GFC and Covid-19 pandemic

| Coefficients | Estimations – Oil | | | | | | |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | DJIM | DJAP | DJEU | DJIEM | DJIGCC | IMUS | SHX |
| Constant (β_0) | 0.0003*** (0.0001) | 0.0003** (0.0001) | 0.0001* (0.0001) | 0.0004*** (0.0001) | 0.0006*** (0.0001) | 0.0003** (0.0001) | 0.0002** (0.0001) |
| Hedge(β_1) | 0.0728*** (0.0037) | 0.0199*** (0.0040) | 0.0581*** (0.0050) | 0.0615*** (0.0051) | 0.0299*** (0.0038) | 0.0791*** (0.0044) | 0.0747*** (0.0043) |
| GFC (β_2) | -0.0019* (0.0011) | -0.0028** (0.0013) | -0.0030* (0.0015) | -0.0028** (0.0014) | -0.0059** (0.0022) | -0.0011* (0.0012) | -0.0010* (0.0012) |
| COVID-19(β_3) | 0.0008* (0.0009) | 0.0005* (0.0008) | 0.0000* (0.0010) | 0.0009* (0.0010) | 0.0004* (0.0006) | 0.0009* (0.0011) | 0.0008* (0.0011) |

In Table 6 below, the results of gold have been presented. Coincidentally we observed a similar pattern for gold as for oil above. We see β_1 (hedge) is positively related with all stock indices which shows it cannot be used as a hedge for stocks in these indices. These relationships are statistically significant. Moving down in table, again we see β_2 (GFC) is negatively related to all stock indices. Although negative relation gives an impression of qualifying as hedge, yet

the magnitude of the relationship sees too low. Finally, during COVID-19 gold tends to move in tandem with stocks with weak relation and does not appear to be a suitable hedge.

Table 7: Estimation results for Gold as a haven asset during the 2008 GFC and Covid-19 pandemic

| Estimations - Gold | | | | | | | |
|------------------------|-----------|-----------|-----------|-----------|-----------|----------|----------|
| Coefficients | DJIM | DJAP | DJEU | DJIEM | DJIGCC | IMUS | SHX |
| Constant (β_0) | 0.0003*** | 0.0003** | 0.0001* | 0.0004*** | 0.0006*** | 0.0003** | 0.0002** |
| | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| Hedge (β_1) | 0.1101*** | 0.1789*** | 0.2374*** | 0.1648*** | -0.0128* | 0.0181** | 0.0139* |
| | (0.0082) | (0.0111) | (0.0105) | (0.0113) | (0.0103) | (0.0084) | (0.0080) |
| GFC (β_2) | -0.0019* | -0.0028** | -0.0030* | -0.0028** | -0.0059** | -0.0011* | -0.0010* |
| | (0.0011) | (0.0013) | (0.0015) | (0.0014) | (0.0022) | (0.0012) | (0.0012) |
| COVID-19 (β_3) | 0.0008* | 0.0005* | 0.0000* | 0.0009* | 0.0004* | 0.0009* | 0.0008* |
| | (0.0009) | (0.0008) | (0.0010) | (0.0010) | (0.0006) | (0.0011) | (0.0011) |

Chapter 6

Conclusions

A significant number of earlier studies examined the haven characteristics of different assets including gold, oil, and many commodities. These studies were carried out for different periods in varied geographical locations of the world. Existing literature on the chosen topic was thoroughly explored which gave varied results. GFC was a stressful period, and it was a time for Islamic Equity to showcase its perceived characteristics. Almost a decade later since GFC, when COVID -19 broke out, the market tended to regenerate the situations similar to GFC 2008, seemingly questioning the validity and relevance of earlier studies and their results. It is so because markets experienced a sudden and abrupt change and made investors change their decisions and portfolios

In this study we attempted to study whether there is a significant relationship between Islamic Indices and haven assets, replicating to earlier studies conducted for GFC. It is aimed to know their possible relationship and confirm their perceived characteristics.

Daily data of returns from seven Islamic Equity indices and two assets i.e. gold and oil have been used, covering the various main parts of the world market. For this study, we employed a widely used GARCH model. The daily returns were taken and then data was analyzed as explained in section 4 above.

The results were quite surprising. The means of gold and oil have equal yet opposite values. Among stock indices, DJ Dow Jones Islamic Market GCC (DJ GCC Islamic) has the lowest value (0.0002), and a maximum value of (0.0004) is shared by the Dow Jones Islamic Market US index (DJ US Islamic) and S&P Shariah Index. Gold is negatively correlated with (DJ GCC Islamic) which can be used as a potential hedge.

Our results show that both of the asset's act as a partial hedge during GFC, but they don't perform as a hedge in COVID-19. The results were in line with earlier similar studies; however, the notable result was that gold lost the status of being a safe haven asset which has been a long-held belief in the financial sector. Possibly investors lost their confidence in gold after its significant reduction in prices in 2011-12.

6.1 Implications and Limitation

Academicians, research scholars, and investors may use these findings as a beginning point for further research and investment decisions. Although care has been taken while collecting and sorting data and then interpreting the results, however, these results are subject to certain

limitations. These results can be taken as indicative rather than definitive. These results are based on historical events, and this imbedded the assumptions that the market shall behave likewise in the prospective times and in practice, this may not hold. Moreover, at the time of carrying out this study, the data was available until Aug 2020. As COVID-19 is a developing phenomenon and it is reasonable to assume that the market has potentially changed since then or has the potential to change. Further research may be conducted on the wider time frame and maybe more commodities and safe haven assets included in the study.

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