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# A Navigating Controversy and Growth: A Sukuk Study in the UK's Islamic Finance Landscape.

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**Abstract :**

Sukuk are considered to be hybrid bonds; they can be splited into two main features of stocks and bonds. They are similar to stocks, they precise the type of partnerships and owners of Sukuk for a specific asset or project for finance, in which the Sukuk have been issued. In this paper we will discuss the main different features between the Sukuk and conventional bonds by conducting an appropriate econometric model. Sukuk are new assets in the islamic finance and they are fastly growing in the market, especially with people who follow shari'a law, as they aim to find an asset such as conventional bonds. The paper will use a multiple regression model to see how major macroeconomics variables affect the performance of the Sukuk market and the bonds market. So, we gathered the data for all variables over a period of 10 years between (2008-2018) .As a conclusion, the bonds and Sukuk are affected by different variables, Sukuk are most issued in the real estate field, which is not the case for the bonds. Then, Stock market is positively correlated with Sukuk and negatively correlated for the bonds.

Sukuk, often regarded as hybrid bonds, embody a unique blend of stock and bond characteristics, delineating specific partnerships and ownership structures for financing particular assets or projects, aligning with the principles of Islamic finance. This paper aims to elucidate the distinctions between Sukuk and conventional bonds, shedding light on their burgeoning presence within the financial landscape, particularly among adherents of Sharia law seeking Sharia-compliant alternatives akin to conventional bonds. Employing a multiple regression model, we endeavor to analyze the influence of key macroeconomic variables on the performance of both Sukuk and bond markets. Our dataset spans a decade from 2008 to 2018, facilitating a comprehensive examination of market dynamics. In this study, we adopt a post-positivist epistemological perspective, recognizing the partial and conditional nature of knowledge while valuing the importance of observable facts. Utilizing a hypothetico-deductive approach, we formulated hypotheses regarding the relationship between key macroeconomic variables and the performance of sukuk and bond markets. Multiple regression analysis is employed to test these hypotheses and ascertain the significant impact of the variables on market performance. Our analysis reveals distinct differences between sukuk and conventional bonds in terms of issuance patterns and correlations with macroeconomic variables. Sukuk issuance is primarily concentrated in the real estate sector, reflecting its unique position within Islamic finance. Notably, Sukuk issuance predominantly gravitates towards the real estate sector, a departure from conventional bond practices. Additionally, we observe a positive correlation between the stock market and Sukuk performance, in contrast to the negative correlation observed with conventional bonds.

**keywords:** Sukuk, hybrid bonds, Islamic finance, macroeconomic variables, real estate sector, correlation

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## Introduction

One of the main controversial subjects related to Islamic finance instruments is the difference between conventional bonds and Sukuk. Many shariah cohorts argue that the main difference between the two is purely about formalities. However, numerous scholars have proved that Muslims actually care about those differences and that Sukuk respects the Rules of shariah since it is an asset based.

Without a shadow of doubts, Sukuk is one of the fastest growing financial instruments in the Islamic finance world and mainly the most important one. According to the World Bank actual data, the growth of sukuk is estimated to be 10% to 12% each year (Iqbal, 2016). It continues to grow in many muslim countries such as Malaysia, United Arab Emirates, and Indonesia. Due to its great advantages such as the financial stability, the increase in the value of sukuk and the liquidity initiator, non-Muslim countries are also concerned by the Sukuk usage. For instance, Singapore was the first non-muslim country to introduce Sukuk in its financial market; we have the United Kingdom as well and Luxembourg (Lee, 2018).

In our study we chose to focus mainly on the United Kingdom due to the limited shared data online and we also wanted to stay concentrated on one population in order to remain succinct and rigorous on only one country. We will make an empirical study analysis based on multivariable regression model. The purpose of our study is to see how bonds and sukuk are affected by a set of variables in the United Kingdom between 2008 and 2018. One of the central debates in Islamic finance revolves around the distinction between conventional bonds and Sukuk. While some argue that the disparity is merely procedural, with Shariah scholars contending that Muslims do indeed prioritize these differences, asserting that Sukuk adheres to Shariah principles as it is asset-based. Undoubtedly, Sukuk stands as one of the most rapidly proliferating financial instruments within the Islamic finance sphere, marking itself as arguably the most significant. According to recent World Bank data, Sukuk's growth is projected at a robust 10% to 12% annually (Iqbal, 2016), with its popularity soaring in Muslim-majority nations like Malaysia, the United Arab Emirates, and Indonesia. Its appeal extends beyond Islamic nations, with non-Muslim countries recognizing its benefits such as financial stability, value appreciation, and liquidity generation. Notably, Singapore emerged as the inaugural non-Muslim nation to integrate Sukuk into its financial market, followed by the United Kingdom and Luxembourg (Lee, 2018). In our research, we opt to concentrate primarily on the United Kingdom due to the scarcity of readily available data online. Moreover, focusing on a single population allows us to maintain precision and rigor. Employing an empirical study approach

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utilizing a multivariable regression model, our objective is to investigate the impact of various factors on bonds and Sukuk within the United Kingdom spanning from 2008 to 2018.

The main objective of this research is to analyze the impact of various factors on these financial instruments, employing a multivariable regression model. By concentration on one single population, we aim to maintain precision and rigor in our analysis by the following structure: a literature review that include the existing literature on sukuk and conventional bonds, highlighting key debates, theories, and empirical findings. Then, a detailed analysis of the empirical data using the multivariable regression model. Additionally, it discusses the rationale behind focusing on the united kingdom and the time frame on the study to examine the impact of various factors on bonds and sukuk within the UK market. More than that, presentation and interpretation of the research findings, discussion the implications of the results and their alignment with existing literature and theoretical framework. Finally, a summary of the key findings of the study, implications for theory and practice, limitations and suggestions for future research to respond to our problem statement which is: how Sukuk and Bonds are affected by a set of variables ?

## 1. Literature review:

### 1.1 Bonds

Bonds are mainly IOUs for large organizations to gather funds. There are many types of Bonds, Short term treasury bills/ Long-term treasury bills, TIPS (Bonds that defend from inflation), Municipal bonds, corporate bonds, and junk bonds. The mechanism behind issuing bonds is that there are two parties called the bondholder and the debtor. The debtor's promises to pay back the whole amount at maturity (the amount is called Face Value), meanwhile he/she will pay interest payments. Some advantages of bonds: the risk of losing your investment is low, profit from a bond's sell, diversification, which can reduce the risk (AMADEO, 2018). For bonds to be an efficient mean of gathering funds for corporation,the market should be sufficiently liquid. According to Choudhry(2009), a liquid market is a market where the investor can easily buy or sell securities.

Harrison (2002) demonstrated the impact of liquidity shocks on firms issuing corporate bonds to the market. So, the presence of a liquid market is a very important point because illiquidity affects the investors, trading activity, and may well be more troublesome than the impact on issuance.

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### 1.2 Sukuk

Sukuk is one of the significant Islamic Shariah compliant financial instruments, which provide an alternative source of financing especially for the giant corporate, and sovereign entities compared to the conventional bonds. Sukuk is an innovative debt security, which is similar to the conventional bond with respect to cash flow and risk. Generally, sukuk are asset-backed, stable income, tradable and Shariah-

compatible trust certificates. (Ali Arsalan Tariq, 2004). The last decade was the spectator of the unprecedented proliferation for Sukuk especially before the global financial crisis. Sukuk had emerged as one of the important components of global Islamic Financial System. Over the recent past years, the Sukuk market has witnessed approximately 10%–15% growth rate to reach US$ 170 billion outstanding portfolio at the end of 3rd quarter in 2011 (Global Sukuk Report, 2011), (Nafis Alam, Kabir Hassan, Mohammad AminulHaque, 2013). Recently, there was a transformation in the growth of thriving multibillion-dollar market in the Shariah-compliant sovereign and corporate Islamic structured Sukuk, which can be considered as a rapid one. As of 2006, the total worth of sukuk in issue globally is estimated to be over $25 billion. Sovereign issuers include Bahrain, Malaysia, Qatar, and Saxony-Anhalt in Germany. Hence, the sukuk are considered as a very important key for the resource mobilization. However, the minimum investment requirements of the sukuk issues are often very large. Sukuk are considered as an efficient tool for resources mobilization that can be enhanced, provided these can be accessible to the general public with feasibly minimum amounts of investment requirements. In 2013,

Rohim and Shereeza made a descriptive research about the nature of sukuk. They analyzed the thoughts of Imam Abu Hanifah and Imam Shafi'i on Sukuk instruments. So, they agreed to accept Sukuk as an Islamic financial instrument. It is created for middle and long term financing due to some limitation existing in Islamic financial system, resulting in lack of use of common bonds that we found in Pegah Zolfaghari's paper in which he demonstrated exactly the same thing as Rohim and shereeza.

In this paper (Usmani,2008) analyses the nature of Sukuk. So, the study shows that the Sukuk will be a used as a new tool in a way that they will be issued to the new commercials and industrial ventures. More than that, the profit will return to the Sukuk holders after deducting all the costs.

Sukuk have the most significant characteristics attracting investors that are willing to follow shariah compliant in their financial actions. According to Mohamed Amrani Sukuk is now

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considered as an alternative way of funding for corporate entities and the government as well. According to actual data conducted by the (IIFM) the International Islamic Financial Market, Sukuk issuance between 2001 and 2005 has overwhelmingly extended to $767 billion: 96% comes from the GCC and the middle east. In 2016, Malaysia was

Leading in the top 10 countries issuing Islamic bonds, However the UAE has taken the lead in 2017 and 2018.As issuance of bonds, issuances of sukuk are in addition done at a fixed price. A research made by Jobst, Kunzel, and Sy tackled the actual condition of the sukuk in the market, it also analyses the involvement of shariah in the outline of Sukuk transmission. They showed in their study that some executive thoughtfulness could eventually increase some costs, as well as decreasing others that are mainly costs from the government. Moreover, it is claimed that the issuance cost of sukuk are higher than the actual normal security.(Jobst, Kunzel, Mills, and Sy, 2018) The issuance of Sukuk have an effects of the company's value. Researchers using seventy-nine sukuk and eighty-seven conventional bonds over an eight year time period while excluding the period of financial crisis have explored this relationship. The study showed a negative impact on the company's value about what the firm declaration of sukuk , however, the effect of the impact of declaration of conventional bonds is purely positive excluding crisis time.

For the operational aspects of Sukuk, Tariq and Dar analyzed the various risks underlying the Islamic sovereign and corporate Sukuk structures (2007). The findings were that different shari'ah compliant perceptions could be a risk for the sukuk and surely will affect their pricing. Also, if the shari'ah is compatible for the Sukuk. For instance, they apply the same rules for the sukuk they will be highly competitive concerning to bonds in the market and accessible to the public as an investment opportunity.

Besides being used to raise capital for corporations, Sukuk are also used by countries to position them within the Islamic financial market. The first Sukuk was issued at Shell MDS in Malaysia in 1990 while the first sovereign Sukuk was given in 2001 by the Central Bank located in Bahrain. Countries such as South Africa, Hong Kong and the United Kingdom issued sovereign Sukuk, not to raise capital, but rather to put themselves in the Islamic financial market (Michael Koch).

Like any other investment, returns on Sukuk have a relation with risk. Cakir and Raei (2007) found that including Sukuk in a portfolio significantly decrease the value of risk (VaR) of the portfolio.

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Being introduced to the financial environment, Sukuk have an impact on the stock market. Although the same financially, Sukuk and conventional bonds haven't similar effects on stock markets. Godlewski, Turk-Ariss and Weill (2010) found that in the Malaysian stock market a Sukuk leads to a negative market that reacts in an adversely affects the company's value. Alam, Hassan and Haque (2013) found similar results in a smaller sample consisting of a bigger region namely Malaysia, Indonesia, Singapore, Pakistan, UAE, Bahrain and Qatar.

Using a similar methodology to Godlewski, Turk-Ariss and Weill evidence that encourages the same conclusion was found.

The effect of sukuk extends also to the macroeconomy. A study that was made about the Sukuk and economic growth by (Said and Grassa, 2013) and which goal was about the macroeconomic factors influencing the construction of Sukuk in Saudi Arabia, Kuwait, Malaysia, Qatar, Bahrain, Pakistan …The results show us that the macroeconomic factors: GDP, Muslim population and trade openness… have effects on the development of the Sukuk in the market. In the last years Sukuk had known a decline due to the financial crisis that impacted the development concerning the factors of macroeconomic.

Using the Solow economic growth model Ghada Gomaa A. Mohamed concluded that holding a conventional bond in an international level of finance grips lower political risk than Islamic bonds in the international Market. He found a positive advantage as well for choosing islamic bonds more then conventional bonds which is the "growth of the country in question lasts for a higher period of time during the transitional period than the case of the scenario of adopting the conventional bonds" (Gomaa A, n.d). This will give us an insight related to the advantages of Sukuk in the market.

In another paper the equivalence between the Sukuk instruments and the conventional bonds that are practiced by the market is analyzed (Ariff and Safari, 2013). The authors examine that the Sukuk are priced significantly differently, these results are done through a large amount of traded data sets on Sukuk and conventional bonds.

Also, based on a statistical tests that was made for Sukuk and conventional bonds in Indonesia, show that the mean yield to maturity of Sukuk is greater than the mean yield to maturity of conventional bonds. However, the standard deviation shows us that Sukuk bonds are more risky than the conventional bonds because the Sukuk standard deviation is much larger than the conventional bonds. ( Wijnbergen and Zaheer, 2013).

Concerning risk of both bonds and sukuk an empirical analysis differentiates between conventional bonds and sukuk regarding risk. The authors end up with the conclusion that

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Sukuk are way less risky than the bonds of conventional banks and more stable. Risk and Stability of sukuk are clarified with the expansion hypothesis and the liquidity point of view. Therefore, the relationship among a large portion of sukuk securities is less or negative that assist in increasing their risks (Nasir, 2017)

In times of crisis, Wahida Ahmad and Rafisah Mat Radzi analyses the effect of financial crisis on the Sukuk in the Malaysian market. It is widely known that the financial crisis directly affects the banking field. Sukuk were also affected by the crisis. However, the Sukuk are more sustainable than conventional bonds. The Malaysian market is considered the leader in Sukuk issuance.

Compared to conventional bonds, Sukuk that we can consider as “islamic bonds” lack a lot of research regarding its huge growth. The global Sukuk market value more than $600 billion US.(IIFM 2014; Thomson Reuters Zawya 2014). As it is mentioned by Muhamed Zulkhibri. Sukuk finds numerous limitations due to the deficiency of regularization, and low liquidity due to the disintegration of its structure. Sukuk Research has room for improvement, in fact, throughout this empirical analysis we will analyse which one is the most attractive.

## 2. Multiple Regression Model

In this section, we will construct a multiple regression model to see how major macroeconomics variables, such as Bank of England’s interest rate, UK’s Gross Domestic Product, Customer Price Index, FTSE 100 Stock Index, and the FTSE 350 RE Real Estate Index are related to the performance of the Sukuk market on one hand, and the bonds market on the other.

Consequently, we gathered the data for all variables over a period of 10 years (2008-2018) traded quarterly.

### 2.1 Descriptive Statistics:

As stated above, 10 years of quarterly trading gave us a pool of 41entries for each variable. Here is a glimpse of our Excel table:

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**Tableau 1 : Sukuk's descriptive statistics**

| DATE (Quarters) | Sukuk Index DJ | Interest Rate (%) | GDP (M of Pounds) | Stock Index (FTSE 100) | CPI | Real Estate (FTSE 350 RE) |
|---|---|---|---|---|---|---|
| 2008 - Q1 | 110.01 | 5.25 | 397,575 | 6456 | 92.73 | 618.33 |
| 2008 - Q2 | 111.58 | 5 | 395,717 | 5702 | 94.60 | 520.11 |
| 2008 - Q3 | 111.48 | 5 | 392,758 | 5625.9 | 95.75 | 491.21 |
| 2008 - Q4 | 96.67 | 3.17 | 386,417 | 4902.5 | 95.86 | 340.3 |
| 2009 - Q1 | 89.35 | 1 | 380,896 | 4434.2 | 95.53 | 236.8 |
| 2009 - Q2 | 103.39 | 0.5 | 380,950 | 3926.1 | 96.57 | 267.57 |
| 2009 - Q3 | 115.03 | 0.5 | 383,237 | 4249.2 | 97.20 | 321.42 |
| 2009 - Q4 | 120.91 | 0.5 | 384,453 | 5133.9 | 97.91 | 337.5 |
| 2010 - Q1 | 115.83 | 0.5 | 389,850 | 5412.9 | 98.66 | 328.62 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 2010 - Q2 | 119.44 | 0.5 | 396,013 | 5679.6 | 99.93 | 311.72 |
| 2010 - Q3 | 122.41 | 0.5 | 395,887 | 4916.9 | 100.22 | 319.13 |
| 2010 - Q4 | 125.75 | 0.5 | 398,127 | 5548.6 | 101.19 | 343.74 |
| 2011 - Q1 | 126.72 | 0.5 | 408,240 | 5899.9 | 102.68 | 365.73 |
| 2011 - Q2 | 129.13 | 0.5 | 405,733 | 5908.8 | 104.32 | 398.7 |
| 2011 - Q3 | 131.55 | 0.5 | 408,478 | 5945.7 | 104.92 | 351.03 |
| 2011 - Q4 | 131.72 | 0.5 | 412,611 | 5128.7 | 105.93 | 328.7 |
| 2012 - Q1 | 133.73 | 0.5 | 415,329 | 5572.3 | 106.26 | 335.5 |
| 2012 - Q2 | 136.23 | 0.5 | 415,598 | 5768.5 | 107.12 | 344.46 |
| 2012 - Q3 | 139.82 | 0.5 | 425,923 | 5571.1 | 107.42 | 369.76 |
| 2012 - Q4 | 142.35 | 0.5 | 428,375 | 5742.1 | 108.76 | 386.63 |
| 2013 - Q1 | 143.32 | 0.5 | 431,961 | 6047.3 | 109.21 | 401.22 |
| 2013 - Q2 | 143.4 | 0.5 | | 6411.7 | 109.99 | 432.4 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 434,360 | | | |
| 2013 - Q3 | 140.9 | 0.5 | 441,709 | 6215.5 | 110.36 | 442.71 |
| 2013 - Q4 | 143 | 0.5 | 444,524 | 6462.2 | 111.03 | 467.7 |
| 2014 - Q1 | 145.47 | 0.5 | 451,293 | 6639.5 | 111.14 | 499.86 |
| 2014 - Q2 | 148.55 | 0.5 | 458,923 | 6789.5 | 111.93 | 504.62 |
| 2014 - Q3 | 150.6 | 0.5 | | 6724.2 | 111.96 | 508.05 |
| | | | 463,142 | | | |
| 2014 - Q4 | 152.3 | 0.5 | 463,704 | 6611.7 | 112.04 | 538.58 |
| 2015 - Q1 | 154.62 | 0.5 | 466,329 | 6823 | 111.26 | 589.8 |
| 2015 - Q2 | 155.28 | 0.5 | 473,601 | 6822 | 111.89 | 596.91 |
| 2015 - Q3 | 155.05 | 0.5 | 473,571 | 6335.3 | 112.00 | 607.74 |
| 2015 - Q4 | 155.12 | 0.5 | 475,236 | 6319.9 | 112.15 | 606.9 |
| 2016 - Q1 | 155.51 | 0.5 | 482,226 | 6118.6 | 111.63 | 534.72 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 2016 - Q2 | 159.43 | 0.5 | 487,939 | 6325.7 | 112.26 | 534 |
| 2016 - Q3 | 163.27 | 0.5 | 493,386 | 6801.8 | 112.78 | 522.73 |
| 2016 - Q4 | 161.9 | 0.25 | 499,760 | 6960.3 | 113.49 | 495.18 |
| 2017 - Q1 | 162.91 | 0.25 | 503,690 | 7228.5 | 114.05 | 512.5 |
| 2017 - Q2 | 165.39 | 0.25 | 507,602 | 7345.5 | 115.36 | 537.85 |
| 2017 - Q3 | 167.26 | 0.25 | 511,914 | 7391.8 | 115.95 | 530.62 |
| 2017 - Q4 | 168.13 | 0.5 | 515,508 | 7502.2 | 116.92 | 538.25 |
| 2018 - Q1 | 166.9 | 0.5 | 519,987 | 7274 | 117.14 | 537.49 |

The descriptive statistics shown in the above table are collected from different reliable websites such as the World Bank, Investing.com, Finance.yahoo.com, and Bloomberg.com. The data was collected for each month of the 10 years (2008 – 2018), then we calculated the average for each quarter of each variable and inserted it in the table shown above. The values shown are the absolute values of each variable during that time period, recorded according to the appropriate.

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**Tableau 2 : Descriptive statistical analysis**

| | Sukuk Index DJ | Interest Rate | GDP (M of Pounds) | Stock Index (FTSE 100) | CPI | Real Estate (FTSE 350 RE) |
|---|---|---|---|---|---|---|
| **Mean** | 138.327 | 0.888 | 439086.146 | 6065.246 | 106.783 | 445.288 |
| **Standard Deviation** | 20.951 | 1.270 | 44165.663 | 864.271 | 7.091 | 106.150 |
| **Sample Variance** | 438.948 | 1.613 | 1950605822.328 | 746964.799 | 50.289 | 11267.792 |
| **Minimum** | 89.350 | 0.250 | 380896.000 | 3926.100 | 92.732 | 236.800 |
| **Maximum** | 168.130 | 5.250 | 519987.000 | 7502.200 | 117.145 | 618.330 |
| **Count** | 41.000 | 41.000 | 41.000 | 41.000 | 41.000 | 41.000 |

Moreover, in the table 2 we calculated the mean, standard deviation, sample variance, minimum, and the maximum value for each variable as shown in the above table to better grasp the understanding of the model and the independent variables.

## 3. Variables Definition:

### 3.1 Interest Rate:

The interest rate is the rate paid on reserves held by commercial banks at the Bank of England. It is considered as the most important interest rate in the UK as it determines the monetary policy of its central bank. Any change in this interest rate affects directly the final customers in the UK, and indirectly customers in Europe and around the globe, given the weight of the UK economy in world trade.

### 3.2 Gross Domestic Product:

GDP is a monetary value which measures the market value of all final goods and services produced in a year (or quarterly in our case) in the UK. It is the most important proxy to measure the health and soundness of the UK's economy.

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### 3.3 FTSE 100 – Stock Index:

The FTSE 100 is a share index of the 100 companies with the highest market capitalization listed in the London Stock Exchange. It's considered as a valuable proxy to evaluate the stock market of the UK.

### 3.4 Customer Price Index:

CPI is a statistical estimate which measures the change in the price level of goods and services purchased by customers. Any macroeconomic impact is directly reflected in the CPI.

### 3.5 FTSE 350 RE – Real Estate Index

The FTSE 350 RE is a share index of the 350 companies with the highest market capitalization listed in the London Stock Exchange, which have their primary activities in the real estate sector. It's considered as a valuable proxy to evaluate the real estate sector of the UK.

### 3.6 Coefficient Expectations:

We expect the sign of the first independent variable (Interest rate) to be positive, because the higher the interest rate, the more people are keen to hold safer financial instruments such as Sukuk.

Also, we expect the sign of the second independent variable (GDP) to be positive, because the higher the GDP the healthier the economy is, which brings about more residual income on average that can be invested in the Sukuk market

More, we expect the sign of the third independent variable (FTSE 100) to be negative, since the Sukuk market becomes more attractive when there is a crash or turbulence in the equity market.

Even further, we can't expect a sign for the fourth independent variable (CPI), because the fixed nominal payoff of the sukuk certificate would either increase or decrease depending on inflation.

Finally, we expect the sign of the fifth independent variable (FTSE 350 RE) to be positive, because Sukuk are heavily used to finance real estate and infrastructure projects.

## 4. Regression Analysis with SPSS and Gretl:

### 4.1 Multicollinearity Test:

Before we start our multivariable regression analysis, we conducted first a test with Gretl, an open source software for statistics, to check if there is any correlation among our chosen independent variables using the Variance Inflation Factor. Below is our findings:

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**Tableau 3 : Variance Inflation Factor (VIF)**

| |
|---|
| Variance Inflation Factors Minimum<br>Possible Value = 1.0<br><br>Values > 10.0 may indicate a collinearity problem<br><br><br><br>VIF (j) = 1/(1-R(j)^2), where R(j) is the multiple correlation coefficient |

**Source : Gretl, an open source software for statistics**

As we can see for the first part of the table, most variables have a Variance Inflation Factor less than 10. Which means, there is no collinearity between the chosen independent variables besides the GDP and CPI which is realistically expected as these two variables tend to go hand in hand most of the time.

**Regression Analysis:**

After gathering our data as seen in the previous section, we conducted a regression analysis and we got the following results:

**Tableau 4 : Regression model**

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .981[a] | .963 | .958 | 4.307665085169686 |

a. Predictors: (Constant), Real Estate (FTSE 350 RE), Interest Rate, Stock Index (FTSE 100), GDP (M of Pounds), CPI

**Notes : GDP is the gross domestic product and CPI is consumer price index**

**Tableau 5 : Regression analysis results for Sukuk index**

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**Tableau 6 : Correlation and Covariance Analysis of Predictors for Sukuk Index**

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -95.432 | 24.648 | | -3.872 | .000 | | |
| | Interest Rate | -2.253 | 1.139 | -.137 | -1.978 | .056 | .222 | 4.510 |
| | GDP (M of Pounds) | 8.860E-5 | .000 | .187 | 1.631 | .112 | .081 | 12.406 |
| | Stock Index (FTSE 100) | .002 | .002 | .099 | 1.198 | .239 | .154 | 6.503 |
| | CPI | 1.559 | .388 | .528 | 4.014 | .000 | .061 | 16.355 |
| | Real Estate (FTSE 350 RE) | .035 | .015 | .179 | 2.413 | .021 | .191 | 5.230 |

a. Dependent Variable: Sukuk Index DJ

**Coefficient Correlations[a]**

| Model | | Real Estate (FTSE 350 RE) | Interest Rate | Stock Index (FTSE 100) | GDP (M of Pounds) | CPI |
|---|---|---|---|---|---|---|

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | Correlations | Real Estate (FTSE 350 RE) | 1.000 | -.528 | -.274 | -.360 | -.064 |
| | | Interest Rate | -.528 | 1.000 | -.302 | -.051 | .681 |
| | | Stock Index (FTSE 100) | -.274 | -.302 | 1.000 | -.148 | -.396 |
| | | GDP (M of Pounds) | -.360 | -.051 | -.148 | 1.000 | -.626 |
| | | CPI | -.064 | .681 | -.396 | -.626 | 1.000 |
| | Covariances | Real Estate (FTSE 350 RE) | .000 | -.009 | -8.094E-6 | -2.873E-7 | .000 |
| | | Interest Rate | -.009 | 1.297 | -.001 | -3.157E-6 | .301 |
| | | Stock Index (FTSE 100) | -8.094E-6 | -.001 | 4.039E-6 | -1.616E-8 | .000 |
| | | GDP (M of Pounds) | -2.873E-7 | -3.157E-6 | -1.616E-8 | 2.950E-9 | -1.320E-5 |
| | | CPI | .000 | .301 | .000 | -1.320E-5 | .151 |

a. Dependent Variable: Sukuk Index DJ

Therefore, the equation of our model becomes:

With:

Y = Sukuk Index DJ X1 = Interest Rate X2 = GDP

X3 = Stock Index – FTSE 100 X4 = CPI

X5 = Real Estate Index – FTSE 350 RE

As shown in the Model Summary table, we got a coefficient of determination of R2 = 96.3%, which means that 96.3% of the variability of the Sukuk Index DJ performance can be explained by our model.

**4.2 Coefficients Interpretation**

Intercept b0: The negative value of the intercept has no economic meaning, as there won't be a Sukuk Index in the first place if there was no market for it. Therefore, we based our analysis on the standardized coefficients, as stated in our model equation.

b1: Ceteris Paribus, if the Bank of England increases by 100 % the interest rate (doubling the rates), the Sukuk Index DJ is going to decrease by 137 basis point (bps).

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b2: Ceteris Paribus, if the GDP of the United Kingdom increases by 1 billion GBP, the Sukuk Index DJ is going to increase by 187 bps.

b3: Ceteris Paribus, if the FTSE 100 increases by 100bps, the Sukuk Index DJ is going to increase by 10bps.

b4: Ceteris Paribus, if the value of the CPI increases by 10 percent, the Sukuk Index DJ is going to increase by 5.28 bps.

b5: Ceteris Paribus, if the FTSE 350 RE increases by 100 bps, the Sukuk Index DJ is going to increase by 18 bps

Testing the overall significance (F-test): Hypothesis:

H0: b1= b2= b3=b4=b5 (There is no linear relationship between the dependent variables and the independent variables)

H1: At least one coefficient is different from the others. (There is a linear relationship between the dependent variable and at least one of the independent variables.

**Tableau 7 : Analysis of variance**

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | *df* | *SS* | *MS* | *F* | *Significance F* |
| Regression | 5 | 16908.4722 | 3381.694 | 182.2429 | 5.05757E-24 |
| Residual | 35 | 649.459247 | 18.55598 | | |
| Total | 40 | 17557.93145 | | | |

**Notes : df is degrees of freedom, ss is sum of squares, F is the ration of mean square and F is the significance**

With, α=5%, and numerator df=p=5 and denominator df= n-p-1=35 F(α/2)=F(0.025)=2.6504

Since F=182.24, then F > F(α/2). Thus, we reject H0 and accept H1.

**So the overall model is significant.**

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**Tableau 8 :Testing the individual significance (T-test)**

After conducting the regression analysis, we got the following results:

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | -95.432 | 24.648 | | -3.872 | .000 | | |
| | Interest Rate | -2.253 | 1.139 | -.137 | -1.978 | .056 | .222 | 4.510 |
| | GDP (M of Pounds) | 8.860E-5 | .000 | .187 | 1.631 | .112 | .081 | 12.406 |
| | Stock Index (FTSE 100) | .002 | .002 | .099 | 1.198 | .239 | .154 | 6.503 |
| | CPI | 1.559 | .388 | .528 | 4.014 | .000 | .061 | 16.355 |
| | Real Estate (FTSE 350 RE) | .035 | .015 | .179 | 2.413 | .021 | .191 | 5.230 |

a. Dependent Variable: Sukuk Index DJ

With α=5%, and df=n-p-1=35

 t(α/2)=t(0.025)= 2.00

**Variable 1: Interest Rate**

$H_0$: b1=0 (There is no significant relationship between the independent variable X1 (Interest Rate) and the dependent variable Y, Sukuk Index DJ).

$H_1$: b1≠0 (There is a significant relationship between the independent variable X1 (Interest Rate) and the dependent variable Y, Sukuk Index DJ). From the table, t= -1.978, and we have -t (α/2)=-2.00

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Since -t > - t (α/2), we fail to reject H0. **So the interest rate variable is not significant.**

However, it is worth mentioning that the t-value as well as the p-value of this variable are

0.001 of the acceptance range. Therefore, Interest Rate would be significant
with a more accurate data.

**Variable 2: GDP**

$H_0$: b2=0 (There is no significant relationship between the independent variable X2 (GDP) and the dependent variable Y, Sukuk Index DJ).

$H_1$: b2≠0 (There is a significant relationship between the independent variable X1 (GDP) and the dependent variable Y, Sukuk Index DJ).

From the table, t= 1.631, and we have t (α/2) = 2.00

Since t< t (α/2), we fail to reject H0. **So the GDP variable is not significant.**

**Variable 3: FTSE 100**

$H_0$: b3=0 (There is no significant relationship between the independent variable X3 (FTSE

100) and the dependent variable Y, Sukuk Index DJ).

$H_1$: b1≠0 (There is a significant relationship between the independent variable X3 (FTSE 100) and the dependent variable Y, Sukuk Index DJ).

From the table, t= 1.198, and we have t (α/2)= 2.00

Since t < t (α/2), we fail to reject H0. **So the FTSE 100 variable is not significant.**

**Variable 4: CPI**

$H_0$: b4 = 0 (There is no significant relationship between the independent variable X4 CPI and the dependent variable Y, Sukuk Index DJ).

$H_1$: b4≠0 (There is a significant relationship between the independent variable X4 CPI and the dependent variable Y, Sukuk Index DJ).

From the table, t= 4.014, and we have t (α/2) = 2.00

Since t > -t (α/2), we reject H0 and accept $H_1$. **So the CPI variable is significant.**

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**Variable 5: FTSE 350 RE**

$H_0$: b5=0 (There is no significant relationship between the independent variable X5 FTSE 350 RE and the dependent variable Y, Sukuk Index DJ).

$H_1$: b5≠0 (There is no significant relationship between the independent variable X5 FTSE 350 RE and the dependent variable Y, Sukuk Index DJ)

From the table, t= 2.413, and we have t (α/2) = 2.00

Since t> t (α/2), we reject H0 and Accept $H_1$. **So the FTSE 350 RE variable is significant.**

**Conclusion:**

After conducting the overall significance test (F-test), we found out that the overall model is significant. However, when we conducted the individual significance tests (T-tests), we found out that based on our data only 2 independent variables are significant.

**Descriptive Statistics:**

As stated in the analysis introduction, 10 years of quarterly trading gave us a pool of 41entries for each variable.

Here is a glimpse of our Excel table:

**Tableau 1 : : Bond's descriptive statistics**

| DATE (Quarters) | Bonds Index | Interest Rate (%) | GDP (M of Pounds) | Stock Index (FTSE 100) | CPI | Real Estate (FTSE 350 RE) |
|---|---|---|---|---|---|---|
| 2008 - Q1 | 154.42 | 5.25 | 397,575 | 6456 | 92.73 | 618.33 |
| 2008 - Q2 | 152.50 | 5 | 395,717 | 5702 | 94.60 | 520.11 |
| 2008 - Q3 | 153.44 | 5 | 392,758 | 5625.9 | 95.75 | 491.21 |
| 2008 - Q4 | 161.55 | 3.17 | 386,417 | 4902.5 | 95.86 | 340.3 |
| 2009 - Q1 | 168.22 | 1 | 380,896 | 4434.2 | 95.53 | 236.8 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 2009 - Q2 | 167.62 | 0.5 | 380,950 | 3926.1 | 96.57 | 267.57 |
| 2009 - Q3 | 169.87 | 0.5 | 383,237 | 4249.2 | 97.20 | 321.42 |
| 2009 - Q4 | 172.29 | 0.5 | 384,453 | 5133.9 | 97.91 | 337.5 |
| 2010 - Q1 | 170.16 | 0.5 | 389,850 | 5412.9 | 98.66 | 328.62 |
| 2010 - Q2 | 174.67 | 0.5 | 396,013 | 5679.6 | 99.93 | 311.72 |
| 2010 - Q3 | 181.85 | 0.5 | 395,887 | 4916.9 | 100.22 | 319.13 |
| 2010 - Q4 | 182.05 | 0.5 | 398,127 | 5548.6 | 101.19 | 343.74 |
| 2011 - Q1 | 179.13 | 0.5 | 408,240 | 5899.9 | 102.68 | 365.73 |
| 2011 - Q2 | 184.17 | 0.5 | 405,733 | 5908.8 | 104.32 | 398.7 |
| 2011 - Q3 | 193.81 | 0.5 | 408,478 | 5945.7 | 104.92 | 351.03 |
| 2011 - Q4 | 205.14 | 0.5 | 412,611 | 5128.7 | 105.93 | 328.7 |
| 2012 - Q1 | 207.66 | 0.5 | 415,329 | 5572.3 | 106.26 | 335.5 |
| 2012 - Q2 | 211.17 | 0.5 | 415,598 | 5768.5 | 107.12 | 344.46 |
| 2012 - Q3 | 216.43 | 0.5 | 425,923 | 5571.1 | 107.42 | 369.76 |
| 2012 - Q4 | 215.26 | 0.5 | 428,375 | 5742.1 | 108.76 | 386.63 |
| 2013 - Q1 | 212.71 | 0.5 | 431,961 | 6047.3 | 109.21 | 401.22 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 2013 - Q2 | 215.63 | 0.5 | 434,360 | 6411.7 | 109.99 | 432.4 |
| 2013 - Q3 | 208.56 | 0.5 | 441,709 | 6215.5 | 110.36 | 442.71 |
| 2013 - Q4 | 209.31 | 0.5 | 444,524 | 6462.2 | 111.03 | 467.7 |
| 2014 - Q1 | 210.56 | 0.5 | 451,293 | 6639.5 | 111.14 | 499.86 |
| 2014 - Q2 | 213.36 | 0.5 | | 6789.5 | 111.93 | 504.62 |
| | | | 458,923 | | | |
| 2014 - Q3 | 217.78 | 0.5 | 463,142 | 6724.2 | 111.96 | 508.05 |
| 2014 - Q4 | 227.84 | 0.5 | 463,704 | 6611.7 | 112.04 | 538.58 |
| 2015 - Q1 | 238.75 | 0.5 | 466,329 | 6823 | 111.26 | 589.8 |
| 2015 - Q2 | 234.95 | 0.5 | 473,601 | 6822 | 111.89 | 596.91 |
| 2015 - Q3 | 235.76 | 0.5 | 473,571 | 6335.3 | 112.00 | 607.74 |
| 2015 - Q4 | 237.59 | 0.5 | 475,236 | 6319.9 | 112.15 | 606.9 |
| 2016 - Q1 | 245.19 | 0.5 | 482,226 | 6118.6 | 111.63 | 534.72 |
| 2016 - Q2 | 250.32 | 0.5 | 487,939 | 6325.7 | 112.26 | 534 |
| 2016 - Q3 | 270.37 | 0.5 | 493,386 | 6801.8 | 112.78 | 522.73 |
| 2016 - Q4 | 258.82 | 0.25 | 499,760 | 6960.3 | 113.49 | 495.18 |
| 2017 - Q1 | 259.34 | 0.25 | 503,690 | 7228.5 | 114.05 | 512.5 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 2017 - Q2 | 265.43 | 0.25 | 507,602 | 7345.5 | 115.36 | 537.85 |
| 2017 - Q3 | 263.21 | 0.25 | 511,914 | 7391.8 | 115.95 | 530.62 |
| 2017 - Q4 | 262.20 | 0.5 | 515,508 | 7502.2 | 116.92 | 538.25 |
| 2018 - Q1 | 261.53 | 0.5 | 519,987 | 7274 | 117.14 | 537.49 |

The descriptive statistics shown in the above table are collected from different reliable websites such as the World Bank, Investing.com, Finance.yahoo.com, and Bloomberg.com. The data was collected for each month of the 10 years (2008 – 2018), then we calculated the average for each quarter of each variable and inserted it in the table shown above. The values shown are the absolute values of each variable during that time period, recorded according to the appropriate.

**Tableau 10 : Descriptive statistical analysis**

| | Bonds Index | Interest Rate | GDP (M of Pounds) | Stock Index (FTSE 100) | CPI | Real Estate (FTSE 350 RE) |
|---|---|---|---|---|---|---|
| **Mean** | 210.259 | 0.888 | 439086.146 | 6065.246 | 106.783 | 445.288 |
| **Standard Deviation** | 35.644 | 1.270 | 44165.663 | 864.271 | 7.091 | 106.150 |
| **Sample Variance** | 1270.516 | 1.613 | 1950605822.328 | 746964.799 | 50.289 | 11267.792 |
| **Minimum** | 152.500 | 0.250 | 380896.000 | 3926.100 | 92.732 | 236.800 |
| **Maximum** | 270.369 | 5.250 | 519987.000 | 7502.200 | 117.145 | 618.330 |
| **Count** | 41.000 | 41.000 | 41.000 | 41.000 | 41.000 | 41.000 |

As done for the first part of our project analysis, we calculated once again the mean, standard deviation, sample variance, minimum, and the maximum value for each variable as shown in the above table to better grasp the understanding of the model and the independent variables.

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**Variables Definition:**

Since our project is an empirical analysis to compare Bonds and Sukuk, we used the same set of variables, which we previously defined, to see how the two financial instruments of interest (Sukuk and Bonds) are affected by them.

**Coefficient Expectations:**

We expect the sign of the first independent variable (Interest rate) to be positive, because the higher the interest rate, the more people are keen to hold debt instruments such as bonds.

Also, we expect the sign of the second independent variable (GDP) to be positive, because the higher the GDP the healthier the economy is, which brings about more residual income on average that can be invested in bonds

More, we expect the sign of the third independent variable (FTSE 100) to be negative, since the bonds market becomes more attractive when there is a crash or turbulence in the equity market.

Even further, we can't expect a sign for the fourth independent variable (CPI), because the fixed nominal payoff of the bond certificate would either increase or decrease depending on inflation.

Finally, we can't expect a sign for the fifth independent variable (FTSE 350 RE), because there is no intuitive expectation about the relationship between the two.

Before we start our multivariable regression analysis, we conducted once again a test with Gretl, to check if there is any correlation among our chosen independent variables using the Variance Inflation Factors. Below is our finding:

**Tableau 11 : Variance Inflation Factor (VIF)**

Variance Inflation Factors Minimum

Possible Value = 1.0

Values > 10.0 may indicate a collinearity problem

VIF (j) = 1/(1-R(j)^2), where R(j) is the multiple correlation coefficient

**Source : Gretl, an open source software for statistics**

As we can see for the first part of the table, most variables have a Variance Inflation Factor less than 10. Which means, there is no collinearity between the chosen independent variables

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besides the GDP and CPI which is realistically expected as these two variables tend to go hand in hand most of the time.

**5.Regression Analysis:**

After conducting a regression analysis with SPSS we got the following result

**Tableau 12 : Regression model**

| Model Summary | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .982[a] | .964 | .959 | 7.205154341416452 |
| a. Predictors: (Constant), Real Estate (FTSE 350 RE), Interest Rate, Stock Index (FTSE 100), GDP (M of Pounds), CPI | | | | |

**Tableau 13 : Regression analysis results for bonds index**

| Coefficients[a] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | -194.821 | 41.227 | | -4.726 | .000 | | |
| | Interest Rate | -1.766 | 1.905 | -.063 | -.927 | .360 | .222 | 4.510 |
| | GDP (M of Pounds) | .001 | .000 | .882 | 7.836 | .000 | .081 | 12.406 |
| | Stock Index (FTSE 100) | -.006 | .003 | -.157 | -1.931 | .062 | .154 | 6.503 |
| | CPI | 1.367 | .650 | .272 | 2.103 | .043 | .061 | 16.355 |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Real Estate (FTSE 350 RE) | -.028 | .025 | -.084 | -1.143 | .261 | .191 | 5.230 |

a. Dependent Variable: Bonds Index

Therefore, the equation of our model becomes:

$$Y = -0.063*X1 + 0.882*X2 - 0.157*X3 + 0.272* X4 - 0.084* X5$$

With:

Y = S&P UK Gilt Bond Index X1 = Interest Rate

X2 = GDP

X3 = Stock Index – FTSE 100 X4 = CPI

X5 = Real Estate Index – FTSE 350 RE

As shown in the Model Summary table, we got a coefficient of determination of $R^2$ = 96.4%, which means that 96.4% of the variability of the S&P UK Glit Bond Index performance can be explained by our model.

*Coefficients*

*Interpretation*

**Intercept b0:** The negative value of the intercept has no economic meaning, as there won't be a bond index in the first place if there were no market for it. Therefore, we based our analysis on the standardized coefficients, as stated in our model equation.

**b1:** Ceteris Paribus, if the Bank of England increases by 100 % the interest rate (doubling the rates), the S&P UK Gilt Bond Index is going to decrease by 63 bps.

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**b2**: Ceteris Paribus, if the GDP of the United Kingdom increases by 1 billion GBP, the S&P UK Gilt Bond Index is going to increase by 882 bps.

**b3**: Ceteris Paribus, if the FTSE 100 increases by 100bps, the S&P UK Gilt Bond Index is going to decrease by 157bps.

**b4**: Ceteris Paribus, if the value of the CPI increases by 10 percent, S&P UK Gilt Bond Index is going to increase by 2.28 bps.

**b5:** Ceteris Paribus, if the FTSE 350 RE increases by 100 bps, the S&P UK Gilt Bond Index is going to decrease by 8.4 bps.

*Testing the overall significance (F-test):*

**Hypothesis***:*

$H_0$: $\mathbf{b_1 = b_2 = b_3 = b_4 = b_5}$ (There is no linear relationship between the dependent variables and the independent variables)

$H_1$: At least one coefficient is different from the others. (There is a linear relationship between the dependent variable and at least one of the independent variables.

**Tableau 2 : Analysis of variance**

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | *df* | *SS* | *MS* | *F* | *Significance F* |
| Regression | 5 | 49003.63098 | 9800.726 | 188.7868 | 2.79E-24 |
| Residual | 35 | 1816.998718 | 51.91425 | | |
| Total | 40 | 50820.62969 | | | |

With, α=5%, and numerator df=p=5 and denominator df= n-p-1=35 F(α/2)=F(0.025)=2.6504

Since F=188.79, then F > F(α/2). Thus, we reject H0 and accept H1. **So the overall model is significant.**

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**Tableau 3 :Testing the individual significance (T-test):**

After conducting the regression analysis, we got the following results:

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -194.821 | 41.227 | | -4.726 | .000 | | |
| | Interest Rate | -1.766 | 1.905 | -.063 | -.927 | .360 | .222 | 4.510 |
| | GDP (M of Pounds) | .001 | .000 | .882 | 7.836 | .000 | .081 | 12.406 |
| | Stock Index (FTSE 100) | -.006 | .003 | -.157 | -1.931 | .062 | .154 | 6.503 |
| | CPI | 1.367 | .650 | .272 | 2.103 | .043 | .061 | 16.355 |
| | Real Estate (FTSE 350 RE) | -.028 | .025 | -.084 | -1.143 | .261 | .191 | 5.230 |

a. Dependent Variable: Bonds Index

With α=5%, and df=n-p-1=35

- t(α/2)=t(0.025)= 2.00

## Variable 1: Interest Rate

$H_0$: b1=0 (There is no significant relationship between the independent variable X1 (Interest Rate) and the dependent variable Y, S&P UK Gilt Bond Index).

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$H_1$: b1≠0 (There is a significant relationship between the independent variable X1 (lead price change)$_j$ and the dependent variable Y, S&P UK Gilt Bond Index).

From the table, t= -0.927, and we have -t (α/2)=-2.00

Since -t > - t (α/2), we fail to reject H0. **So the interest rate variable is not significant.**

**Variable 2: GDP**

$H_0$: b2=0 (There is no significant relationship between the independent variable X2 (GDP) and the dependent variable Y, S&P UK Gilt Bond Index).

$H_1$: b2≠0 (There is a significant relationship between the independent variable X1 (GDP) and the dependent variable Y, S&P UK Gilt Bond Index).

From the table, t= 7.836, and we have t (α/2) = 2.00

Since t > t (α/2), we reject H0 and accept $H_1$. **So the GDP variable is significant.**

**Variable 3: FTSE 100**

$H_0$: b3=0 (There is no significant relationship between the independent variable X3 (FTSE 100) and the dependent variable Y, S&P UK Gilt Bond Index).

$H_1$: b1≠0 (There is a significant relationship between the independent variable X3 (FTSE 100) and the dependent variable Y, S&P UK Gilt Bond Index).

From the table, t= -1.931, and we have -t (α/2)= -2.00

Since -t > -t (α/2), we fail to reject H0. **So the FTSE 100 variable is not significant.**

However, once again, it is worth mentioning that we ran again the regression with α=10%, and we found the FTSE 100 to be significant.

**Variable 4: CPI**

$H_0$: b4 = 0 (There is no significant relationship between the independent variable X4 (CPI) and the dependent variable Y, S&P UK Gilt Bond Index).

$H_1$: b4≠0 (There is a significant relationship between the independent variable X4 (CPI) and the dependent variable Y, S&P UK Gilt Bond Index).

From the table, t= 2.103, and we have t (α/2) = 2.00

Since t > t (α/2), we reject H0 and accept $H_1$. **So the CPI variable is significant.**

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### Variable 5: FTSE 350 RE

$H_{0:}$ b5=0 (There is no significant relationship between the independent variable X5 (FTSE 350 RE) and the dependent variable Y, S&P UK Gilt Bond Index).

$H_1$: b5≠0 (There is no significant relationship between the independent variable X5 (FTSE 350 RE) and the dependent variable Y, S&P UK Gilt Bond Index)

From the table, t= -1.143, and we have -t (α/2) = -2.00

Since -t > - t (α/2), we fail to reject H0. **So the FTSE 350 RE variable is not significant.**

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## Conclusion:

After conducting the overall significance test (F-test), we found out that the overall model is significant. However, when we conducted the individual significance tests (T-tests), we found out that based on our data only 2 independent variables are significant.

### GENERAL FINDINGS AND CONCLUSION:

As stated in the introduction, the objective of this project is to conduct an empirical analysis to see how Sukuk and Bonds are affected by a set of variables. The multivariable regression models we constructed show a sharp relationship significance between the independent and explanatory variables.

While some of the chosen independent variables are found to be insignificant in both models, there is no multicollinearity among them, and we may therefore conclude that a longer period of analysis (15years for example) would have led to better results.

Another very important point to note is the irrationality of the investors and the market in general. Thus, deriving a solid model could be more challenging both theoretically and practically.

Finally, from this analysis we may safely infer the following conclusions:

- ✓ Bonds are significantly affected by CPI, GDP, and FTSE 100, while Sukuk are significantly affected by CPI, FTSE 350 RE, and Interest Rate.
- ✓ Real Estate sector is positively correlated with Sukuk, while it's negatively correlated with bonds.
- ✓ Stock market is positively correlated with Sukuk, while it's negatively correlated with bonds

**Tableau 4 : Abbreviations used in the article**

| ABBREVIATION | MEANING |
|---|---|
| UK | UNITED KINGDOM |
| GDP | GROSS DOMESTIC PRODUCT |
| CPI | CONSUMER PRICE INDEX |
| RE | REAL ESTATE INDEX |

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