A comparative analysis of islamic and developed equity markets

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Abstract:

This paper aims to comprehensively compare the risk-return profiles of Islamic and conventional equity markets, providing valuable insights into the financial performance of stock market indices in Islamic countries as compared to those in developed nations. The objective is to delve into the intricate dynamics of these markets, shedding light on how they respond to various economic and financial factors. By focusing on the performance metrics of stock market indices in both Islamic and developed countries, this study intends to analyze not only the overall returns generated but also the associated risks involved. In doing so, it seeks to unearth the nuances in investment opportunities, uncovering potential patterns of divergence or convergence between these two market segments. Furthermore, this research endeavors to discern how different economic and regulatory environments impact these markets, contributing to a more profound understanding of global investment.

Keywords: Islamic equity markets, Risk-return analysis, Capital Asset Pricing Model, Markowitz's algorithm, Ethical investment

I. INTRODUCTION

The intersection of finance and faith has long been the subject of academic research and market speculation. In the investment realm, one area that has received considerable attention is the performance of Islamic equities compared to their conventional counterparts. The dynamics of Islamic finance, guided by Sharia principles that prohibit certain financial activities and promote ethical investment, have created a unique landscape for investors and researchers alike.

Over the years, numerous studies have attempted to unravel the complex relationship between Islamic and conventional equities, seeking to answer a fundamental question: Do Islamic stocks outperform their conventional counterparts, or do they operate in a similar performance realm? This paper seeks to contribute to this ongoing debate by conducting a rigorous analysis of the performance of Islamic and conventional equities in various global markets.

The literature on this subject reveals a complex mixture of findings. Some studies suggest that Islamic stocks have superior performance metrics, while others argue that there is no significant difference in returns between these two categories of stocks. Moreover, the comparative analysis spans different time periods, market conditions and methodologies, resulting in a rich tapestry of evidence that invites further exploration.

This paper aims to compare the markets of Islamic countries and the markets of developed countries, we employ various methods, including the estimation of betas of the capital asset pricing model (CAPM), the calculation of synthetic indices, and the construction of efficient borders using Markowitz's algorithm. Our analysis provides valuable insights for investors interested in the equity markets of Islamic countries and helps them make informed investment decisions.

Our findings suggest that Islamic stocks offer attractive investment opportunities for investors who seek to align their financial activities with their religious and ethical beliefs. However, investors should also be aware of the risks and challenges associated with investing in the equity markets of Islamic countries and should conduct thorough due diligence before making investment decisions.

The rest of the paper is organized as follows, we provide a literature review of the key differences between Islamic and conventional equities, the performance of Islamic and conventional equities, and the diverse findings in the literature on this topic. Then we describe our methodology, including data sources and sample selection, the estimation of betas of the capital asset pricing model (CAPM), the calculation of synthetic indices, and the construction of efficient borders using Markowitz's algorithm. Next, we present our results and analysis. Finally, we summarize our study, highlight our contributions and implications, and provide some future work directions.

II. REVUE DE LITERATURE

The literature review presents diverse findings when comparing the performance of Islamic and conventional stocks. Various studies have focused on analyzing risk-return relationships and stock performance in different markets using different methodologies. Some studies indicate that Islamic stocks outperform conventional stocks. For example, (Hakim & Rashidian, 2004) found that the Dow Jones Islamic Market Index (DJIM) achieves a satisfactory level of performance when compared to the Dow Jones Global Index (DJ Global) and shows lower performance levels in comparison to the Dow Jones Sustainability World Index (DJSI World).While (Jabeen & Kausar, 2022) compare the performance of Islamic and conventional stocks on the Pakistan Stock Exchange, using parametric and non-parametric approaches., and find that the Islamic index (KMI-30) outperforms the conventional index (KSE-30) in terms of returns, excess returns per risk unit, and stochastic dominance. Also (Al-Khazali et al., 2014) Found that Islamic indexes outperform their conventional peers during global financial crisis. While(Asutay et al., 2022) compare Islamic and conventional stock indices, showing Islamic indices' superior performance in the 2007-2009 crisis, the 2013-2017 post-crisis period, and mixed results in the 2009-2013 period, particularly excelling in European and Asia-Pacific markets. Furthermore, in the context of the COVID-19 pandemic, multiple studies have highlighted the resilience of Shariah-compliant investments.(Shear & Ashraf, 2022) observed that the prices of stocks that adhere to Shariah principles responded to the rise in confirmed Coronavirus cases and government-enforced social distancing measures with less severe negative impacts on their returns compared to stocks that do not follow Shariah principles. In general, their results suggest that Shariah compliant stocks performed more favorably throughout the Covid-19 crisis period.

Similarly,(Adekoya et al., 2022) found that Islamic markets exhibit a greater resilience to the pandemic compared to conventional markets. (Nomran & Haron, 2021) revealing that while both were negatively impacted by COVID-19, Islamic indices showed comparatively better performance with earlier positive returns by mid-April 2020.Building on the evidence of greater efficiency in Islamic financial markets, (Ali et al., 2018) employ MF-DFA to compare efficiency between Islamic and conventional stock markets, revealing that, except for a few, Islamic markets tend to be more efficient due to their distinctive characteristics, such as Sharia compliance, strong governance, and disclosure mechanisms. Furthermore,(Alam et al., 2016) conducts a pioneering 18-year analysis of 10 global sectoral indices in both conventional and Islamic contexts using multifractal de-trended fluctuation analysis. The study shows higher efficiency in Islamic sectoral indices over the last decade, aligning with the weak form efficient market hypothesis. Moreover , (Ben Rejeb & Arfaoui, 2019) use a state space model with GARCH(1,1) and structural breakpoints to find that Islamic stock indexes are more informationally efficient than conventional ones.

However, other studies suggest that here is no significant variation between non-Islamic and Islamic indexes. (Albaity & Mudor, 2012) examines Islamic and non-Islamic indices during different periods, finding no significant return differences and that index performance doesn't surpass conventional indices, but it may offer peace of mind to certain investors. Similarly,(Girard & Hassan, 2008) compare Islamic and non-Islamic indexes from 1999 to 2006, finding no significant performance differences. They attribute variations to style differences and conclude that both types of indexes offer similar risk and diversification benefits.

Another study by (Munusamy & Natarajan, 2011) analyzed Nifty Shariah and Nifty index in India from 2007 to 2010, finding no significant performance difference, both underperforming in terms of risk-adjusted returns. They also note lower volatility in Nifty Shariah, concluding that both indices perform similarly. Furthermore, (Touiti & Henchiri, 2016) evaluate Islamic and conventional indices during the subprime crisis. Both exhibited lower returns and higher volatility, except four Islamic indices that demonstrated resilience and continued outperformance even in calmer times. In addition,(El Amri & Hamza, 2017) examine Islamic against Conventional index performance from 2003 to 2011, across different periods. They find that faith-based screens have an insignificant impact on investment performance. Also the study by (Guyot, 2011) concluded that Shariah criteria don't compromise efficient investment allocation.(Aarif et al., 2020) and (Trabelsi et al., 2020) also supported these findings, suggesting that there is little to no significant variation in the return performance of Islamic and conventional stocks across both emerging and developed stock markets. While (Rana & Akhter, 2015) showed that the KMI-30 performs more poorly than the KSE-100 in terms of risk due to higher monitoring costs and smaller investment magnitudes associated with Islamic stocks. However, (Abu-Alkheil et al., 2020) took a different analytical approach, employing CAPM-GARCH analysis to compare Islamic and conventional stock indexes (DJ Global, MSCI, FTSE, S&P, and JII) using CAPM-GARCH analysis. Their findings show that Islamic stock indexes are less responsive to market changes than similar-risk conventional stock indexes, resulting in underperformance.

In the landscape of portfolio comparisons, various studies have contributed valuable insights. Starting with a different perspective, (González et al., 2019) found that Islamic sector portfolios consistently outperformed conventional sector portfolios across all performance metrics. Similarly, (Hoque et al., 2020) conducted a performance analysis of Islamic and conventional stock portfolios in Malaysia, revealing that Islamic stock portfolios delivered higher returns while carrying lower systematic risk, as indicated by CAPM statistics. Turning to efficiency and volatility, (Ben Rejeb & Arfaoui, 2019) discovered that Islamic stock indexes exhibited greater efficiency and volatility compared to conventional indexes. In contrast, (Hendranastiti & Asutay, 2016) reported that, when comparing conventional and Islamic portfolios, Sharīah portfolios carried higher levels of risk than their conventional counterparts. In conclusion, the literature presents different conclusions regarding the performance comparison of conventional and Islamic stocks. Some studies suggest that Islamic stocks outperform, while others find no significant difference or even indicate the outperformance of

conventional stocks. These findings vary across different markets, time periods, and methodologies employed. Further research is needed to comprehensively investigate the performance of conventional and Islamic stocks, considering both returns and risk.

III. THEORETICAL REFERENTIAL

A. Theorical capital asset pricing model - CAPM

The Capital Asset Pricing Model (CAPM), developed by Sharpe (1964), Linter (1965) and Mossin (1966), is generally accepted as the symbol of the beginning of the theory of arbitrage theory. The CAPM is still used extensively.

The CAPM is expressed as follows:

$$R_{it} = \varphi_i + \beta_i \, MSCW_t + \varepsilon_{it} \quad (1)$$

With:

R_{it}: return of index i for the period t,
φ_i, β_i: model coefficients,
ε_{it}: specification error.
$\mathbf{MSCW_t}$: return of MSCI world index for the period t.

$$\beta_i = COV(i, MSWt)/Var(MSCW) \quad (2)$$

B. Construction of two synthetic indices

This method consists of the calculation of two synthetic indices (weighted average), one index concerns the indexes of developed countries and the other index concerns an index of Islamic countries.

$$Synthetic\ index_j = \sum_i^n indices_i \quad (3)$$

For the comparison of the two synthetic indices, we will normalize the two indices in the form of bell curves.

C. Efficient Frontier (Markowitz Algorithm)

The Efficient Frontier is an asset selection model developed by Harry Markowitz in 1952 as part of what he calls modern portfolio theory(Markowitz, 1952). The model principle is as follows; or $\mathbf{R_p}$. the return of the portfolio consisting of assets characterized by their respective returns $\mathbf{R_1}, \mathbf{R_2}, \ldots, \mathbf{R_n}$. It is further assumed that each asset i enters a $\mathbf{X_i}$ proportion in the composition of the P portfolio.

In other words:

$$\mathbf{R_P} = \sum_{i=1}^{n} \mathbf{X_i R_i} \quad (4)$$

And:

$$\begin{cases} \mathbf{E(R_P)} = \mathbf{E}\left(\sum_{i=1}^{n} \mathbf{X_i R_i}\right) = \sum_{i=1}^{n} \mathbf{X_i}\, \mathbf{E(R_i)} & (5) \\ \mathbf{V(R_P)} = \sum_{j=1}^{n}\sum_{i=1}^{n} \mathbf{X_j X_i Cov}\,(\mathbf{X_i}, \mathbf{X_j}) & (6) \end{cases}$$

Selecting a portfolio is like choosing one such as:

E(Rp) be maximum and V(Rp) is minimal under the constraint $\sum_{i=1}^{n} \mathbf{X_i} = 1$.

It is therefore a problem of maximizing an economic function under duress, to build the key border, it would have to iterate optimization for different yields and put on a graph, having to abscess the yields and to order the variances of portfolios, the different points obtained from the process of quadratic optimization.

IV. METHODOLOGY

For the comparison of the markets of Islamic countries and the markets of developed countries, four methods are taken into account, first we will estimate the betas of the capital asset pricing model (CAPM) of the two categories of the markets studied, then we will compare the estimated betas of the two types of markets, then we will estimate the variance of CAPM for the two groups.

The third method consists of the calculation of two synthetic indices (weighted average), one index concerns the indexes of developed countries and the other index concerns an index of Islamic countries, for the comparison of the two synthetic indices the two indices will be normalized in the form of bell curves.

The fourth method is to construct the two efficient borders of the two categories using Markowitz's algorithm and juxtapose the two efficient borders, that of the Islamic group and that of the group of developed countries for a possible comparison.

V. RESULTS AND DISCUSSION

The performance data for the various stock indexes in our sample is taken from Yahoo Finance's database. The data used are monthly frequencies ranging from January 2009 to March 2019. Our database consists of the Morgan Stanley -Co Index (MSCI WORLD) and two groups:

- The group of stock indexes of developed countries that are Italy, Singapore, Spain, Canada, Japan, the Netherlands, Denmark, Hong Kong, the United Kingdom and Australia.
- The group of stock indexes of Islamic countries that are Saudi Arabia, Kuwait, Pakistan, Indonesia, Turkey, the United Arab Emirates, Bahrain, Qatar and Oman.

Figure 1 presents the Comparison of CAPM betas of the indices of developed and Islamic countries. We find that the betas of developed countries are for the most part higher and higher in the indexes of the Islamic countries except for the index of Turkey and the United Arab Emirates. We note that the markets of the developed countries are more aggressive than the markets of Islamic countries since their betas are approaching unit and, in several markets, greater than 1 (Italy, Spain, Honkong and the United Kingdom). Similarly, it is not

very clear that the stock markets of Islamic countries are more defensive compared to the global market (MSCI) since all their betas are less than the unit.
The beta analysis leads us to conclude that the markets of developed countries are more dynamic than the markets of Islamic countries, this is mainly due to the fact that investors have more confidence in the stock markets of developed countries and they are more reluctant to invest in the markets of Islamic countries.

Figure 1: Comparison of Betas of Islamic and developed countries

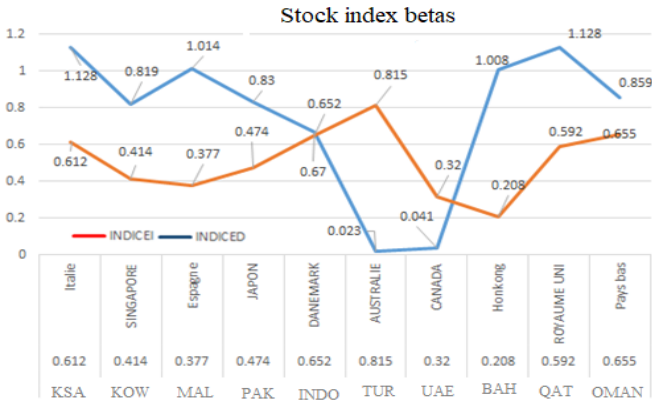


Figure 2 shows the risk profile of Islamic countries' indices (markets). We find that the stock markets of Islamic countries are characterized by the importance of their specific diversifiable risk. This importance of specific risk in the markets of Islamic countries can be explained by various factors such as the organization of these markets, the specifics of their political, economic and financial environment and the significant volatility and liquidity in these markets.

Figure 2: Risk profile of Islamic countries

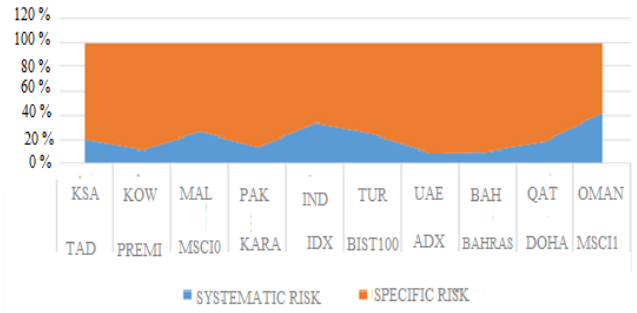


Figure 3 shows the risk profile of indexes (markets) of developed countries. We find that the stock markets of developed countries are characterized by the importance of their non-diversifiable systematic risk except for two glasses that are Canada and Australia. This importance of systemic risk in developed country markets can be explained primarily by the strong integration of these markets into the global market.

Figure 3: Risk profile of developed countries

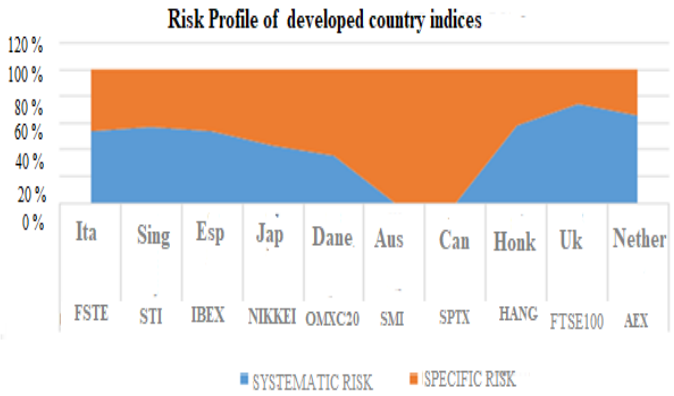
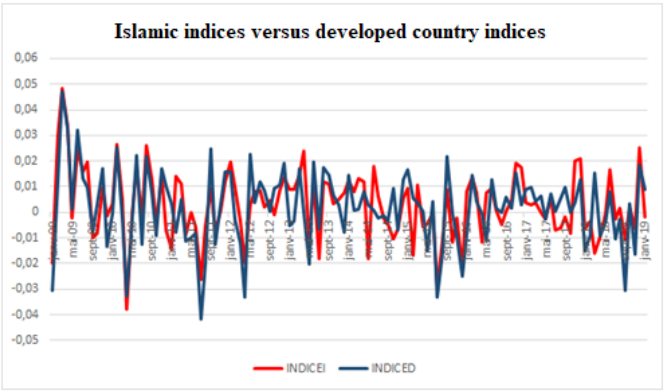


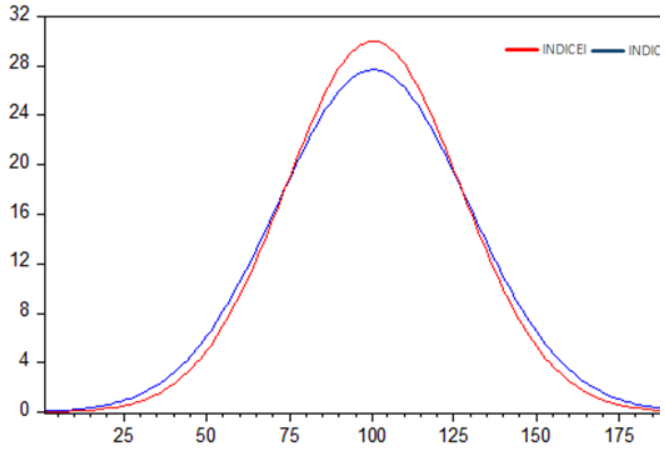
Figure 4 presents the development of two synthetic indices that represent the stock markets of developed countries and the stock markets of Islamic countries. The development of these two synthetic indices was done in a calculation of an arithmetic average of the different indices forming each group. We find that both indices are characterized by apparent volatility, as can be seen a fairly obvious correlation between the two indices during the beginning of the period of our sample. For a more obvious comparison of the two indices, the two indices were normalized by a Gaussian**.**

Figure 4: Synthetic indices of developed countries versus Islamic countries



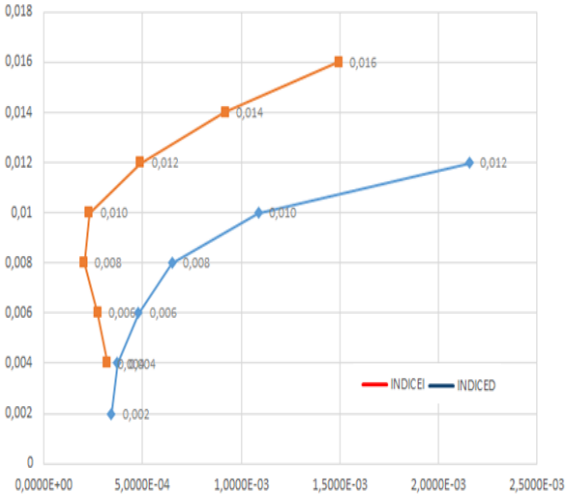
The normalization of both series gives the following two normal curves. It is clear from Figure 5 that the Islamic stock index gives a greater expectation and a lesser variance than the stock index of developed countries.

Figure 5: Normalization of and developed indices countries



The second model to be used is the Markowitz model, which consists of the non-linear optimization of the quadratic form of the transposed weight vector multiplied by the variances/covariances matrix multiplied by the weights, under constraints a given yield vector, with the condition of the sum of weights equal to the unit. The algorithm for both samples gives the boundaries as shown in Figure 6.

Figure 6: Efficient frontiers of Islamic countries versus developed countries



It is clear from Figure 6 that the frontier of Islamic stock indices dominates that of the stock indexes of developed countries, which shows that Islamic financial markets have a much higher return and a much lower risk, in other words, it can be said that Islamic financial markets perform better than the financial markets of developed countries.

CONCLUSION

In conclusion, this paper provides a comprehensive analysis of the performance of Islamic and developed equity markets. The literature review presents diverse findings when comparing the performance of Islamic and conventional stocks. While some studies suggest that Islamic stocks outperform, others find no significant difference or even indicate the outperformance of conventional stocks.

The comparison of the markets of Islamic countries and the markets of developed countries is done using four methods, including the estimation of betas of the capital asset pricing model (CAPM), the calculation of two synthetic indices, and the construction of two efficient borders using Markowitz's algorithm.

The paper highlights the advantages and risks of investing in the equity markets of Islamic countries and discusses the main investment barriers in these markets. Further research is needed to comprehensively investigate the performance of conventional and Islamic stocks, considering both returns and risk. Overall, this paper provides valuable insights for investors interested in the equity markets of Islamic countries and helps them make informed investment decisions.

The future study will introduce the deep learning models in terms of comparing the risk/return between investing in stock market indices in Islamic countries and those in developed countries.

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