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SUSTAINABLE INVESTING AND ISLAMIC FINANCE: EVIDENCE FROM THE ORGANISATION OF ISLAMIC COOPERATION (OIC) COUNTRIES

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ABSTRACT

Purpose — In the aftermath of the Global Financial Crisis, sustainable investing and Islamic finance have become two of the most rapidly growing areas of finance. In the literature on Islamic equities, there are relatively few studies that have integrated sustainability factors into Islamic finance. To address this significant gap in knowledge and evidence, the objective of this paper is to contribute to the literature on the integration of sustainable investing into Islamic finance.

Design/Methodology/Approach — This paper first examines the comparative performance of investing in the sustainability equity indices from those Organisation of Islamic Cooperation (OIC) countries that are partners of the Sustainable Stock Exchanges (SSE) initiative. This paper then conducts a case study on Borsa Istanbul, which has the best-performing sustainability equity index from OIC countries.

Findings — The findings of this paper reveal the heterogeneity in sustainable investment performance, and suggest the potential of obtaining superior risk-adjusted returns in certain economies.

Originality/Value — This paper contributes to the literature that links sustainable investing with Islamic finance, specifically in the context of OIC countries and by focusing on the case of Borsa Istanbul.

Research Implications — This research draws policy and practical implications on how sustainable investing can bridge the gap between Islamic and conventional financial markets.

Keywords — Environmental, social and governance (ESG); Islamic finance; Sustainable investing

Article Classification — Research paper



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INTRODUCTION

Sustainable investing and Islamic finance have become two of the fastest-growing areas of finance (Bennett & Iqbal, 2013), especially in the wake of the Global Financial Crisis (Zeti *et al.*, 2019). In theory, sustainable investing and Islamic finance are compatible (Williams & Zinkin, 2010). In practice, sustainable investing and Islamic finance are complementary capital-raising and investment approaches, with more similarities than differences (Bennett & Iqbal, 2013; Zeti *et al.*, 2019; CFA Institute, 2019; CFA Institute & UN PRI, 2019). On the one hand, sustainable investing is an investment approach that considers both financial objectives and environmental, social and governance (ESG) factors in portfolio construction and management (Renneboog *et al.*, 2008b; Munoz *et al.*, 2014; Miralles-Quiros & Miralles-Quiros, 2017; Zeti *et al.*, 2019; GSIA 2020; Meira *et al.*, 2023). On the other hand, Islamic finance is a financial system in which financial institutions offer financial services that are based on the principles of shared risk and reward (Kammer *et al.*, 2015).

Against the backdrop of the COVID-19 pandemic, sustainable investment is still a major force shaping global capital markets (GSIA, 2020). At the same time, the Islamic financial services industry has sustained its growth momentum and progressed on a double-digit growth trajectory, with significant improvement across different segments of the industry, particularly in Islamic capital markets (IFSB, 2021). Across Islamic capital markets, stock exchanges have joined the Sustainable Stock Exchanges (SSE) initiative (Halawi, 2021). Sitting at the heart of the global investment chain, stock exchanges have a leading role in promoting sustainability in finance. Among the 57 OIC countries, 23 countries are SSE partners, of which five stock exchanges have sustainability-related indices, as shown in **Table 1**.

Table 1: OIC Countries and the Sustainable Stock Exchanges (SSE) Initiative

OIC Country	Stock Exchange	Number of Listed Companies	Market Capitalisation (USD Million)	Has Annual Sustainability Report	Requires ESG Report as a Listing Rule	Offers ESG-related Training	Has Sustainability-related Index
Malaysia	Bursa Malaysia	947	414,285	Yes	Yes	Yes	Yes
Indonesia	Indonesia Stock Exchange (IDX)	766	578,631	Yes	Yes	Yes	Yes
United Arab Emirates (UAE)	Dubai Financial Market (DFM)	63	111,605	Yes	Yes	Yes	Yes
Turkey	Borsa Istanbul (BIST)	417	174,396	Yes	No	Yes	Yes
Egypt	The Egyptian Exchange (EGX)	244	48,731	Yes	Yes	Yes	Yes

Source: Sustainable Stock Exchanges (SSE) – Stock Exchange Database

In the literature on Islamic equities, common research themes include the comparative performance of Islamic equities versus their conventional counterparts (Hussein & Omran, 2005; Girard & Hassan, 2008; Hayat & Kraeussl, 2011; Al-Khazali *et al.*, 2014; Ashraf & Mohammad, 2014; Ho *et al.*, 2014; Shamsuddin, 2014; Ashraf & Khawaja, 2016); the portfolio diversification benefit of investment in Islamic equities (Abbes & Trichilli, 2015; Balcilar *et al.*, 2015; Mensi *et al.*, 2015; Paltrinieri *et al.*, 2019; Gok *et al.*, 2020; Ali *et al.*, 2021); the comparative performance of Islamic versus sustainable investing strategies (Lyn & Zychowicz, 2010; Abdelsalam *et al.*, 2014a, 2014b), among others (Masih *et al.*, 2018). However, there are relatively few research studies that have integrated sustainability factors into Islamic finance, including Erragragui and Revelli (2015, 2016); Erragragui (2017); Erragragui *et al.* (2018); Azmi *et al.* (2019); Qoyum *et al.* (2021).

To address this significant gap in knowledge and evidence, this paper studies sustainable investing and Islamic finance; in particular, the integration of sustainability factors into Islamic finance. Due to the nature of global capital markets, investors are always on the search for investment strategies that can improve risk-adjusted returns and benefit from portfolio diversification. The research objectives of this paper are to examine the performance of investing that considers both the themes of sustainability and Islamic finance, and to compare it against the global equity market benchmarks. The research questions of this paper address two key issues that are of concern to most investors:

1. Can the investment strategy that targets both sustainability and Islamic finance outperform the global sustainability benchmark?
2. Can this investment strategy outperform the Islamic benchmark?

The answers to these questions contribute to the line of research on the integration of sustainable investing into Islamic finance. They also have practical implications for portfolio managers and policy implications for regulators and policymakers.

The remainder of this paper is organised as follows. A literature review is conducted on the comparative performance of investing in both themes: sustainability and Islamic finance. An empirical study is then performed to examine the comparative performance of investing in the sustainability equity indices from those OIC countries that are SSE partners, and compare it with the global benchmarks. Building from that, a case study is conducted on the best-performing sustainability equity index from OIC countries. This paper concludes with practical and policy implications.

LITERATURE REVIEW

In the literature on the comparative performance of investing in sustainability and Islamic finance, the main arguments can be broadly classified into three strands. The first strand is the *underperformance hypothesis*. Grounded in the modern portfolio theory (Markowitz, 1952; Sharpe, 1964; Fama, 1971), it argues that the ethical screening process restricts the investment universe (Schroder, 2007), imposes an additional set of constraints on the optimisation problem that is faced by return-maximising investors, and consequently shifts the mean-variance frontier towards less favourable risk-return tradeoffs than those of conventional portfolios (Renneboog *et al.*, 2008a, 2008b).

Despite this argument from the modern portfolio theory, the second strand is the *outperformance hypothesis*. Grounded in stakeholder theory (Freeman, 1984; Donaldson & Preston, 1995; Jones 1995), it argues for the merits of increasing the number of ethical screens in portfolio selection and management (Barnett & Salomon, 2006; Kempf & Osthoff, 2007; Humphrey & Lee, 2011; Capelle-Blancard & Monjon, 2012), with empirical evidence in favour of outperformance (Azmi *et al.*, 2019; Qoyum *et al.*, 2021).

The third strand is the *no difference hypothesis*. While the classical efficient capital market theory (Fama, 1970) questions whether any abnormal returns can ever be generated by using public information, the adaptive efficient capital market theory (Daniel & Titman, 1999) suggests that any abnormal returns based on trading strategies via public information will dissipate over time (Bebchuk *et al.*, 2013). So, any value proposition—whether in the form of ethical and/or religious values—will not affect stock prices.

Considering all the arguments above, the set of hypotheses is formulated as follows, which will be tested in the next section on empirical study:

- H1a. Sustainability equity indices from OIC countries that are SSE partner exchanges deliver superior risk-adjusted returns than the global equity market benchmarks.
- H1b. Sustainability equity indices from OIC countries that are SSE partner exchanges yield lower risk-adjusted returns than the global equity market benchmarks.
- H1c. Sustainability equity indices from OIC countries that are SSE partner exchanges have non-significant difference in risk-adjusted returns compared with the global equity market benchmarks.

EMPIRICAL STUDY

In this study, the focus is on those OIC countries that are SSE partners with sustainability-related indices, as listed in **Table 1**. **Table 2** summarises the information on the sustainability indices from those four OIC countries with available data. These sustainability indices from OIC countries have two themes: sustainability and Islamic. The FTSE4Good Global Benchmark (FT4GDBGL) is chosen as the global sustainability benchmark, and the FTSE Shariah All World (FTSWORLDS) is chosen as the global Islamic benchmark, as indicated in **Table 3**.

Table 2: Sustainability-related Indices in OIC Countries

OIC Country	Stock Exchange	Index Name	Ticker	Release Date
Malaysia	Bursa Malaysia	FTSE4Good Bursa Malaysia	FTF4GBM	23 December 2014
Indonesia	Indonesian Stock Exchange	IDX SRI-KEHATI	JKSRI	8 June 2009
Turkey	Borsa Istanbul	BIST Sustainability	XUSRD	1 October 2021
Egypt	The Egyptian Exchange	S&P/EGX ESG	SPESEGUP	28 June 2007

Source: Sustainable Stock Exchanges (SSE) – Stock Exchange Database

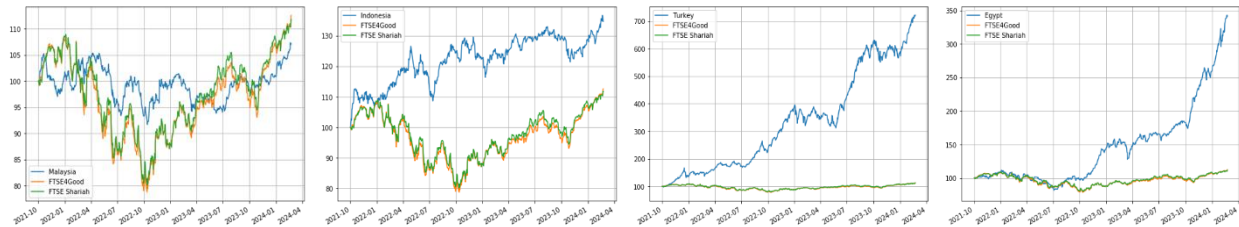
Table 3: Global Equity Market Benchmarks

Index Name	Ticker	Index Theme
FTSE4Good Global Benchmark	FT4GDBGL	Global sustainability benchmark
FTSE Shariah All World	FTSWORLDS	Global Islamic benchmark

Source: Author's own

Figure 1 presents a graphical overview of the relative performance of the four sustainability equity indices under study (from Table 2, in blue) versus the global sustainability benchmark (in orange), and the global Islamic benchmark (in green), from a common start date of 1 October 2021 to 23 February 2024. Among all the sustainability indices under study, the IDX SRI-KEHATI and the BIST Sustainability outperformed the two global benchmarks during the entire sample period; the FTSE4Good Bursa Malaysia and the EGX ESG outperformed the two global benchmarks in more recent periods. Between the two global equity market benchmarks, they tracked the performance of each other closely.

Figure 1: Relative Performance of OIC Countries' Sustainability Equity Indices vis-à-vis Global Benchmarks



Note: The price data on 1 October 2021 are indexed to 100

Source: Author's computation in Python

Table 4 provides a statistical overview of the performance metrics of the sustainability equity indices from OIC countries versus their two global market benchmarks. In the calculation, the annualised mean return is computed as the first difference of the daily time series in logarithm, multiplied by 252 trading days; and the annualised standard deviation is computed by multiplying the daily volatility by the positive square root of 252. Among all the analysed indices, the BIST Sustainability from Turkey has the highest annualised mean but also the highest annualised volatility. Hence, a higher mean return could be due to a higher risk exposure.

Table 4: Performance Metrics of OIC Countries' Sustainability Equity Indices vis-à-vis Global Benchmarks

	Malaysia	Indonesia	Turkey	Egypt	FTSE4Good	FTSE Shariah
Number of observations	585	585	604	586	625	688
Annualised mean return	0.0294	0.1281	0.8242	0.5228	0.0478	0.0407
Annualised volatility	0.0986	0.1372	0.3368	0.2353	0.1556	0.1446

Source: Author's computation in Python

Next, the risk-adjusted returns are examined, including those of the sustainability equity indices from OIC countries and their two global benchmarks. In **Table 5**, the first row follows Sauer (1997), Statman (2000), Schroder (2007), Collison *et al.* (2008), Consolandi *et al.* (2009), Cunha and Samanez (2013), Belghitar *et al.* (2014), Lean and Nguyen (2014), Ang (2015), Ur Rehman *et al.* (2016), Sherwood and Pollard (2018), Cunha *et al.* (2019), and Dai (2021, 2022, 2024), and assesses the risk-adjusted performance by using the Sharpe ratio (Sharpe 1966), which measures the performance of an investment compared to a risk-free asset, after adjusting for its risk. It is

defined as the difference between the returns of the investment and the risk-free return, divided by the standard deviation of the investment returns.

In **Table 5**, the second row follows Cunha and Samanez (2013), Sherwood and Pollard (2018), Cunha *et al.* (2019), and Dai (2021, 2022, 2024), and assesses the risk-adjusted performance by the Sortino ratio (Sortino & Price, 1994). As a modification of the Sharpe ratio, the Sortino ratio penalises only those returns that fall below the required rate of return, while the Sharpe ratio penalises both upside and downside volatility. The third row of **Table 5** follows Cunha and Samanez (2013), Cunha *et al.* (2019), and Dai (2021, 2022, 2024) to assess the risk-adjusted performance by the Omega ratio (Keating & Shadwick, 2002). Based on the information discarded by the Sharpe ratio, the Omega ratio is calculated as the probability-weighted ratio of gains versus losses for some threshold return target.

In assessing risk-adjusted performance, this study follows Meira *et al.* (2022), and collects the daily US Treasury Bill Rates (4-week) as the global benchmark for the risk-free rate of return in calculating the Sharpe ratio, as a global proxy for the required rate of return in calculating the Sortino ratio, and as a proxy for the threshold return target in calculating the Omega ratio.

Based on these three portfolio performance measures, it is found that the sustainability equity indices from Indonesia, Turkey and Egypt outperformed the two global benchmarks, with the sustainability index from Malaysia being the exception. Among all the analysed indices, the BIST Sustainability from Borsa Istanbul delivered the highest risk-adjusted return, which is consistent with the findings in **Figure 1** and **Table 4**.

Table 5: Risk-Adjusted Returns of OIC Countries' Sustainability Equity Indices vis-à-vis Global Benchmarks

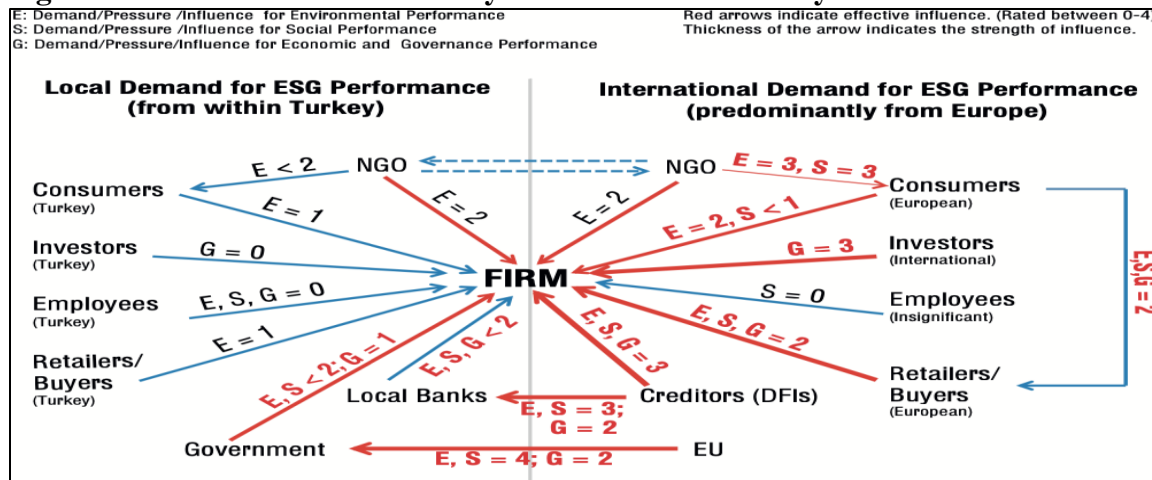
	Malaysia	Indonesia	Turkey	Egypt	FTSE4Good	FTSE Shariah
Sharpe ratio	-1.3902	-1.3043	-0.9041	-0.9899	-1.3273	-1.3523
Sortino ratio	-0.8127	-0.7971	-0.6845	-0.7390	-0.8023	-0.8069
Omega ratio	0.0190	0.0351	0.0907	0.0544	0.0329	0.0277

Source: Author's computation in Excel

CASE STUDY: BORSA ISTANBUL

In this section, a case study is conducted on Borsa Istanbul, which has the best-performing sustainability equity index. Among all the SSE partner exchanges from OIC countries (as mentioned in **Table 1**), Borsa Istanbul was one of the five founding exchanges that signed the foundation document of the SSE initiative at the RIO+20 Summit, joint with Nasdaq, Egyptian Exchange, Johannesburg Stock Exchange, and Brazil Stock Exchange. As a transcontinental country, Turkey has a strategic geopolitical location in the region, and it is referred to as a satellite market (Saygili *et al.*, 2022). With its proximity to Europe, the European Union serves as an anchor for Turkey's sustainability standards and institutional evolution, and aligns its economic and political options with those of Europe (Ararat *et al.*, 2011). This leads to local and international (predominantly from Europe) demand for sustainability performance in Turkey among different stakeholders, as depicted in **Figure 2**. As a response, Borsa Istanbul (BIST) launched the BIST Sustainability in November 2014, where constituents are shares of companies with high performance on corporate sustainability.

Figure 2: Demand for Sustainability Performance in Turkey



Source: Ararat *et al.* (2011, p. 11)

With Turkey's position in the international financial markets in the field of Islamic finance (known as participation finance in the context of Turkey), Borsa Istanbul launched participation indices by evaluating the companies whose shares are traded in accordance with participation principles. In November 2021, Borsa Istanbul launched the BIST Sustainability Participation, which was formed for investors who want to invest in both the themes of sustainability and participation finance (BIST, 2021). The scope of the BIST Sustainability Participation consists of shares of companies that meet the selection criteria of the BIST Sustainability and the BIST Participation All Shares. **Table 6** summarises the information on the BIST Sustainability Participation and its themed benchmarks.

Table 6: Borsa Istanbul (BIST) Sustainability Participation and Its Themed Benchmarks

Index Name	Ticker	Index Type	Release Date
BIST Sustainability Participation	XSRDK	Sustainability & participation-themed	12 November 2021
BIST Sustainability	XUSRD	Domestic sustainability benchmark	1 October 2021
BIST Participation All Shares	XKTUM	Domestic participation benchmark	
FTSE4Good Global Benchmark	FT4GDBGL	Global sustainability benchmark	
FTSE Shariah All World	FTSWORLDS	Global Islamic benchmark	

Source: Borsa Istanbul

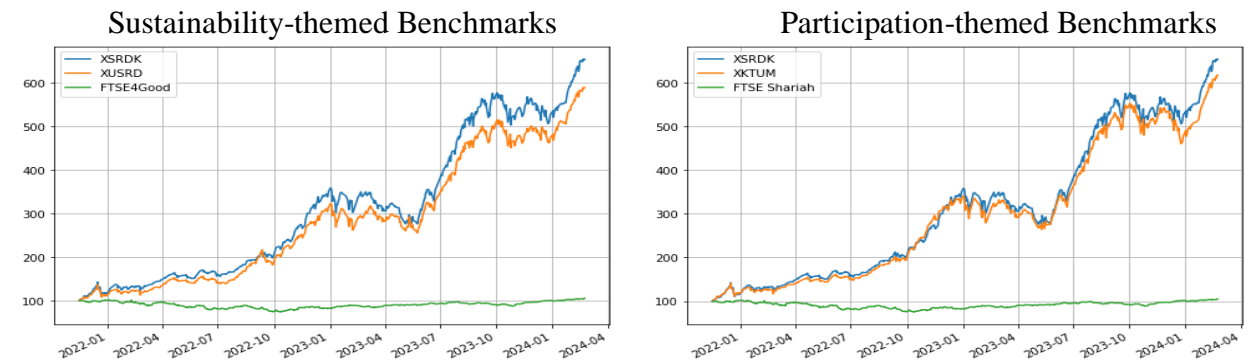
This case study focuses on Borsa Istanbul and examines the performance of investing in the themes of sustainability and participation finance. Due to the nature of global capital markets, investors are always on the search for investment strategies that can improve risk-adjusted returns. In this study, there are two key issues that are addressed, which are of particular concern to most international investors:

1. Can the BIST Sustainability Participation outperform its domestic and global sustainability-themed benchmark indices?
2. Can the BIST Sustainability Participation outperform its participation-themed benchmarks?

Among all the equity indices under study (as reflected in **Table 6**), the BIST Sustainability (XUSRD) had its calculation methodology revised on 1 October 2021; and the BIST Sustainability Participation (XSRDK) had its release date on 12 November 2021. Thus, the date of 16 November 2021 is used, which was the first trading day of the BIST Sustainability Participation (XSRDK), as a common start date for all the equity indices in this case study. The coverage period of the sample is from 16 November 2021 to 23 February 2024.

Figure 3 presents a graphical overview of the performance of the BIST Sustainability Participation (in blue) relative to its domestic (in orange) and global (in green) sustainability-themed benchmarks (left panel) and its participation-themed benchmarks (right panel), with the data on 16 November 2021 indexed to 100. The BIST Sustainability Participation outperformed its domestic and global themed benchmarks over the entire time period under study, and its performance was tracked closely by its two domestic themed benchmarks.

Figure 3: Relative Performance of the BIST Sustainability Participation (XSRDK) vis-à-vis the Themed Benchmarks



Source: Author's computation in Python

Table 7 provides a statistical overview of the comparison of the main risk-return characteristics of the BIST Sustainability Participation (XSRDK) and its sustainability-themed and participation-themed benchmarks. It is found that the BIST Sustainability Participation (XSRDK) has a higher annualised mean return than its domestic and global themed benchmarks. The BIST Sustainability (XUSRD) has the highest annualised volatility during the time period under study.

Table 7: Performance Metrics of the BIST Sustainability Participation (XSRDK) vis-à-vis the Themed Benchmarks

	Sustainability-themed Benchmarks			Participation-themed Benchmarks	
	XSRDK	XUSRD	FTSE4Good	XKTUM	FTSE Shariah
Number of observations	573	573	592	573	651
Annualised mean return	0.8254	0.7796	0.0220	0.8004	-0.0188
Annualised volatility	0.3431	0.3434	0.1585	0.3218	0.1474

Source: Author's computation in Python

In **Table 8**, the Sharpe ratio, the Sortino ratio, and the Omega ratio are applied to measure the risk-adjusted performance of the BIST Sustainability Participation (XSRDK) and its domestic and global sustainability-themed and participation-themed benchmarks. Same as in the previous section, the daily US Treasury Bill Rates (4-week) as the global benchmark for the risk-free rate of return is used in calculating the Sharpe ratio, as a global proxy for the required rate of return in calculating the Sortino ratio, and as a proxy for the threshold return target in calculating the Omega ratio. Based on these three portfolio performance measures, the XSRDK has relatively higher risk-adjusted returns than its themed benchmarks. This is consistent with the findings that are based on annualised mean returns in **Table 7**.

Table 8: Risk-adjusted Performance of the BIST Sustainability Participation (XSRDK) vis-à-vis the Themed Benchmarks

	Sustainability-themed Benchmarks			Participation-themed Benchmarks	
	XSRDK	XUSRD	FTSE4Good	XKTUM	FTSE Shariah
Sharpe ratio	-0.9540	-0.9735	-1.4418	-0.9918	-1.4709
Sortino ratio	-0.7049	-0.7105	-0.8258	-0.7159	-0.8296
Omega ratio	0.0849	0.0784	0.0284	0.0733	0.0237

Source: Author's calculation in Excel

Next, spanning tests (Huberman & Kandel, 1987) are applied to evaluate whether the BIST Sustainability Participation (XSRDK) can be spanned by its domestic and global themed benchmarks, in order to further examine the performance of investing in the themes of sustainability and participation. In the regression-based test, the dependent variable is the difference between the BIST Sustainability Participation (XSRDK) and the global risk-free rate of return as in the calculation of the risk-adjusted returns, and the independent variable is the difference between the relevant benchmark (BM) and the risk-free rate of return.

$$r_{i,t}^{XSRDK} = \alpha_i + \beta_i r_{i,t}^{BM} + \varepsilon_{i,t} \quad (1)$$

where the (intercept) parameter α_i is Jensen's (1968) alpha, and the (slope) parameter β_i is the estimated correlation coefficient between the dependent variable $r_{i,t}^{XSRDK}$ and the independent variable $r_{i,t}^{BM}$.

Following Sauer (1997), Collison *et al.* (2008), Ur Rehman *et al.* (2016), Cunha *et al.* (2019), and Dai (2021, 2022, 2024), Jensen's alpha is estimated, which measures the extra return of the BIST Sustainability Participation (XSRDK) that is not explained by its risk exposure with respect to its reference benchmark index. In **Table 9**, the 'const' rows are the estimated values of Jensen's alpha. It is positive for the case of the BIST Sustainability Participation (XSRDK) versus its domestic participation-themed benchmark (XKTUM, Case III) at the 5 per cent significance level.

As in the Capital Asset Pricing Model (CAPM), the correlation coefficient β_i measures the relative risk of the BIST Sustainability Participation (XSRDK) with respect to its reference benchmark index. If $\beta_i > < 1$, it indicates that the risk of the analysed index is higher than / at par with / lower than that of the benchmark. From the regression results in **Table 9**, it is found

that the BIST Sustainability Participation has a lower risk than its two sustainability-themed benchmarks (Cases I, II) and its global participation-themed benchmark (Case IV); and it has a higher risk than its domestic participation-themed benchmark (Case III).

In the spanning test, the joint null hypothesis is $H_0: (\alpha_i = 0, \beta_i = 1)$. If the null hypothesis H_0 is not rejected, the BIST Sustainability Participation (XSRDK) can be replicated by the relevant benchmark, in which case investing in the benchmark is equivalent to investing in the BIST Sustainability Participation on average, without differences in return or risk. The regression results show that spanning can be rejected for Cases III. In this case, an investor who is primarily interested in sustainable investment from OIC countries can expect a slightly higher return (as proxied by Jensen's alpha), but a relatively higher risk (as proxied by the beta coefficient) than its domestic participation-themed benchmark. In other cases, an investor, who is only interested in the financial outcome of the investment, could equally invest in the BIST Sustainability Participation and its domestic sustainability-themed benchmark and its two global themed benchmarks.

Table 9: Spanning Tests of the BIST Sustainability Participation (XSRDK) vis-à-vis the Themed Benchmarks

Dependent Variable: BIST Sustainability Participation (XSRDK)							
	Case I		Case II		Case III		Case IV
const	-0.0270		0.0123		0.0677	**	-0.1138
p-value	0.5150		0.9400		0.0250		0.5050
BIST Sustainability	0.9649	***					
p-value	0.0000						
FTSE4Good Global Benchmark			0.8812	***			
p-value			0.0000				
BIST Participation All Shares					1.0194	***	
p-value					0.0000		
FTSE Shariah All World							0.8452
p-value							0.0000
Spanning Tests	not rejected		not rejected		rejected		not rejected
Number of observations	574		574		574		574

*, **, *** indicate statistical significance at the 10, 5, and 1 per cent levels, respectively.

Source: Author's computation in Python

CONCLUSION AND IMPLICATIONS

This paper first examines the performance of investing in the sustainability indices from those OIC countries that are SSE partners, and compared against the global equity market benchmarks. Overall, the findings of this paper reveal the heterogeneity in sustainable investment performance, and suggest the potential of obtaining superior risk-adjusted returns in certain economies from OIC countries.

This paper next conducts a case study of Borsa Istanbul, which has the best-performing sustainability index from OIC countries. It examines the comparative performance of investing together in the themes of sustainability and participation finance in the case of Borsa Istanbul. In terms of annualised mean returns (**Table 7**) and risk-adjusted returns (**Table 8**), it is found that the BIST Sustainability Participation (XSRDK) can outperform its domestic and global themed

benchmarks. From the spanning tests, the results indicate that the BIST Sustainability Participation (XSRDK) can outperform its domestic participation-themed benchmark, by integrating the sustainability factor into Islamic investing. In theory, sustainable investing and Islamic finance are compatible (Williams & Zinkin, 2010). For OIC countries, it is found that the Islamic factor can decrease portfolio risk (Cases I, II) and the sustainability factor may increase portfolio risk (Case III). **Table 10** summarises the results.

Table 10: Summary of the Results

	Sustainability-themed Benchmarks			Participation-themed Benchmarks	
	XSRDK	XUSRD	FTSE4Good	XKTUM	FTSE Shariah
Annualised mean return		√	√	√	√
Risk-adjusted return		√	√	√	√
Spanning test				√	

Note: ‘√’ indicates an outperformance of the BIST Sustainability Participation over its respective themed benchmark

Source: Author’s own

Sustainability issues and Islamic finance are of interest to practitioners, regulators, and policymakers (WFE, 2021). For practitioners, this study serves as a basis to develop investment products that have both Islamic and sustainability mandates. For regulators, this research proves the merits of sustainability-themed and Islamic-themed products, which may provide arguments for the promotion of sustainability guidelines by Islamic finance regulatory institutions. Companies in the Middle East that share the values of Islamic finance, demonstrate their commitment to sustainability as well as compliance with reporting requirements will gain facilitated access to capital as well as greater attention from international investors. For policymakers, the findings of this paper have implications for stock exchanges regarding their role in creating sustainability-themed and Islamic-themed products. Sitting at the heart of the global investment chain, stock exchanges should offer advanced sustainability equity indices on a range of ESG metrics, and they should strengthen listing requirements for companies. With sustainability factors embedded through the global investment chain, policymakers in OIC countries will be more inclined to support regulatory initiatives to reinforce responsible investment practices. The sustainability factor may be incorporated into the existing centralised governance framework for Islamic finance, which in turn could bridge the gap between Islamic and conventional financial markets.

REFERENCES

- Abbes, M.B. & Trichilli, Y. (2015), ‘Islamic stock markets and potential diversification benefits’, *Borsa Istanbul Review*, Vol. 15 No. 2, pp. 93–105.
- Abdelsalam, O., Duygen, M., Matallin-Saez, J.C. & Tortosa-Ausina, E. (2014a), ‘Do ethics imply persistence? The case of Islamic and socially responsible funds’, *Journal of Banking & Finance*, Vol. 40, pp. 182–194.
- Abdelsalam, O., Fethi, M.D., Matallin, J.C. & Tortosa-Ausina, E. (2014b), ‘On the comparative performance of socially responsible and Islamic mutual funds’, *Journal of Economic*

- Behavior & Organization*, Vol. 103, Supplement, Special Issue: Islamic Finance, pp. S108–S128.
- Al-Khazali, O., Lean, H.H. & Samet, A. (2014), ‘Do Islamic stock indexes outperform conventional stock indexes? A stochastic dominance approach’, *Pacific-Basin Finance Journal*, Vol. 28, Special Issue: Islamic Banking and Finance, pp. 29–26.
- Ali, M.H., Uddin, M.A., Khan, M.A.R. & Goud, B. (2021), ‘Faith-based versus value-based finance: Is there any portfolio diversification benefit between responsible and Islamic finance?’, *International Journal of Finance and Economics*, Vol. 26 No. 4, pp. 5570–5583.
- Ang, W.R. (2015), ‘Sustainable investment in Korea does not catch a cold when the United States sneezes’, *Journal of Sustainable Finance & Investment*, Vol. 5 No. 1–2, pp. 16–26.
- Ararat, M., Yurtoglu, B.B., Suel, E. & Tura, D. (2011), ‘Sustainable investment in Turkey 2010’, *IFC Sustainable Investment Country Reports*, International Finance Corporation (IFC), World Bank Group.
- Ashraf, D. & Mohammad, N. (2014), ‘Matching perception with the reality: performance of Islamic equity investments’, *Pacific-Basin Finance Journal*, Special Issue: Islamic Banking and Finance, Vol. 28, pp. 175–189.
- Ashraf, D. & Khawaja, M. (2016), ‘Does the Shariah screening process matter? Evidence from Shariah compliant portfolios’, *Journal of Economic Behavior & Organization*, Vol. 132, Supplement, Special issue: Islamic Finance, pp. 77–92.
- Azmi, W., Ng, A., Dewandaru, G. & Nagayev, R. (2019), ‘Doing well while doing good: the case of Islamic and sustainability equity investing’, *Borsa Istanbul Review*, Vol. 19 No. 3, pp. 207–218.
- Balcilar, M., Demirer, R. & Hammoudeh, S. (2015), ‘Global risk exposures and industry diversification with Shariah-compliant equity sectors’, *Pacific-Basin Finance Journal*, Vol. 35, Part B, pp. 499–520.
- Barnett, M.L. & Salomon, R.M. (2006), ‘Beyond dichotomy: the curvilinear relationship between social responsibility and financial performance’, *Strategic Management Journal*, Vol. 27 No. 11, pp. 1101–1122.
- Bebchuk, L., Cohen, A. & Wang, C.C.Y. (2013), ‘Learning and the disappearing association between governance and returns’, *Journal of Financial Economics*, Vol. 108 No. 2, pp. 323–348.
- Belghitar, Y., Clark, E. & Deshmukh, N. (2014), ‘Does it pay to be ethical? Evidence from the FTSE4Good’, *Journal of Banking & Finance*, Vol. 47, pp. 54–62.
- Bennett, M.S. & Iqbal, Z. (2013), ‘How socially responsible investing can bridge the gap between Islamic and conventional financial markets’, *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 6 No. 3, pp. 211–225.
- BIST (2021), ‘Borsa Istanbul starts to calculate participation indices’, Borsa Istanbul (BIST), November 12, 2021, available at: <https://www.borsaistanbul.com/en/duyuru/3876/borsa-istanbul-starts-to-calculate-participation-indices> (accessed 8 March 2023).
- Capelle-Blancard, G. & Monjon, S. (2012), ‘Trends in the literature on socially responsible investment: looking for the keys under the lamppost’, *Business Ethics: A European Review*, Vol. 21 No. 3, pp. 239–250.

- CFA Institute (2019), *Sustainable, Responsible, and Impact Investing and Islamic Finance: Similarities and Differences*, CFA Institute.
- CFA Institute & UN PRI (2019), *ESG Integration and Islamic Finance: Complementary Investment Approaches*, CFA Institute & United Nations (UN) Principles for Responsible Investment (PRI).
- Collison, D.J., Cobb, G., Power, D.M. & Stevenson, L.A. (2008), 'The financial performance of the FTSE4Good indices', *Corporate Social Responsibility and Environmental Management*, Vol. 15 No. 1, pp. 14–28.
- Consolandi, C., Jaiswal-Dale, A., Poggiani, E. & Vercelli, A. (2009), 'Global standards and ethical stock indexes: the case of the Dow Jones Sustainability Stoxx Index', *Journal of Business Ethics*, Vol. 87, pp. 185–197.
- Cunha, F.A.F.d.S. & Samanez, C.P. (2013), 'Performance analysis of sustainable investments in the Brazilian market: a study about the corporate sustainability index (ISE)', *Journal of Business Ethics*, Vol. 117, pp. 19–36.
- Cunha, F.A.F.d.S., Oliveira, E.M., Orsato, R.J., Klotzle, M.C., Oliveira, F.L.C. & Caiado, R.G.G. (2019), 'Can sustainable investments outperform traditional benchmarks? Evidence from global stock markets', *Business Strategy and the Environment*, Vol. 29 No. 2, pp. 682–697.
- Dai, Y. (2021), 'Can ESG investing beat the market and improve portfolio diversification? Evidence from China', *The Chinese Economy*, Vol. 54 No. 4, pp. 272–285.
- Dai, Y. (2022), 'Is ESG investing an 'equity vaccine' in times of crisis? Evidence from the 2020 Wuhan Lockdown and the 2022 Shanghai Lockdown', *Borsa Istanbul Review*, Vol. 22 No. 5, pp. 992–1004.
- Dai, Y. (2024), 'Sustainable investing in emerging markets: evidence from SSE partner exchanges', Working paper, Zhejiang University, China.
- Daniel, K. & Titman, S. (1999), 'Market efficiency in an irrational world', *Financial Analysts Journal*, Vol. 55 No. 6, pp. 28–40.
- Donaldson, T. & Preston, L.E. (1995), 'The stakeholder theory of the corporations: concepts, evidence, and implications', *Academy of Management Review*, Vol. 20 No. 1, pp. 65–91.
- Erragragui, E. & Revelli, C. (2015), 'Should Islamic investors consider SRI criteria in their investment strategies?', *Finance Research Letters*, Vol. 14, pp. 11–19.
- Erragragui, E. & Revelli, C. (2016), 'Is it costly to be both Shariah compliant and socially responsible?', *Review of Financial Economics*, Vol. 31 No. 1, Special Issue: Empirical Islamic Financing, pp. 64–74.
- Erragragui, E. (2017), 'Is it costly to introduce SRI into Islamic portfolios?', *Islamic Economic Studies*, Vol. 25, Special Issue, pp. 23–54.
- Erragragui, E., Hassan, M.K., Peillex, J. & Khan, A.N.F. (2018), 'Does ethics improve stock market resilience in times of instability?', *Economic Systems*, Vol. 42 No. 3, pp. 450–469.
- Fama, E.F. (1970), 'Efficient capital markets: a review of theory and empirical work', *The Journal of Finance*, Vol. 25 No. 2, pp. 383–417.
- Fama, E.F. (1971), 'Risk, return, and equilibrium', *Journal of Political Economy*, Vol. 79 No. 1, pp. 30–55.
- Freeman, R.E. (1984), *Strategic Management: A Stakeholder Approach*, Pitman, Boston MA.

- Girard, E.C. & Hassan, M.K. (2008), 'Is there a cost to faith-based investing: evidence from FTSE Islamic indices', *Journal of Investing*, Vol. 17 No. 4, pp. 112–121.
- Gok, I.Y., Duranay, S. & Unlu, H.U. (2020), 'Co-movement dynamics of sustainability indices: investigating the diversification opportunities through FTSE4Good index family and Borsa Istanbul Sustainability index', *Social Responsibility Journal*, Vol. 16 No. 8, pp. 1475–1487.
- GSIA (2020), *Global Sustainable Investment Review 2020*, Global Sustainable Investment Alliance (GSIA).
- Hayat, R. & Kraeussl, R. (2011), 'Risk and return characteristics of Islamic equity funds', *Emerging Markets Review*, Vol. 12 No. 2, pp. 189–203.
- Ho, C.S.F, Rahman, N.A.A., Yusuf, N.H.M. & Zamzamin, Z. (2014), 'Performance of global Islamic versus conventional share indices: international evidence', *Pacific-Basin Finance Journal*, Vol. 28, Special issue: Islamic Banking and Finance, pp. 110–121.
- Huberman, G. & Kandel, S. (1987), 'Mean-variance spanning', *The Journal of Finance*, Vol. 42 No. 4, pp. 873–888.
- Humphrey, J.E. & Lee, D.D. (2011), 'Australian socially responsible funds: performance, risk and screening intensity', *Journal of Business Ethics*, Vol. 102, pp. 519–535.
- Hussein, K. & Omran, M. (2005), 'Ethical investment revisited: evidence from Dow Jones Islamic Indexes', *The Journal of Investing*, Vol. 14 No. 3, pp. 105–126.
- IFSB (2021), *Islamic Financial Services Industry (IFSI) Stability Report 2021*, Islamic Financial Services Board (IFSB), Kuala Lumpur.
- Jensen, M.C. (1968), 'The performance of mutual funds in the period 1945–1964', *The Journal of Finance*, Vol. 23 No. 2, pp. 389–416.
- Jones, T. (1995), 'Instrumental stakeholder theory: a synthesis of ethics and economics', *Academy of Management Review*, Vol. No. 2, pp. 404–437.
- Kammer, A., Norat, M., Pinon, M., Prasad, A., Towe, C. & Zeidane, Z. (2015), 'Islamic finance: opportunities, challenges, and policy options', *IMF Staff Discussion Note*, SDN/15/05, International Monetary Fund (IMF), Washington DC.
- Keating, C. & Shadwick, W.F. (2002), *A Universal Performance Measure*, The Finance Development Centre.
- Kempf, A. & Osthoff, P. (2007), 'The effect of socially responsible investing on portfolio performance', *European Financial Management*, Vol. 13 No. 5, pp. 908–922.
- Lean, H.H. & Nguyen, D.K. (2014), 'Policy uncertainty and performance characteristics of sustainable investments across regions around the global financial crisis', *Applied Financial Economics*, Vol. 24 No. 21, pp. 1367–1373.
- Lyn, E.O. & Zychowicz, E.J. (2010), 'The impact of faith-based screens on investment performance', *The Journal of Investing*, Vol. 19 No. 3, pp. 136–142.
- Markowitz, H.M. (1952), 'Portfolio selection', *Journal of Finance*, Vol. 7 No. 1, pp. 77–91.
- Masih, M., Kamil, N.K.M. & Bacha, O.I. (2018), 'Issues in Islamic equities: a literature survey', *Emerging Markets Finance and Trade*, Vol. 54 No. 1, pp. 1–26.
- Meira, E., Cunha, F.A.F.d.S., Orsato, R.J., Miralles-Quiros, M.M. & Miralles-Quiros, J.L. (2023), 'The added value and differentiation among ESG investment strategies in stock markets', *Business Strategy and Environment*, Vol. 32 No. 4, pp. 1816–1834.

- Mensi, W., Hammoudeh, S., Reboredo, J.C. & Nguyen, D.K. (2015), 'Are Sharia stocks, gold and U.S. Treasury hedges and/or safe havens for the oil-based GCC markets?', *Emerging Markets Review*, Vol. 24, pp. 101–121.
- Miralles-Quiros, M.d.M. & Miralles-Quiros, J.L. (2017), 'Improving diversification opportunities for socially responsible investors', *Journal of Business Ethics*, Vol. 140 No. 2, pp. 339–351.
- Munoz, F., Vargas, M. & Marco, I. (2014), 'Environmental mutual funds: financial performance and managerial abilities', *Journal of Business Ethics*, Vol. 124, pp. 551–569.
- Qoyum, A., Hashfi, R.U.A., Zusryn, A.S., Kusuma, H. & Qizam, I. (2021), 'Does an Islamic-SRI portfolio really matter? Empirical application of valuation models in Indonesia', *Borsa Istanbul Review*, Vol. 21 No. 2, pp. 105–124.
- Paltrinieri, A., Floreani, J., Kappen, J.A., Mitchell, M.C. & Chawla, K. (2019), 'Islamic, socially responsible, and conventional market comovements: evidence from stock indices', *Thunderbird International Business Review*, Vol. 61 No. 5, Special Issue: The Impact of Research Findings on Islamic Finance, pp. 719–733.
- Renneboog, L., Ter Host, J. & Zhang, C. (2008a), 'The price of ethics and stakeholder governance: the performance of socially responsible mutual funds', *Journal of Corporate Finance*, Vol. 14 No. 3, pp. 302–322.
- Renneboog, L., Ter Horst, J. & Zhang, C. (2008b), 'Socially responsible investments: Institutional aspects, performance, and investor behavior', *Journal of Banking & Finance*, Vol. 32 No. 9, pp. 1723–1742.
- Sauer, D.A. (1997), 'The impact of social-responsibility screens on investment performance: Evidence from the Domini 400 social index and Domini equity mutual fund', *Review of Financial Economics*, Vol. 6 No. 2, pp. 137–149.
- Saygili, E., Arslan, S. & Birkan, A.O. (2022), 'ESG practices and corporate financial performance: evidence from Borsa Istanbul', *Borsa Istanbul Review*, Vol. 22 No. 3, pp. 525–533.
- Schroder, M. (2007), 'Is there a difference? The performance characteristics of SRI equity indices', *Journal of Business Finance & Accounting*, Vol. 34 No. 1-2, pp. 331–348.
- Shamsuddin, A. (2014), 'Are Dow Jones Islamic equity indices exposed to interest rate risk?', *Economic Modelling*, Vol. 39, pp. 273–281.
- Sharpe, W.F. (1964), 'Capital asset prices: a theory of market equilibrium under conditions of risk', *The Journal of Finance*, Vol. 19 No. 3, pp. 425–442.
- Sharpe, W.F. (1966), 'Mutual fund performance', *The Journal of Business*, Vol. 39 No. 1, Part 2: Supplement on Security Prices, pp. 119–138.
- Sherwood, M.W. & Pollard, J.L. (2018), 'The risk-adjusted return potential of integrating ESG strategies into emerging market equities', *Journal of Sustainable Finance & Investment*, Vol. 8 No. 1, pp. 26–44.
- Sortino, F.A. & Price, L.N. (1994), 'Performance measurement in a downside risk framework', *The Journal of Investing*, Vol. 3 No. 3, pp. 59–64.
- Statman, M. (2000), 'Socially responsible mutual funds', *Financial Analysts Journal*, Vol. 56 No. 3, pp. 30–39.

- Ur Rehman, R., Zhang, J., Uppal, J., Cullinan, C. & Naseem, M.A. (2016), 'Are environmental social governance equity indices a better choice for investors? An Asian perspective', *Business Ethics, the Environment & Responsibility*, Vol. 25 No. 4, pp. 440–459.
- WFE (2021), 'The WFE's 7th sustainability survey: exchanges step up efforts to support a sustainable recovery', World Federation of Exchanges (WFE).
- Williams, G. & Zinkin, J. (2010), 'Islam and CSR: A study of the compatibility between the tenets of Islam and the UN Global Compact', *Journal of Business Ethics*, Vol. 91, pp. 519–533.
- Zeti, A.A., Idris, A. & Sultan, Y. (2019), *Responsible Finance – Ethical and Islamic Finance: Meeting the Global Agenda*, RFI Foundation & Islamic Financial Services Board (IFSB).

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DECLARATION

Credit Authorship Contribution Statement

- Yuwen Dai is the sole author of this paper.

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The author declares that she has no known competing financial interest or personal relationships that could have influenced the research work.

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The data in this paper is available upon request from the author.

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Appendix

None