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Are South African Socially Responsible Investment Funds Doing Well While Doing Good?

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Abstract: In recent years, the popularity of socially responsible investment (SRI) funds has soared as individuals are driven towards more environmentally and socially conscious investments. However, SRI funds could incur substantial costs whilst trying to comply with the principles of environmental, social and corporate governance (ESG). The question of financial performance is vital for investors who go beyond philanthropic affinities. The objective of this study is therefore to evaluate the risk-adjusted performance of South African SRI funds relative to their conventional funds and respective passive benchmarks. To achieve this objective, the performance of 23 South African SRI funds is examined from January 2008 to December 2018 using the Fama and French 3-factor and Carhart 4-factor models. The results of this study indicate that SRI funds underperformed relative to non-SRI funds in earlier periods but outperformed or exhibited no significant performance difference in latter periods. This improved performance of SRI funds is attributed to the 'learning effect'. The implications of this findings for South African investors are discussed further.

Keywords: alpha; mutual fund; risk-adjusted return; socially responsible investment

JEL Classification: G11

1. Introduction

Socially Responsible Investing (SRI) can be defined as any investment made, with the intent of meeting certain social or environmental outcomes, in addition to generating a return (Jones, et al., 2008). SRI funds often make use of Environmental, Social and Governance (ESG) criteria when evaluating the assets for inclusion. Particularly since the recent COVID-19 pandemic, and the current issues around climate change, these considerations have gained an increasing interest by both

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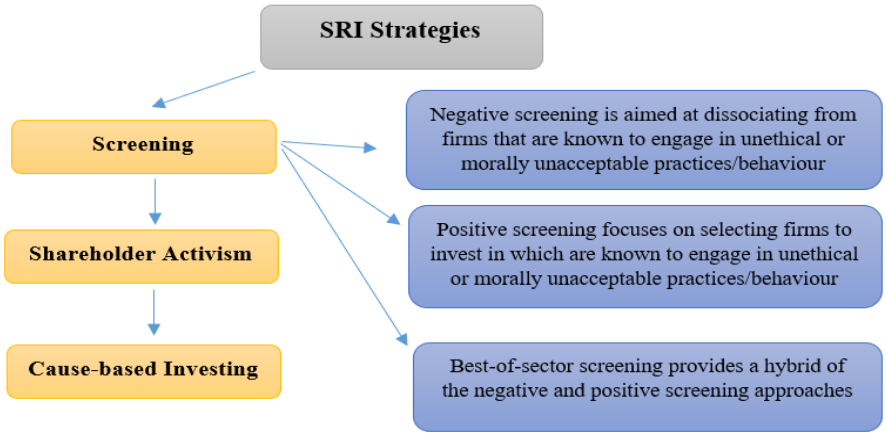
academics, and investors. According to Bloomberg Intelligence (2021), global ESG assets under management are expected to surpass $53 trillion by 2025 which represents approximately 38% of the forecasted total assets under management ($140.5 trillion). ESG investments have also gained popularity in South Africa (S.A.). Specifically, S.A. has positioned itself as an international proponent of SRI by gaining recognition as the single largest market for sustainable investments in the Southern African region. Approximately 74% of all sustainable investments disbursed in the region has been placed in S.A. (Global Impact Investing Network, 2018). There are three dominant strategies utilised by SRI funds, as illustrated in figure 1.



Source: Du Plessis (2015:p.20)

A key feature of SRI is that investors experience both financial returns, and psychological returns from the investment decisions made (Barwick-Barrett, 2015). In particular, ethical investors can capture psychological return in two ways. The first is the psychological benefit they receive through selecting their investments on the basis of ethical criteria as well as financial criteria. For instance, an ethical investor may acquire a psychological return by only investing in mutual funds that do not hold the stock of tobacco companies if the ethical investor does not wish to support tobacco companies and benefit from their success. The second form of psychological return is captured through the shareholder voting in SRI mutual funds. Many SRI funds actively promote their proxy voting strategies within their prospectuses and claim through their proxy voting to support shareholder proposals that promote the firm's environmental and social actions. An ethical investor may receive a psychological return if they invest in SRI funds with proxy voting strategies that promote environmental and social actions if they value the SRI fund's promotion of these actions (Barwick-Barrett, 2015).

Although there are undoubtedly plausible reasons why investors would opt for SRI, the business case for SRI is still debatable. For investors who go beyond philanthropic affinities, the question of financial return is consequently vital. Hence, the question of how SRI performs relative to conventional investments calls for an empirical review. From a theoretical perspective, SRI critics highlight (i) increases in monitoring costs, and (ii) a restricted investment universe which limits the potential for diversification, subsequently, leading to SRI investments under-performing conventional investments (Cortez, et al., 2009). However, proponents of SRI contend that any loss in deriving mean-variance efficient portfolios as a result of a constrained investment universe is compensated for by the desirable profile characteristics which include the ability to raise funds (Waddock and Graves, 1997); and an ability to hire a quality workforce (Greening and Turban, 2000) of the screened assets' underlying companies. This view is anchored in the belief that screening eliminates firms with undesirable characteristics that the market or society will eventually penalise over time.

To date, the international empirical evidence on the existence of performance differences between SRI and non-SRI funds are mixed. While SRI consciousness has grown steadily in S.A.; there is a paucity of research in the SRI domain. Considering the limited studies documented, the extant research delves into (i) the profile of the responsible South African investing industry and opportunities and challenges in the SRI sector (Herringer, et al., 2009) and (ii) the degree to which investors integrate ESG factors into their investment choices (Giamporcaro & Pretorius, 2012). Therefore, the question of financial performance of SRI in S.A. has rarely been addressed at the fund-level. In fact, with the pioneering study by Viviers, et al. (2008) documented more than a decade ago, the only other known study that exists, to date, was that by Du Plessis (2015). The findings of both these studies, however, was shown to be contradictory, thereby providing no consensus on the performance of SRI funds in S.A., which in turn, establishes a field requiring further research.

The motivation of this study is therefore to evaluate the risk-adjusted performance of South African SRI funds relative to their conventional funds and respective passive benchmarks. Therefore, the main contribution of this study is that it provides insight into whether the consideration of social and environmental welfare by South African SRI funds hinders or enhances their financial performance relative to their matched funds and passive benchmarks. Hence, the findings of this study are particularly important for investors as it provides them with the ability to make more informed decisions regarding the SRI approach. Additionally, the results of this study are important for policymakers and regulators as it can be used to promote the growth and existence of the South African market for SRI funds.

The outline of this paper is as follows: Section 2 provides a detailed discussion of the theoretical foundations underpinning this study, and thereafter, reviews existing empirical research on the financial performance of SRI funds. Section 3 discusses the data and methodology employed in this study whilst Section 4 presents and analyses the results obtained. Finally, Section 5 provides the concluding remarks and recommendations for future research.

2. Literature Review

2.1. History and Development of SRI

SRI has a rich history that extends to biblical times. The development into what we now know as ethical investing, began with Jewish and Islamic laws that were based on their ancient texts, and aimed to to prevent harm and exploitation of its citizens. Shariah law, in particular, prohibits the earning or receiving of interest, or investment in alcohol, pork, gambling and armaments (Sparkes & Cowton, 2004). This methodology took root in the 18th century in the United States (U.S), with the advent of the Methodists, who shunned the slave trade and any investment in companies which deal with alcohol, gambling or tobacco products. This outlook grew over the years, buoyed by events like the Vietnam War, and eventually, in the early 1980s, the first socially responsible mutual funds were introduced, which made use of both positive and negative screening methods. As noted previously in figure 1, negative screening methods exclude companies which do not meet the criteria of the fund whilst positive screening methods include companies that have strong evidence in favour of ESG criteria.

More locally, the political environment in South Africa was a key driver in the movement towards socially responsible investing, with certain countries withdrawing their investment into the SA economy due to apartheid (Heese, 2005). This marked a turning point in the ethical investing environment, which was largely propelled by religious beliefs which later became an investment philosophy that had a much wider focus. SRI unit trusts were introduced in SA in the early 1990s via the Community Growth Equity Fund, and the FutureGrowth AlBaraka Equity Fund. However, these funds were accompanied by a lack of confidence in investors (both, individual and institutional), who were of the belief that SRI was accompanied with lower risk-adjusted returns and, subsequently, large-scale losses (Viviers, et al., 2008; Herringer et al., 2009). However, following the inception of the FTSE/JSE SRI Index in May 2004 (renamed as the FTSE-JSE Responsible Investment Top 30 Index in 2015), investors' interest in the SRI market increased exponentially (Viviers, et al., 2008). Subsequently, the market value of the South African SRI market gained increased from R18 billion in 2006 to R71.38 billion in 2018, with more than three-quarters of SA investors increasing their allocation to sustainable

investments over the past five years (Viviers, et al., 2008; Giamporcaro, et al., 2010; Business Day, 2018).

In 2010, the Johannesburg Stock Exchange (JSE) became the first entity to require firms to incorporate ESG factors into their financial reporting. A similar standard took effect in the European Union in 2017, affecting about 6 000 large firms (Bloomberg, 2018). A 2017 global investment survey by Schroder found that 81% of South African investors reported sustainable investment growing in importance to them in recent years. 67% of these respondents reported increasing their allocation to these investments in the five years precedent - 13% more than the global average. Among the respondents contemplating a sustainable investment, 70% indicated a willingness to provide equal or higher emphasis on social and environmental returns relative to financial criteria (Business Maverick, 2019). In support of South Africa's aim to position itself globally as a proponent of SRI, it has also engaged in some notable local developments, mainly in regulatory and industry-driven initiatives. These include an amendment to Regulation 28 of the Pension Funds Act establishing a requirement for funds to consider Responsible Investment (RI) in investment decisions and the launch of a Code of Responsible Investing in S.A. (CRISA) which is a voluntary code of five principles meant to guide the RI practices of institutional investors. Furthermore, the Government introduced the Sustainable Returns initiative to help retirement funds comply with Regulation 28 and CRISA (Business Maverick, 2019).

2.2. Empirical Evidence

The neoclassical theory, developed by Friedman (1962), dictates that the duty and responsibility of the manager is to maximise shareholder value. This, therefore, implies that CSR initiatives pose additional costs, which will result in firms deviating from their desired goal of attaining wealth maximisation. Also, in support of the neoclassical viewpoint, Modern Portfolio Theory (MPT) suggests that the inclusion of non-financial restrictions will not benefit financial performance as the criteria results in lower diversification and exposes the firm to risk and additional costs (Cortez et al., 2009). Critics of SRI point out that any effort to achieve social responsibility by firms is costly and will result in above average costs that subsequently manifest in below average financial performance. In turn, these practices place firms in a competitive disadvantage rather than the desired advantage to their peers (Friedman, 1970; Jensen, 2002). In addition, employing the screening procedures necessary can prove to be a costly and time-consuming process for SRI funds, with additional monitoring costs also being incurred relative to conventional funds. These additional costs thus result in an increased expense ratio, and thus decreased net performance, for SRI funds, relative to conventional funds which do not bear these responsibilities.

An additional concern with SRI is that it limits the investment horizon, which then limits the opportunities to achieve adequate diversification. In the formation of Markowitz (1952) efficient frontier, the screening procedures necessary will result in a sub-optimal portfolio for investment, which produces a less favourable risk-return ratio and, subsequently, inferior risk-adjusted financial performance. This implies that their efficient portfolio frontier is flatter than that of the conventional fund managers, that is, for a given level of variance, the expected return is lower (Barnett and Salomon, 2006; Renneboog et al., 2008). Consequently, it is possible that the diversification cost tends to zero when the universe of investable stocks is large enough, and the negative covariance between excluded and included stocks is negligible when negative screens are not too severe (Derwall et al., 2011).

However, it is noted that the aforementioned diversification effect is highly dependent on the initial objectives of the mutual funds, the asset classes involved and the portfolio constructions. Therefore, the practical costs depend on the extent of exclusion. For example, if a part of the investment universe is cut-off, that is already considered off-limits in light of the investment mandate, the indirect costs will be low. Vice versa, if the cut-off part includes highly lucrative opportunities, indirect costs will be high. In contradiction to MPT, scholars have found evidence that specialised funds, in some cases improve risk-adjusted fund performance (Gil-Bazo, et al., 2010), so even though the screening limits the investment horizon, practical costs associated with this limitation might not be as severe as expected. The final cost associated with socially responsible investment funds is the possibility of incurring a timing cost if the fund managers is forced by fund rules to sell the stock of a company which modifies its behaviour and loses its SR characteristics. This event may cause the fund manager to perform an action equivalent to a liquidity constrained sale, forcing the manager to a suboptimal transaction when the stock of that company has good return prospects (Becchetti, et al., 2012). Studies such as Jones, et al. (2008) and Renneboog, et al. (2008) have found evidence confirming this negative impact on return, in their respective markets (Australia and Europe).

In contrast to the afore-mentioned argument, proponents have argued that a company which is found to be more proactive with its corporate social responsibility (CSR) initiatives will promote their company's image in the marketplace, attracting more respect from their consumers and the market as a whole (Renneboog, et al., 2008). Additionally, Chegut, et al. (2011) argue that the social theory of the firm suggests that the financial performance of responsible investments is superior to that of its counterparts because SRI incorporates information that is relevant and thus allows room for a better decision-making process. The underlying rationale that socially responsible efforts lead to better results is referred to as *stakeholder theory*, which states that firms should be concerned with the interests of its shareholders, but also all relevant parties and stakeholders to the business (Freeman, 1984). Ultimately, *stakeholder theory* emphasises that by satiating the welfare of all stakeholders,

shareholders, in turn, would gain increased value. Therefore, the fundamental argument is that SRI firms portray a higher quality of management and would, therefore, be expected to outperform its less responsible peers (Hamilton, et al., 1993).

Barnett and Salomon (2006) note that the possible advantages of firms engaging in socially responsible efforts are the ability to attract capital at a lower cost, to obtain well-suited employees and to be able to market products and services more easily due to a better reputation. Kempf and Osthoff (2007) find evidence supporting this theory. Specifically, Kempf and Osthoff (2007) report that a strategy that invests in high ESG score firms and sells those with low ESG scores achieves a 4% net outperformance or abnormal returns (AR) of up to 8.7% annually. Diltz (1995) and Derwall et al. (2005) endorse these findings whilst constructing hypothetical portfolios. Alternatively, Hamilton, et al. (1993) argue that SRI funds may earn superior returns by omitting non-SRI stocks. They argue that investors underestimate the possibility of harmful information that affects non-ethical firms, which would ultimately affect the overall share returns. Hong and Kacperzyk (2009) acknowledge this additional risk that is associated with firms involved in gambling, tobacco and alcohol are often combined with high litigation costs. Moreover, governments also play an important role in promoting SRI investments via tax benefits, or tax penalisations. By taxing the tobacco and alcohol industries more, this makes these industries relatively less profitable overall.

The argument that SRI funds might suffer from a lack of diversification is countered by Bello (2005). The key conclusion of Bello (2005) is that the SRI and conventional samples show similar diversification characteristics. Therefore, screening does not necessarily imply that diversification benefits diminish by a significant margin. This is in line with the argument that the screening process excludes investments already off-limit considering the funds' mandate. In contrast to the previously discussed *shun-stock hypothesis*, Derwall et al. (2011) provide an alternative hypothesis, namely the *errors-in-expectations hypothesis*. The latter is based on the assumption that SRI screens are able to generate abnormal returns because the market finds it difficult to incorporate and identify benefits from corporate socially responsible efforts. This delay in pricing should prove profitable for SRI funds when the markets eventually learn the benefits of socially responsible efforts. In addition to the latter argument, Renneboog, et al. (2008) stress that screening may generate value if screening yields non-public information. Generally, fund management actively discusses environmental, social and governance issues with the firms' management and subsequently tries to influence firm policy. This is not possible for an average retail investor, and therefore, may yield non-public information and in turn, increase risk-adjusted performance of the SRI mutual fund.

In addition, best-in-class performers possibly possess valuable intangible characteristics leading to a strong corporate reputation that could fuel superior firm performance (Fombrun & Shanely, 1990). This goodwill has an insurance-like effect when firms experience negative events. As a result of this goodwill, some stakeholders change their negative attitude towards firms in these negative events (Godfrey, et al., 2009). Following this rationale, one might expect that these benefits are ultimately reflected in the differential between SRI and conventional funds. The materiality of the efforts, the incorporation in valuation models and the subjectivity of CSR practices, can lead to prices deviating from fundamental values.

Alternatively, the previously discussed arguments can be explained from a different perspective, as correlation does not necessarily mean causation. Consider the problematic phenomenon of reverse causality, which may be apparent. Firms that are profitable probably have deeper pockets, and therefore, a higher probability exists that they direct this cash to socially responsible purposes compared to a poor performing firm that is in need of cash (Stanwick and Stanwick, 1998). Thus, CSR can be considered a 'luxury good' only pursued by companies who are already highly profitable, whereas poor performers only focus on improving short term financial performance and have no room and/or time to engage in these practices. In essence, when firms initiate SRI practices, this simply signals that firms are doing well, and therefore, can be considered a leading indicator in picking outperforming stocks. The previous argument merits further explanation largely due to a mistake that many investors make, namely, the assumption that an operationally and financially sound company makes a good investment. Even though companies pursuing SRI practices can be considered good companies, they do not need to be good investments.

Studies such as Bauer, et al. (2002) and Viviers, et al. (2008) found evidence of a "learning effect" present, which means that SRI funds showed improved performance over time as fund managers familiarized themselves better with socially responsible investments. This was also substantiated by SRI funds showing persistence in their performance. SRI funds were also found to perform better than conventional funds during periods of high volatility (market downturns) and vice versa during low volatility periods (bullish markets). The study of Traaseth and Framstad (2016) found that SRI funds which held companies with higher ESG scores, as well as global SRI funds, performed better than SRI funds which had companies with lower ESG scores, and purely domestic SRI funds. On the contrary however, when Barwick-Barrett (2015) evaluated the impact of screening strategies, it was found that negative screening had a more detrimental effect on fund performance than other screening methodologies.

3. Data and Methodology

3.1. Data description

The target population of the study comprised of any South African institutional (pooled and segregated) or collective investment fund that employs SRI screening methods such as, among the many, shareholder activism, and/or cause-based (that is, targeted) investment strategies. For the purpose of the study, Shari'ah compliant funds were included due to the approach they follow when employing exclusionary screening practices as part of their investment strategy (investing in accordance with Islamic laws) and alignment of objectives they purport to attain. According to AfricaSRI (2019), there were 23 SRI-labelled funds in existence in S.A. in 2019. To be an SRI-labelled fund, the following requirements had to be met:

- The fund's mandate/investment strategy must be in accordance with the ESG criteria as stipulated in the JSE's requirements for a firm listing on the JSE SRI Index;
- The fund must invest in JSE SRI index constituents and/or other international ESG or SRI-related securities; and
- More than 75% of the fund's assets must comprise of SRI-related securities.

Accordingly, this study made use of all SRI-labelled funds in S.A. (i.e. 23 funds) over the time period of January 2009 - December 2018. These funds had to be "matched" to their conventional peers in the industry to facilitate a comparison, which was conducted by means of a matched-pairs analysis, based on the fund's characteristics such as their age, size and fund style. This approach, proposed by Mallin et al. (1995) and applied in later studies such as Kreander, et al. (2005), Leite and Cortez (2014) and Belghitar, et al. (2017), postulates that not accounting and controlling for the aforementioned variables could potentially distort the results of the study. This happens because perceived observations of disparity or similarity in performance could in fact reflect the influence of a specific characteristic that has an explicit effect on financial performance.

The first step in the use of a matched-pairs analysis is to determine the fund styles of the respective funds. For the purpose of the study, the sample will consist of four broad fund styles, namely, equity (South African and global, respectively), balanced (multi asset), interest-bearing and real estate (property). However, the number of funds that constitute each fund style will vary. Using the Association for Savings and Investment South Africa (ASISA) and Fundsdata Online classifications, the aforementioned fund styles were further subdivided into various sectors. These categories (including the number of funds that comprise that sector) are as follows:

- Equity (both local and international) – 11 funds.

- Multi-Asset/Balanced – 10 funds.
- Interest-bearing – 1 fund.
- Real Estate – 1 fund.

The next step is to isolate conventional funds of the same fund style and an equivalent age (calculated as the difference between the fund's inception date and 31 December 2018). The method of Bollen (2007) in allowing the conventional fund to be no more than three years younger or older than the SRI fund was used. This restriction ensures that the funds experienced similar macroeconomic time-series effects. Lastly, for a given SRI fund, all eligible conventional funds (matched by fund style and age) are scored based on the distance between the size of the conventional and SRI funds and the risk sensitivities of the conventional and SRI funds. The distance relating to how close the SRI fund (i) is to each of the conventional funds (j) was measured using the following algorithm:

$$Distance_{i,j} = \sum_{k=1}^{n} \left(\frac{\beta_{i,k} - \beta_{j,k}}{\sigma_k}\right)^2 + \left(\frac{TNA_i - TNA_j}{\sigma_{TNA}}\right)^2 \quad (1)$$

where n is the number of risk factors in the two models, β_k are the risk coefficients, σ_k is the cross-sectional standard deviation (CSV)[1] of the risk coefficients, TNA is the maximum size reached by the fund, and σ_{TNA} is the cross-sectional standard deviation of TNA. The scaling by standard deviation in equation 1 is meant to normalise the weights placed on each matching criterion. Based on the calculation shown in Equation 1, the conventional fund with the shortest distance to the SRI fund was selected.

3.2. Methodology

This study employed the Carhart (1997) 4-factor model to evaluate the performance of the SRI funds. Rathner (2013) postulates that this model is the most prominent measure used in evaluating index and fund performance, and South African studies such as Van Rensburg (2001), Hoffman (2012) and Muller and Ward (2013) found three distinct style factors being dominant: size, value and momentum (evaluated across firms listed on the JSE as well as relative to other style approaches). The Carhart (1997) 4-factor models is expressed in Equation 2 as follows:

$$R_p - R_f = \alpha_0 + \beta_{0,p} MKT + \beta_{1,p} SMB + \beta_{2,p} HML + \beta_{3,p} MOM + \varepsilon_p \quad (2)$$

where R_p represents portfolio p's return, MKT represents the market risk premium calculated as the difference between the market portfolio's return (R_m) and the risk-

[1] CSV is calculated as: $CSV = \sqrt{\sum_i w_i \, (r_i - R)^2}$, where R represents the average return across all assets, r_i is the return of asset *i*, and w_i is the weight of asset *i*.

free interest rate (R_f). SMB represents the size effect[1], HML represents the value effect[2], and MOM captures the momentum effect[3]. α_0 is the alpha for portfolio j, $\beta_{0,p} - \beta_{3,p}$ are coefficient estimates in time-series regressions, and ε_j is a random error that yields a zero expected value.

Alpha (α_0) is the measure of the difference between a fund's actual returns and its expected performance, given its level of risk as measured by the beta coefficients ($\beta_{0,p} - \beta_{3,p}$). A statistically significant positive α_0 indicates the fund has performed better than its betas would predict, that is, the fund generated an excess return. In contrast, a statistically significant negative α_0 indicates the fund's underperformance, given the expectations established by the fund's betas. A statistically significant positive coefficient for the SMB factor implies that the fund exhibited, on average, a larger exposure to small-cap stocks in comparison to large-cap stocks over the evaluation period while a statistically significant negative coefficient implies that the fund showed a greater exposure to large-cap stocks. A statistically significant positive coefficient for the HML factor implies that the fund exhibited, on average, a larger exposure to value stocks in comparison to growth stocks over the evaluation while a statistically significant negative coefficient implies that the fund showed a greater exposure to growth stocks. A statistically significant positive coefficient for MOM implies that the fund is showing positive momentum over the evaluation period, and vice versa. The resultant t-statistics and p-values for the estimated coefficients will be analysed to determine its statistical significance.

The benchmark index used was either the fund's proxy benchmark or composite benchmark (if no proxy benchmark existed for the respective fund). All sectors except for the balanced fund style comprised of proxy benchmarks. The type of benchmark matched to each fund was sourced from ASISA (for proxy benchmarks) or the fund's factsheet (for composite benchmarks). In addition, the selection of conventional funds was achieved through a matched-pairs analysis that is based on the fund's characteristics, such as their age, size, and fund style. As the objective of

[1] SMB has been constructed to measure the additional component of return historically earned by investors through investing in shares of firms that are known to have fairly low market capitalisation. The method used in this study therefore calculated the return differential between small-sized and large-sized firms by subtracting the logged monthly returns of the JSE Top 40 index (large-sized firms) from the logged monthly returns of the JSE Small-Cap index (small-sized firms).

[2] HML is designed to capture the 'value premium' received by investors for investing in firms with high book-to-market values and is calculated in this study by subtracting the logged monthly returns of the JSE Growth Index from the logged monthly returns of the JSE Value Index (Atsin & Ocran, 2015).

[3] The momentum variable (MOM) is constructed to measure the tendency of a stock to continue rising if it has been increasing in value or continue declining if it has been decreasing in value (Carhart, 1997). In this study, the momentum factor will be calculated as the return differential between the top 10% and bottom 10% of selected (JSE) stocks ranked based on their prior 12-month performance (Margolis, 2014).

the analysis is to evaluate the relative performance of SRI funds to their conventional counterparts, this will result in the use of a difference fund and difference benchmark. Similar to the approach of Bauer et al. (2002), Derwall et al. (2005), Rathner (2013) and Du Plessis (2015), the difference fund will be obtained by subtracting the returns of the matched conventional fund from the returns of the SRI fund while the difference benchmark will be obtained by subtracting the returns of the SRI fund's benchmark from the returns of the SRI fund. A statistically positive α_0 by the difference fund indicates that the SRI fund outperformed relative to the non-SRI fund whilst a statistically negative α_0 implies that the SRI fund underperformed relative to the non-SRI fund. If the difference fund generates an α_0 of zero and/or is statistically insignificant then this suggests that there is no significant difference in the performance of the SRI fund and non-SRI fund. The same will apply in the analysis of the difference benchmark.

4. Data Analysis and Results

4.1. Risk-return Analysis of the Sample Funds

The samples constituent's mean returns, standard deviations, and betas were computed to allow risk-return comparisons of SRI funds and its matched funds and passive benchmarks. The sample period of January 2009 – December 2018 was further sub-divided into two equal periods of January 2009 - December 2013 and January 2014 – December 2018. This division ensures more stable beta estimations and allows for the variation of estimates and results over the two time periods. Table 1 presents the risk-return comparisons for the two periods, which constitute the study.

The statistics presented in Table 1 indicate that, during both sub-periods, SRI funds exhibited a lower return and lower risk (both total risk and market risk) in comparison to non-SRI funds. Relative to its passive benchmarks, SRI funds showed a higher return and lower risk (both total risk and market risk) from January 2009 to December 2013 and vice versa from January 2014 to December 2018. Although, on average, mixed findings were shown for SRI funds with respect to its lower/higher return and risk relative to its conventional counterparts, the SRI fund from the interest-bearing fund style was found to exhibit similar risk-return attributes relative to its matched fund and passive benchmark.

Table 1. Risk Return Statistics for Each Category of Funds

	Jan 2009 – Dec 2013			Jan 2014 – Dec 2018		
	Annualised Mean Return (%)	Annualised Standard Deviation (%)	Beta	Annualised Mean Return (%)	Annualised Standard Deviation (%)	Beta
Category 1: Equity Fund Style						
SRI funds	13.43	11.83	0.72	3.26	11.48	0.65
Matched funds	17.95	13.51	0.88	3.86	11.15	0.81
Benchmarks	15.53	14.91	0.89	5.14	12.28	0.86
Category 2: Balanced Fund Style						
SRI funds	11.85	5.88	0.34	4.71	5.93	0.27
Matched funds	13.38	6.79	0.33	4.67	4.97	0.26
Benchmarks	6.88	1.24	0.00	6.86	1.34	0.00
Category 3: Interest-Bearing Fund Style						
SRI fund	8.07	6.42	0.10	7.41	7.67	0.05
Matched fund	8.18	6.54	0.10	7.47	7.93	0.05
Benchmark	7.43	6.08	0.11	7.37	7.88	0.05
Category 4: Real Estate Fund Style						
SRI fund	16.60	14.14	0.39	6.69	15.07	0.36
Matched fund	15.36	16.80	0.49	9.19	17.06	0.26
Benchmark	12.63	16.25	0.62	8.23	14.70	0.42
Average for all SRI funds	12.49	9.57	0.39	5.52	10.04	0.33
Average for all matched funds	13.72	10.91	0.45	6.30	10.28	0.35
Average for all benchmarks	10.60	9.62	0.41	6.92	9.05	0.33

4.2. Performance Evaluation Analysis

This study employed the Carhart (1997) 4-factor model to assess of the risk-adjusted performance of SRI funds relative to its matched conventional funds and passive benchmarks. To aid in the comparison of the SRI fund to its respective conventional fund and passive benchmark, a difference fund and difference benchmark was used. The results of the Carhart 4-factor model are presented in Appendix A.

The results of the alpha coefficients in Appendix A indicate that, for sub-period one which contains 12 funds in total, 3 of the SRI funds generated positive, statistically significant alphas which were larger than their matched counterparts. Similarly, 3 of the matched funds have statistically significant and larger alphas than their SRI counterparts. When viewing the matched funds however, it can be seen that only 3 of the differenced funds have statistically significant alphas, and all of these are negative, which indicates underperformance of these SRI funds during the earlier sample period of the study (2009 to 2013).

The alpha statistics of sub-period 2 (2014 to 2018) indicate better performance from the SRI funds with 8 (out of 23) funds displaying positive and statistically significant performance. In addition, the size of the coefficients indicates that during this sample

period, the SRI funds outperformed their matched counterparts. However, when viewing the results from the differenced funds, 4 of the funds display positive, statistically significant alpha coefficients, whereas 3 of them display negative statistically significant alpha coefficients. Therefore, whilst the later period of the studies seems to indicate improved performance from the SRI funds, there is still some evidence of underperformance in some fund categories (which coincides with the results from sub period 1). The remaining 16 funds display statistically insignificant alpha coefficients which indicate no statistical difference in performance between the two funds.

The findings of the Carhart 4-fact\or model indicate that, on average, SRI funds exhibited a lower sensitivity to market risk in comparison to non-SRI funds in both sub-periods. Specifically, relative to their non-SRI funds, 75% and 92% of the SRI exhibited lower β_0 coefficients in sub-periods one and two, respectively. With regards to the size factor, only half (50%) the SRI funds exhibited a higher sensitivity (β_1) to the size factor in sub-period one. In sub-period two, 67% of the SRI funds exhibited higher β_1 coefficients, thus, indicating that, on average, SRI funds exhibited a higher sensitivity to the size factor relative to non-SRI in sub-period two. For the value factor, the results in Appendix A indicate that, relative to non-SRI funds, 83% of the SRI funds were more growth-orientated in sub-period one whilst 92% of the SRI funds were more value-orientated in sub-period two as indicated by their β_2 coefficients. Notably, in both sub-periods, the momentum factor (MOM) was insignificant for both the SRI and non-SRI funds on average except for two SRI funds with negative momentum in sub-period one and three SRI funds with positive momentum in sub-period two. On average, SRI funds differ from non-SRI funds in terms of their performances and risk exposures. In addition, the Carhart 4-factor models presented in Appendix A were a good fit for the funds' return series as indicated by their medium to high adjusted R^2 values.

4.3. Summary of Findings

The results of the study found indicate that, on average, the SRI funds underperformed in sub-period one but outperformed or exhibited no significant performance difference in sub-period two (or despite underperforming in both sub-periods, the fund underperformed by a smaller margin in sub-period two). This improved performance of SRI funds in latter periods could be attributed to the 'learning effect' in which fund managers learn and improve their trading skills through experience, subsequently, resulting in improved fund performance with the progression of time. Similar findings were reported by Viviers, et al. (2008) who found that South African SRI funds undergo a 'learning effect', and thus, show improve performance in latter periods. Overall, this improved performance of SRI funds suggests that, on average, SRI funds are viable long-term investments. This

is consistent with the objective of SRI to undertake sustainable investments and to have positive long-term effect on ESG concerns.

5. Conclusion

SRI funds are becoming increasingly popular as individuals are driven towards more environmentally and socially conscious investments. However, SRI funds could incur significant costs whilst trying to comply with the principles of ESG. Consequently, the question of financial performance is important for investors who go beyond philanthropic affinities. Hence, the objective of this study was to investigate the risk-adjusted performance of South African SRI funds relative to their conventional funds and respective passive benchmarks. The results of this study indicated that SRI funds underperformed relative to non-SRI funds in earlier periods but outperformed or exhibited no significant performance difference in latter periods (or despite underperforming in both sub-periods, the SRI funds underperformed by a smaller margin in latter periods). This improved performance of SRI funds is attributed to the 'learning effect'.

Given the improved performance of SRI funds over the long-term, the results of this study imply that SRI funds are appropriate for investors with long-term investment horizons. However, prior to investing in SRI funds, it is important that investors consider the fund manager's skills and expertise as well as the risk and return characteristics of the SRI fund relative to its long-term benchmark fund. For policymakers and regulators, these results imply that policymakers should implement policies that bridge the gap between the performances of SRI funds and their conventional funds in order to promote more sustainable investment practises. For instance, such policies could deal with reducing the screening costs incurred by SRI funds. Further research could look into the risk and return characteristics of SRI funds under changing market conditions by, for example, using regime switching models. Another area of research could be to examine the performance of SRI mutual funds versus SRI exchange traded funds (ETFs).

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Appendix A: Results of the Estimated Carhart 4-factor Model

	Sub-period 1 (Jan 2009 – Dec 2013)				**Sub-period 2 (Jan 2014 – Dec 2018)**			
	SRI fund	**Matched fund**	**Difference fund**	**Difference benchmark**	**SRI fund**	**Matched fund**	**Difference fund**	**Difference benchmark**
Category 1: Equity Fund Style								
Fund 1: 27Four Shari'ah Active Equity Prescient Fund								
Alpha (α_0)	0.006	0.007	-0.009	-0.011	0.008	-0.003	0.012	0.019
MKT (β_0)	0.929***	0.977***	0.592***	0.543***	0.836***	0.951***	0.625***	0.602***
SMB (β_1)	0.284***	0.211***	0.677***	0.817***	0.247***	0.141***	0.598***	0.809***
HML (β_2)	0.068	0.113**	-0.187*	-0.173	0.045	0.015	-0.013	0.099
MOM (β_3)	-0.056	-0.064	0.425	0.470	-0.036	0.045	-0.246*	-0.310**
Adj R^2	0.947	0.984	0.701	0.678	0.896	0.986	0.774	0.751
Fund 2: Community Growth Equity Fund								
Alpha (α_0)	-0.008	-0.005	-0.012	-0.038	0.010	0.004	0.008	0.003*
MKT (β_0)	1.005***	0.998***	0.693***	0.688***	0.980***	0.995***	0.679***	0.678***
SMB (β_1)	0.202***	0.080**	0.486***	0.534***	0.053	0.048	0.726***	0.806***
HML (β_2)	-0.055	-0.092*	-0.097	-0.178*	-0.050	-0.08***	0.179	0.087
MOM (β_3)	0.084	0.095*	0.451	0.419	-0.087	-0.032	-0.244	-0.150
Adj R^2	0.971	0.985	0.803	0.776	0.959	0.983	0.743	0.722
Fund 3: Element Earth Equity Fund								
Alpha (α_0)	-0.035	0.014**	-0.019*	-0.013*	-0.015	-0.003	-0.018	-0.005
MKT (β_0)	0.955***	0.938***	0.677***	0.585***	0.877***	0.907***	0.689***	0.628***
SMB (β_1)	0.378***	0.137**	0.580***	0.728***	0.227***	0.148***	0.846***	0.983***
HML (β_2)	-0.013	0.039	0.354***	0.308***	0.435***	-0.047	-0.021	0.018

MOM (β_3)	0.150	-0.123	0.852	0.914*	0.407	0.062	0.039	-0.084
Adj R^2	0.918	0.966	0.725	0.732	0.900	0.974	0.638	0.613
Fund 4: Element Islamic Equity Fund								
Alpha (α_0)	-0.023	0.031	-0.061	-0.024*	-0.011	-0.014	0.010	0.000
MKT (β_0)	0.907***	0.335***	0.500***	0.503***	0.795***	1.002***	0.569***	0.579***
SMB (β_1)	0.242***	1.224***	0.644***	0.718***	0.218***	0.074*	0.862***	0.847***
HML (β_2)	-0.042	-0.031	-0.228*	0.178	0.456***	0.406***	-0.104	-0.011
MOM (β_3)	0.084	-0.605**	0.627	0.825*	0.318	0.198	-0.287	-0.150
Adj R^2	0.923	0.449	0.571	0.664	0.857	0.973	0.558	0.580
Fund 5: Oasis Crescent Equity Fund								
Alpha (α_0)	-0.004	0.009	-0.012	-0.012	0.013*	0.000	0.015*	0.024*
MKT (β_0)	0.871***	0.936***	0.596***	0.468***	0.761***	0.873***	0.608***	0.544***
SMB (β_1)	0.315***	0.160***	0.591***	0.697***	0.196***	0.106***	0.760***	0.920***
HML (β_2)	-0.287***	-0.002	0.097	0.023	0.151***	-0.074*	-0.254*	-0.256
MOM (β_3)	-0.158*	-0.065	0.546	0.564	0.057	0.017	-0.327*	-0.392**
Adj R^2	0.943	0.973	0.747	0.695	0.916	0.968	0.673	0.629
Fund 6: Old Mutual Albaraka Equity Fund								
Alpha (α_0)	-0.003	0.017***	-0.013	-0.011**	0.018**	0.002	0.011*	0.028*
MKT (β_0)	0.890***	1.020***	0.558***	0.532***	0.825***	0.975***	0.542***	0.562***
SMB (β_1)	0.345***	0.168***	0.641***	0.759***	0.258***	0.117**	0.781***	0.949***
HML (β_2)	-0.088	0.170***	-0.004	-0.074	0.054	-0.069	-0.226	-0.056
MOM (β_3)	-0.192	-0.187***	0.601	0.561	0.055	-0.040	-0.239	-0.426**

Adj R^2	0.948	0.975	0.698	0.747	0.919	0.953	0.592	0.656
Fund 7: 3 Laws Climate Change Equity Prescient Fund								
Alpha (α_0)	--	--	--	--	-0.033	0.025	-0.011**	-0.021**
MKT (β_0)	--	--	--	--	0.876***	1.037***	0.546***	0.583***
SMB (β_1)	--	--	--	--	0.342***	0.305***	0.438***	0.743***
HML (β_2)	--	--	--	--	0.027	0.247***	-0.348***	-0.101
MOM (β_3)	--	--	--	--	0.339	-0.232	1.078**	0.845**
Adj R^2	--	--	--	--	0.941	0.920	0.579	0.739
Fund 8: Kagiso Islamic Equity Fund								
Alpha (α_0)	--	--	--	--	-0.028	-0.011	-0.025*	-0.026**
MKT (β_0)	--	--	--	--	0.770***	0.900***	0.577***	0.477***
SMB (β_1)	--	--	--	--	0.293***	0.021	0.773***	0.794***
HML (β_2)	--	--	--	--	0.133*	0.032	-0.028	0.005
MOM (β_3)	--	--	--	--	0.355	0.106	0.756*	0.862**
Adj R^2	--	--	--	--	0.910	0.951	0.747	0.752
Fund 9: NewFunds Shari'ah Top 40 Index Fund								
Alpha (α_0)	--	--	--	--	0.013**	0.026	-0.012***	-0.018***
MKT (β_0)	--	--	--	--	0.871***	1.029***	0.528***	0.564***
SMB (β_1)	--	--	--	--	-0.143	0.315***	0.046	0.471***
HML (β_2)	--	--	--	--	0.657***	-0.001	0.507***	0.562***
MOM (β_3)	--	--	--	--	0.821**	-0.268	2.374***	2.015***
Adj R^2	--	--	--	--	0.869	0.927	0.653	0.781

Fund 10: Oasis Crescent International Feeder Fund								
Alpha (α_0)	0.015	0.025	-0.025	-0.023	0.026	-0.009	0.012	0.005
MKT (β_0)	0.707***	0.763***	0.676***	0.621***	0.523***	0.554***	0.616***	0.582***
SMB (β_1)	0.541***	0.588***	0.533***	0.531***	0.074	0.042	0.558***	0.705***
HML (β_2)	-0.529***	-0.566***	-0.096	-0.037	-0.361***	-0.394***	0.068	0.009
MOM (β_3)	-0.298	-0.274	0.243	0.210	-0.139	0.124	-0.258	-0.191
Adj R^2	0.609	0.679	0.767	0.786	0.556	0.591	0.664	0.596
Fund 11: Element Islamic Global Equity SCI Fund								
Alpha (α_0)	--	--	--	--	0.013	-0.015	0.010**	-0.010**
MKT (β_0)	--	--	--	--	0.564***	0.871***	0.869***	0.973***
SMB (β_1)	--	--	--	--	0.113	0.103	0.563***	0.699***
HML (β_2)	--	--	--	--	-0.470***	-0.240**	0.092	0.351***
MOM (β_3)	--	--	--	--	-0.129	0.173	-0.065	0.687
Adj R^2	--	--	--	--	0.569	0.801	0.579	0.800
Category 2: Balanced Fund Style								
Fund 12: Oasis Crescent Balanced Progressive Fund of Funds								
Alpha (α_0)	-0.012	-0.035	-0.025	-0.018	0.011	0.012	0.010	0.007
MKT (β_0)	0.734***	0.751***	0.630***	0.715***	0.716***	0.794***	0.786***	0.804***
SMB (β_1)	0.286***	0.309**	0.397***	0.233***	0.247***	0.351***	0.732***	0.418***
HML (β_2)	-0.112	-0.048	0.004	0.006	0.039	-0.092	-0.033	-0.130
MOM (β_3)	-0.136	-0.177	0.242	0.149	0.419	0.314*	-0.193	-0.145
Adj R^2	0.931	0.730	0.881	0.914	0.922	0.912	0.802	0.925
Fund 13: Element Real Income Fund								

Alpha (α_0)	-0.051**	-0.035	-0.024**	-0.058**	0.020	0.015	0.015	0.014
MKT (β_0)	0.740***	0.770***	0.655***	0.737***	0.739***	0.792***	0.642***	0.739***
SMB (β_1)	0.624***	0.631***	0.437***	0.401***	0.416***	0.479***	0.598***	0.636***
HML (β_2)	-0.058	0.029	-0.109	-0.116*	0.083	-0.102	-0.056	-0.076
MOM (β_3)	-0.218	-0.223	0.677**	0.600**	0.601**	0.430	-0.229	-0.227
Adj R^2	0.797	0.818	0.845	0.882	0.892	0.889	0.745	0.792
Fund 14: Element Flexible Fund								
Alpha (α_0)	-0.055**	-0.016	-0.046**	-0.041	0.012	-0.005	0.028	0.005
MKT (β_0)	0.775***	0.886	0.565***	0.677***	0.768***	0.911***	0.561***	0.774***
SMB (β_1)	0.535***	0.642	0.517***	0.524***	0.328***	0.331***	0.498***	0.547***
HML (β_2)	-0.126	-0.049	0.145	-0.110	0.057	-0.216***	-0.046	-0.143
MOM (β_3)	-0.167	-0.188	0.953**	0.434	0.633**	0.186	-0.569**	-0.176
Adj R^2	0.854	0.830	0.652	0.720	0.899	0.922	0.465	0.849
Fund 15: Old Mutual Albaraka Balanced Fund								
Alpha (α_0)	--	--	--	--	-0.022	-0.047*	-0.023	-0.027
MKT (β_0)	--	--	--	--	0.747***	0.707***	0.748***	0.746***
SMB (β_1)	--	--	--	--	0.330***	0.501***	0.330***	0.315***
HML (β_2)	--	--	--	--	-0.066	-0.128*	-0.066	-0.099*
MOM (β_3)	--	--	--	--	0.268	0.506	0.269	0.268
Adj R^2	--	--	--	--	0.936	0.851	0.936	0.926
Fund 16: Oasis Crescent Income Fund								
Alpha (α_0)	--	--	--	--	-0.042	-0.045	-0.005	-0.046

MKT (β_0)	--	--	--	--	0.673***	0.746***	0.635***	0.671***
SMB (β_1)	--	--	--	--	0.452***	0.504***	0.448***	0.437***
HML (β_2)	--	--	--	--	-0.146*	-0.128	-0.146**	-0.179**
MOM (β_3)	--	--	--	--	0.501*	0.540*	0.467	0.500
Adj R^2	--	--	--	--	0.844	0.855	0.838	0.827
Fund 17: 27Four Shari'ah Balanced Prescient Fund of Funds								
Alpha (α_0)	--	--	--	--	-0.020	-0.053	-0.015	-0.027
MKT (β_0)	--	--	--	--	0.749***	0.773***	0.684***	0.747***
SMB (β_1)	--	--	--	--	0.298***	0.446***	0.353***	0.284***
HML (β_2)	--	--	--	--	-0.084*	0.019	-0.231**	-0.117**
MOM (β_3)	--	--	--	--	0.244	0.625	0.126	0.244
Adj R^2	--	--	--	--	0.941	0.796	0.653	0.932
Fund 18: Element Islamic Balanced Fund								
Alpha (α_0)	--	--	--	--	-0.032	-0.016	-0.024	-0.039
MKT (β_0)	--	--	--	--	0.743***	0.828***	0.623	0.741***
SMB (β_1)	--	--	--	--	0.296***	0.241***	0.555	0.281***
HML (β_2)	--	--	--	--	0.115	-0.078*	0.065	0.082
MOM (β_3)	--	--	--	--	0.396	0.191	0.711	0.396
Adj R^2	--	--	--	--	0.881	0.961	0.694	0.867
Fund 19: Oasis Crescent Balanced High Equity Fund of Funds								
Alpha (α_0)	--	--	--	--	-0.014	-0.012	-0.020	-0.021
MKT (β_0)	--	--	--	--	0.730***	0.810***	0.627***	0.728***
SMB (β_1)	--	--	--	--	0.242***	0.248***	0.507***	0.233***

HML (β_2)	--	--	--	--	0.076	-0.17***	0.119	0.043
MOM (β_3)	--	--	--	--	0.173	0.141	0.539	0.173
Adj R^2	--	--	--	--	0.927	0.962	0.820	0.921
Fund 20: Kagiso Islamic Balanced Fund								
Alpha (α_0)	--	--	--	--	-0.024	-0.011	-0.021	-0.031
MKT (β_0)	--	--	--	--	0.751***	0.842***	0.616***	0.749***
SMB (β_1)	--	--	--	--	0.302***	0.230***	0.572***	0.287***
HML (β_2)	--	--	--	--	0.013	-0.16***	0.044	-0.020
MOM (β_3)	--	--	--	--	0.291	0.126	0.671*	0.290
Adj R^2	--	--	--	--	0.946	0.974	0.822	0.940
Fund 21: Oasis Crescent Balanced Stable Fund of Funds								
Alpha (α_0)	--	--	--	--	-0.016	-0.027	-0.037	-0.021
MKT (β_0)	--	--	--	--	0.691***	0.766***	0.633***	0.689***
SMB (β_1)	--	--	--	--	0.312***	0.404***	0.408***	0.297***
HML (β_2)	--	--	--	--	0.035	-0.15***	-0.014	-0.069
MOM (β_3)	--	--	--	--	0.198	0.323	0.381	0.198
Adj R^2	--	--	--	--	0.909	0.926	0.824	0.896
Category 3: Interest-Bearing Fund Style								
Fund 22: Community Growth Gilt Fund								
Alpha (α_0)	-0.054*	-0.061*	-0.004	-0.049	0.027*	0.028*	0.010	0.011
MKT (β_0)	0.930***	0.942***	0.699***	0.676***	0.998***	1.007***	0.660***	0.701***
SMB (β_1)	0.829***	0.826***	0.493***	0.630***	0.773***	0.765***	0.602***	0.508***
HML (β_2)	0.115	0.129	-0.135*	0.021	0.195*	0.202*	0.016	-0.134*
MOM (β_3)	-0.388**	-0.404**	0.421	-0.234	0.726*	0.641*	-0.218	0.517*

Adj R^2	0.827	0.833	0.850	0.777	0.844	0.842	0.778	0.857
Category 4: Real Estate Fund Style								
Fund 23: Oasis Crescent International Property Equity Feeder Fund								
Alpha (α_0)	0.018*	0.022*	-0.007	-0.001	0.047*	0.018*	0.036	0.025
MKT (β_0)	0.906***	1.019***	0.560***	0.531***	0.562***	0.529***	0.740***	0.610***
SMB (β_1)	0.841***	0.914***	0.532***	0.716***	0.069	0.143	0.427***	0.464***
HML (β_2)	-0.506**	-0.339	-0.136	-0.174	-0.390***	-0.47***	-0.046	0.013
MOM (β_3)	-0.497	-0.600	-0.157	-0.035	-0.193	-0.270	0.609	0.245
Adj R^2	0.681	0.680	0.425	0.381	0.504	0.387	0.786	0.726

Notes:
1. Funds that were incepted during January 2009 to December 2013 were only introduced to the study in sub-period two due to lack of data availability for the entire period.
2. ***, **, * represents statistical significance at a 1%, 5%, and 10% level of significance.