

THE PERFORMANCE OF SOCIALLY RESPONSIBLE INVESTMENT FUNDS AND EXCHANGE-TRADED FUNDS: EVIDENCE FROM JOHANNESBURG STOCK EXCHANGE

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Abstract

The research reported in this article explored how the JSE SRI Index performed relative to exchange-traded funds during the period of economic growth as well as during the period of economic decline between 2004 and 2014. The JSE SRI Index and exchange traded funds are analysed by a single factor model as well as other risk-adjusted performance measures including the Sharpe ratio, the Treynor ratio and the M-squared ratio. The single-factor model regression results suggest that during the period of economic growth the JSE SRI index neither significantly outperformed nor underperformed the exchange-traded funds. However, the JSE SRI Index significantly underperformed the exchange-traded funds during the period of economic decline. Further tests that engaged other risk-adjusted measures indicated that the exchange-traded funds performed better than the JSE SRI index in both periods. Based on this research it is recommended that further research be conducted using models that can control for the liquidity difference in funds.

Keywords: Socially Responsible Investment Index, Exchange-Traded Funds, Performance, Capital Asset Pricing Model, Sharpe Ratio, Treynor Ratio, M-Squared Ratio

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“Not everything that can be counted, counts; and not everything that counts can be counted.”
Albert Einstein (1879-1955)

1. Introduction

For many years investment professionals believed that the ultimate goal for investing was to maximise return at any given level of risk. Markowitz (1952) in his seminal work of portfolio theory suggested that since investors are rational and averse to risk, they aim at maximising return per any given level of risk. However, there has been a paradigm shift in the way investors construct their investment portfolios; individual choices are no longer governed by risk and return only but also by the social, ethical and environmental practices (Pretorius and Giamporcaro, 2012). Consequently, the financial institutions have responded to these changes through the establishment of socially responsible investment (SRI) funds.

Although the principles of socially responsible investing (SRI) have been known for many decades, the need for ethical screening of corporate behaviour has become necessary in view of reports of some serious corporate environmental and accounting scandals over recent decades (Bauer, Derwall and Otten, 2007). The surge in interest in

socially responsible investing paved the way for the introduction of SRI indices by many stock exchanges in the past two decades. However, the performance of SRIs has been in the centre of debate by many finance professionals because both theory and empirical research have shown that these strategies have had positive as well as negative effects on the portfolio performance of those funds (Rathner, 2013).

Bauer, Derwall and Otten (2007) believe that investing in SRI funds will always come at a cost and hence will always underperform their conventional peer instruments. Furthermore, these writers argue that selecting securities based on a certain criterion entails forgoing other securities which do not meet the threshold of social, ethical and environmental screening, thereby forgoing the benefits of diversification. Other scholars such as Schröder (2007) argue that screening securities based on business ethics, social responsibility and environmental issues can be a costly exercise resulting in low performance of portfolios based on this criterion. Another group, namely Jones, Van der Laan, Frost and Loftus (2008), holds the view

that companies that do not meet SRI screening criteria always produce better returns regardless of how the economy performs. Supporters of these views therefore claim that SRI funds are likely to underperform their conventional peers under any economic environments.

Contrary to the idea that SRI come at a cost and ultimately underperform, other researchers such as Cortez, Silva and Areal (2009) show that social screening has resulted in an increase in returns of the portfolio. Their argument is based on the idea that people in general always want to do good. By investing in SRI, investors believe they can support social activities and non-profit organisations or have the guarantee that their investments are not used to finance companies involved for example in the weapon industry or in polluting activities. Basso and Funari (2003) assert that the commonality and social responsibility features that characterise SRI satisfy a deep human need to act according to one's conscience and behave in a socially useful manner that will benefit society. This provides one of the foremost motivations for investors to choose socially responsible mutual funds as investment vehicles leading to their enhanced returns.

However, proponents of socially responsible investment funds argue that while there may be less potential breadth in an SRI fund's portfolio resulting in poor diversification, those firms that are chosen for the portfolio are substantively better managed than the average firm. Thus they tend to generate equal or higher financial returns, even on a risk-adjusted basis (Barnett and Salomon, 2006).

In view of the conflicting evidence in literature, the research reported in this article sought to examine the performance of socially screened mutual funds during periods of economic growth as well as economic decline. This research focused on assessing the performance of SRI during a recovery or contraction stages in the economy. The performance of the SRI indexes was estimated by the single-factor model (Capital Asset Pricing Model) to calculate the Jensen's alpha (α) which is the extra-return that is not explained by the risk exposure with respect to the benchmark index. Other risk-adjusted measures were also employed and the t-statistic measure was used to measure the significance of the differences in performance.

This article contributes to the existing empirical work in three ways: Firstly the investigation relates to whether the JSE SRI Index outperformed the JSE All Share Index for the years 2004 to 2014. Unlike the research by Gladyssek and Chipeta (2012), this research examined the performance during the period of economic growth and economic decline. Secondly, the returns investigated were adjusted for risk by utilising the Sharp ratio, the Treynor ratio, the M-squared

measure and the Jensen's alpha. Thirdly, the analysis was based on a much longer period of 10 years and used much more recent and high-frequency data – instead of analysing yearly average returns, quarterly returns were examined.

The rest of the article is organised as follows: section 2 provides a review of related theoretical and empirical literature, section 3 presents the data and methodology, section 4 presents the findings, and the last section contains the conclusions.

2. Development of socially responsible investments in South Africa

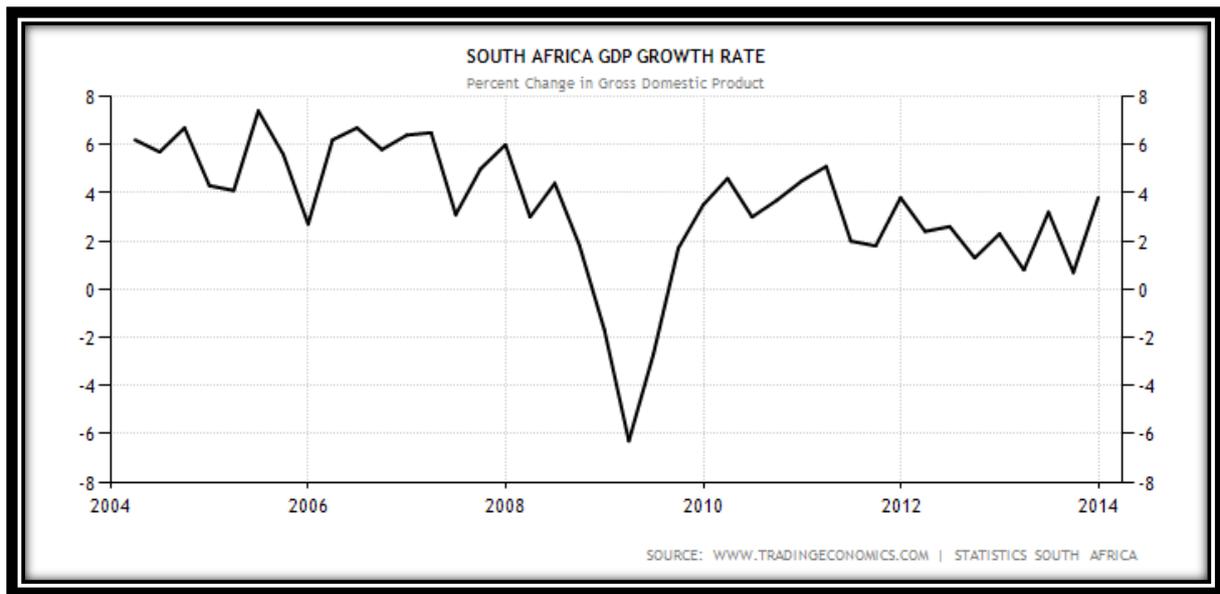
This article focuses on the relative performance of socially responsible investments and therefore the developments of this investment segment in South Africa are discussed. According to Giamporcaro and Viviers (2014), the South African SRI industry is believed to have great potential. Research conducted by Viviers, Bosch, Smit and Buijs (2009) indicates that the South African SRI market had 35 SRI-labelled funds in 2006 available to investors, amounting to approximately 0.7% of total assets under management.

In July 2009, research conducted by Pretorius and Giamporcaro (2012) revealed that there were 38 SRI-labelled products in South Africa, with an approximate market value of ZAR23.28 billion (about US\$2.9 billion). More recent research reveals that the market has grown slightly since 2009 with a total of 52 SRI-labelled funds in existence at December 2011. Thirteen SRI funds were discontinued over the period July 1992 to December 2011 due to poor performance. However, the number of SRI funds still remains very marginal compared to mainstream investments. Developments in the SRI funds are closely associated with capital markets and economic growth. The next section discusses trends in capital markets development and economic growth in South Africa.

3. Capital markets and economic growth trends in South Africa

Many developments, both in the international arena and South Africa's local arena in the past decade resulted in a highly volatile gross domestic product (GDP) growth rate for South Africa. The South African economy in the past decade went through distinct economic cycles, particularly the recession during the period from 2008 to 2010. These cycles could have had some influence on the performance of SRI funds and exchange-traded funds (ETFs). The graph below (Fig. 1) shows the trend in GDP growth in the past 10 years.

Figure 1. South African gross domestic product growth rate



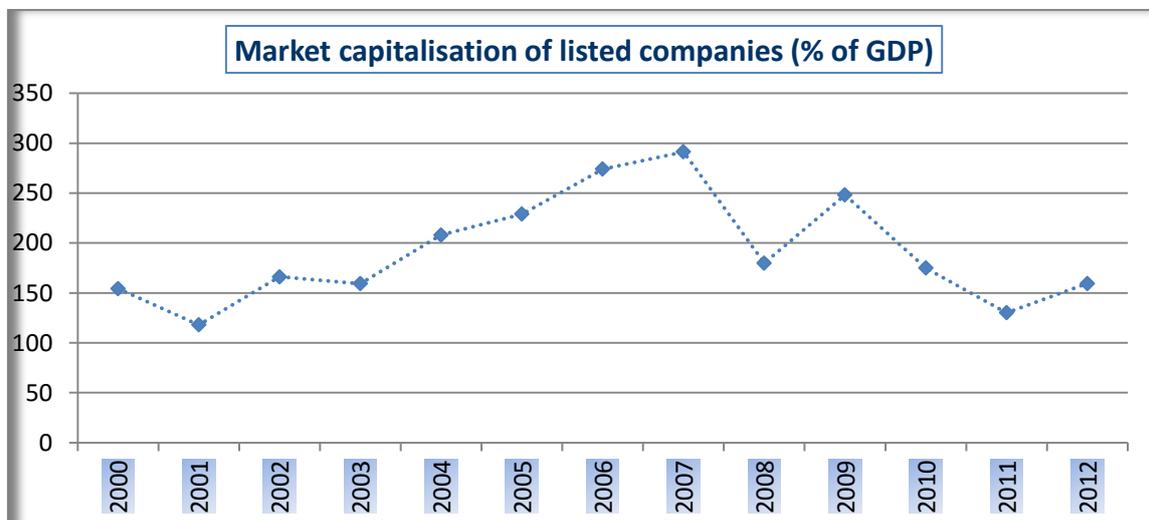
The graph in Figure 1 shows that there was neither an increase nor a decrease on average over the period of 2004 to 2007 that was followed by a steep fall in 2008 until 2009. The fall in GDP could have been a result of the country having gone through an economic recession coupled with a spillover effect of the global economic crisis in 2008/9 which resulted in a wobbly and uncomplimentary economic outlook.

Furthermore, the business environment in general was not favourable to investors as investments and trading were thin on all spheres, thereby negatively affecting GDP growth. The fall in GDP was not disastrous because the government intervened quickly with substantial government infrastructure development programmes. This helped the country to recover quickly compared to

other affected countries such as the United States of America (USA) and Britain. Towards the end of 2009 there was a significant increase in the country’s GDP growth rate from -6.3% to around 4% in the first quarter of 2010, and ever since the South African GDP growth rate has been fluctuating around 3%. South African capital markets almost went through the same trend as shown in Figure 2.

South Africa is Africa’s biggest institutional investment market with assets under management worth more than ZAR4 trillion (approximately US\$500 billion) (Giamporcaro and Viviers, 2014). The graph in Figure 2 shows the development in South African capital markets using stock market capitalisation as a proxy.

Figure 2. Johannesburg stock exchange market capitalisation
 Source: World Bank Global Statistical Indicators (2014)



According to the World Bank global statistical indicators web site, the Johannesburg Stock Exchange (JSE) is the largest stock market in Africa and the 14th largest stock market in world. At the end of 2012, the JSE had a market capitalisation of approximately US\$900 billion. The JSE is one of the nascent emerging markets' stock exchanges.

As shown in Figure 2, there has been an exponential growth in the JSE market capitalisation ratio as a percentage of GDP from the year 2000 to beginning of 2007. The capitalisation ratio increased undeterred until the financial crisis in 2008. The JSE witnessed a slump during the crisis and this continued until the end of 2011 despite all the robust financial market regulations the country prides in having. This could have been a result of how financial markets operate. Globalisation resulted in highly interconnected financial institutions such that a contagion effect was extensive during the crisis. The performance of capital markets obviously reflect the performance of investment instruments that make up that market such as stocks, indices, bonds and mutual funds. The following section discusses the performance ETFs and SRIs aiming to understand their performance relative to the market and to each other.

4. Performance of socially responsible investments

Socially responsible investments are playing an increasing role among the financial investments of international capital markets. The term 'socially responsible investment' refers to the practice of making investment decisions on the basis of both financial and social performance. Many mutual funds across the world apply SRI as a strategy and use an array of social screening methods to determine their portfolios. Screens are usually based on environmental, social or ethical criteria.

The main question regarding the studies on the performance of SRI investment funds is whether these funds perform better than traditional investment funds that have no restricted investment universe (Schröder, 2004). There are three views on the theoretical front that explain the performance of SRIs relative to the conventional mutual funds. These three views will now be discussed.

The first view maintains that socially screened investments underperform the portfolios that are not screened. Studies consistent with this view include those undertaken by Jones, Frost, Loftus and Van der Laan (2007), Schröder (2007), and Bauer, Koedijk and Otten (2005) who posit that SRI funds or indices underperformed in financial performance against conventional funds or indices. This is a perplexing result since SRI funds are restricted to a subset of the total investment universe and should

therefore exhibit at best the same performance as comparable to conventional portfolios (Schröder, 2007). However, proponents of this theory argue that the additional costs of monitoring social performance will also cause lower returns. Accordingly, these funds should exhibit underperformance relative to conventional portfolios. Moreover, conventional funds that employ no social screens improve financial performance through benefits received from increased portfolio diversification (Barnett and Salomon, 2006).

Gregory, Matatko and Luther (1997) developed a two-factor capital asset pricing model (CAPM) which incorporated a 'size premium' to control for size bias in measuring the excess returns of SRI funds. Therefore, this regression based on two benchmarks indices was more appropriate for performance measurement because many SRI equity funds invest a larger part of their portfolio in small-cap stocks. Gregory et al. (1997) ultimately found evidence to support cross-sectional monthly returns of SRI trusts underperformed conventional trusts, but the results were again not found to be statistically significant (Jones et al., 2008). The utilisation of market indices as performance benchmarks for analysing SRI returns is appropriate as the match-pair analysis can sometimes remove distinguishing characteristics of the SRI fund since this type of analysis attempts to match fund characteristics between the control and treatment groups as closely as possible (Jones et al., 2008).

The second view maintains that socially screened investments outperform their conventional funds peers. Study by Derwall, Günster, Bauer and Koedijk (2003), established that the performance of some SRI portfolios outperformed their conventional counterparts; although not by a statistically significant margin. Other studies, such as those by Derwall et al. (2003), Kempf and Osthoff (2007) and Cortez, Silva and Areal (2009) concluded that SRI funds did in fact outperform their conventional counterparts over various stages and in various markets, although not to a statistically significant margin. Consistent to the theory of outperformance by SRIs, Hill, Ainscough, Shank and Manullang (2007) and Kempf and Osthoff (2007) assert that social screens represent filters that enable the identification and selection of firms with higher quality of management relative to their less responsible competitors. As a result, portfolios composed of socially responsible stocks would benefit from improved performance in the long run (Cortez et al., 2009). Therefore, funds that employ social screens effectively eliminate underperforming firms from their portfolio in order to improve financial performance.

Orlitzky, Schmidt and Rynes (2003) performed a meta-analysis of 52 funds in search of the relationship between corporate social

performance and corporate financial performance. The results confirmed that socially responsible investing outperformed traditional portfolios. The relationship was strongest for the social dimension within corporate social performance.

Focusing on the relationship between human resources management and firm performance in a study of around 500 multi-industry USA companies, Becker and Huselid (1998) showed that a high performance human resources management system has an economically and statistically positive effect on company performance and therefore on returns. Bauer, Günster and Otten (2004) also analysed the effect of corporate governance on stock returns and firm value. They used the Deminor Corporate Governance ratings to build a portfolio of well-governed companies against a portfolio of companies with bad corporate governance. They found positive results for style-adjusted returns, with weaker positive results.

Earlier study by Luther, Matatko and Corner (1992) attempted to identify the effects of social screening on portfolio performance by utilising the Jensen's alpha to measure the difference in performance. The results from the study by Luther et al. (1992) provided some weak evidence of superior performance (or greater returns) of the SRI funds as opposed to the FTSE All Share Index.

The third view maintains that the performance differential of SRI funds and traditionally managed funds does not deviate significantly from zero. Statman (2006) compared the returns of socially responsible indices and found no statistically significant differences between their returns and the return of the Standard and Poor (S&P) 500 Index of conventional companies.

In the studies by Bauer et al., (2005), Renneboog, Horst and Chendi (2008) and Otten, Bauer and Rad (2006) they were not able to find a significant performance gap between screened and non-screened portfolios. For instance, Otten et al. (2006) concluded that there were no statistically significant differences between the returns of ethically screened and unscreened portfolios in Australia for the period 1992 to 2003. Bauer et al. (2005) investigated the performance of international ethical mutual funds, corrected for investment style and found no significant difference in risk-adjusted returns between SRI and conventional funds for the period. Due to these inconsistencies the research reported in this article tried to close the gap by analysing data through unconventional methods. The following section reviews methodologies previously employed and briefly explains what this research will add to existing methods.

To date much of the international research on SRI has been performed on USA and European samples and has employed a variety of methodological and statistical approaches to

estimate the financial performance of these funds. These studies inevitably produced inconsistencies as a result of the interpretation difficulties of various studies (Jones et al., 2008). Although there are limitations when a CAPM model is used (for example, the assumptions underlying the CAPM model are not realistic and the model's parameters cannot be estimated precisely) it was decided that this is still the best model for this research.

However, the CAPM still continues to flourish because of its relative simplicity and the fact that alternative asset pricing models do not tend to perform any better (Jones et al., 2008). Bauer et al. (2007) suggested this viewpoint as they applied the single-factor CAPM and the multi-factor CAPM models to their study; and thereby confirmed similar results with both these models. In the current research the returns were further investigated by utilising other risk-adjusted return measures which include the Sharp ratio, the Treynor ratio, the M-squared measure and the Jensen's alpha. The following section assesses the performance of ETFs and SRIs relative to the market as well as relative to each other.

5. Data, empirical model specification and estimation techniques

Empirical research was used to properly demonstrate the effect that social screening has on the financial performance of mutual funds during periods of economic growth and economic decline. The research reported in this article used modern portfolio and stakeholder theories to evaluate the link between mutual funds practising socially responsible investing and their respective financial performance. Similar studies by Jones et al. (2008) also made use of a historical research design to investigate the performance of ethical mutual funds in Australia and the UK.

5.1 Data sources and definition of variables

The quarterly time series data for the period between 2004 and 2014 was utilised. All the data used in this research was obtained from the Johannesburg Stock Exchange, the central bank of South Africa (SARB) and World Bank Global Statistical Indicators. Both the JSE All Share Index and the JSE SRI Index were used instead of selecting particular portfolios. For conventional mutual funds this research utilised exchange-traded funds that are currently listed on the JSE that were active in the periods between 2004 and 2014. Since this research focused only on the ETFs that were active, analysis was done on the funds with the longest data history in the data set and other funds that did not meet the minimum prescribed time length of seven years were excluded.

The limitation of this research is that the McGregor BFA database only provided data on only ETFs that were active. The final sample of this research comprised eight 8 ETFs that were divided into two categories of small-cap stock funds and

large-cap stock funds. To have a better understanding of the ETFs a summary of the descriptive statistics on the included ETFs is given in Table 1.

Table 1. Descriptive statistics on JSE ETFs

Portfolio type	Large-cap ETFs	Small-cap ETFs
Number of funds	5	3
Number of fund-month observations	72	72
Average monthly return (%)	0.94	-2.25
	1.02	1.94
Average size (million Rands)	753	274
	1,242	152
Average age (in years till 04/2014)	8.00	7.83
	0.00	28.86

This table shows summary statistics on selected JSE ETFs. The first two lines show the number of included funds and the number of fund-month observations. The next lines show average values of the selected funds characteristics and (below) the standard deviation.

Source: Data acquired from McGregor BFA database

The performance of ETFs as shown in Table 1 was compared to the market during periods of economic growth (2004 to 2007 combined with 2011 to 2014) and periods of economic decline (2008 to 2010). Another comparison was done between SRIs and the JSE all-share index. This comparison was intended to identify whether ethical unit trusts outperformed or underperformed their conventional counterparts in relation to the JSE Index during the different stages of the business cycles. The following sub-section discusses the main model to be used in this research.

5.2 Model specification and estimation techniques

The Capital Asset Pricing Model (CAPM) based on the single-index model was used in the research. This is also the main model that has been utilised in other studies on SRI funds and ETFs performance. Rathner (2013) showed that Jensen's alpha (1968) and Carhart's four-factor alpha are the most prominent measures to evaluate the performance of funds; therefore this research utilised the Jensen's alpha and other risk-adjusted performance measures.

The intercept of CAPM, α_i , gives the Jensen's alpha, which is typically interpreted as a measure of out- or underperformance relative to a market proxy (Statman, 2000):

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + \epsilon_{it} \quad (1)$$

This model is expressed algebraically, where R_{it} is the return on fund i in month t , R_{ft} the return on a local one month T-bill in month t , R_{mt} the return on the relevant equity benchmark in month t

and ϵ_{it} an error term (Bauer et al., 2005). This equation (1) was used to compute Jensen's alphas for both the portfolio of ethical and conventional mutual funds.

Data analysis was conducted by means of using E-Views statistical software. A p-value of 0.05 was used to determine statistical significance (Alpha) between ethical and conventional mutual funds. To enhance the comparability a 'difference portfolio' was constructed by subtracting conventional fund returns from ethical fund returns. This portfolio serves to examine differences in risk and return between the two investment approaches.

The Sharpe ratio, the M-squared ratio and the Treynor ratio were also utilised to gauge the performance of ethical and conventional funds during periods of economic growth and decline. The Sharpe ratio and the M-squared measures use standard deviation to measure a fund's risk-adjusted returns. The higher a fund's Sharpe ratio or M-squared ratio, the better its returns have been relative to its degree of risk. On the other hand the Treynor ratio uses systematic risk (beta) to adjust returns for risk.

5.3 Socially responsible investments and exchange-traded funds Jensen's alpha (α) analysis

The performance of the SRI indexes is estimated by the single-factor model (CAPM). The single-factor model is used to calculate the Jensen's alpha, which is the extra-return that is not explained by the risk exposure with respect to the benchmark index. The β_i coefficient is used to compare the relative risk of the SRI index and ETFs. As in the CAPM a $\beta_i > 1$ indicates that the risk of the SRI index or ETFs is higher compared to the benchmark because a

benchmark return of one would translate into a return of the SRI index, which is larger than one. For $\beta_i < 1$ the SRI index or ETFs have a lower risk

compared to the benchmark. In Table 2 regression results from the CAPM are presented for the two sub-periods.

Table 2. The results of the one-factor model (CAPM) by sub-periods

Portfolio type	Alpha (α)	Beta (β_t)	R ² / Nr. Obs
Panel A: Sub-period (2004 to 2007 and 2011 to 2014) – Economic growth			
JSE SRI Index	-0.02323*** 0.0004	0.1047*** 0.0235	0.4322 28
Conventional ETFs	-0.0253*** 0.0010	-0.0041 0.0730	0.0150 11
Difference	-0.0000 0.3181	-222.7577 68.2824	0.2642 11
Panel B : Sub-period (2008 to 2010) – Economic decline			
JSE SRI Index	-0.0324*** 0.0016	-0.0570 0.03513	0.2084 12
Conventional ETFs	-0.0313*** 0.0013	-0.0258 0.0221	0.1197 12
Difference	-0.03208*** 0.0062	43.7679 28.6614	0.1891 12
<p><i>In Table 2 the results of the one-factor model (CAPM) for equally weighted portfolios of SRI Index and conventional ETFs are shown. The 'difference portfolios' are constructed by subtracting the returns of conventional funds' portfolios from the returns of JSE SRI funds index. These are presented in two sub-periods of economic growth and economic decline. Standard errors are reported below their respective coefficients.</i></p> <p><i>*Coefficient is statistically significant at the 10% level.</i></p> <p><i>**Coefficient is statistically significant at the 5% level.</i></p> <p><i>***Coefficient is statistically significant at the 1% level.</i></p>			

The second column of Table 2 contains the estimated values for the alpha parameter. The results show that the SRI Index and ETFs underperformed in relation to the market, as the alpha coefficients are significantly negative in both periods under review, which is during the period of economic growth and the period of economic decline. The main results as shown in Table 2 suggest that during the period of economic growth the ETFs and the SRI index performed equally: the difference is almost zero and is not significant. This is a clear indication that the performance of the SRI stock indexes did not deviate systematically from the exchange-traded funds. However, the results

indicate that SRI index at 10% level significantly underperformed the ETFs during the period of economic decline.

The third column shows the results for the beta-coefficients and their test of significance. The estimated values can be interpreted as a measure of risk relative to the benchmark index. For the SRI index and ETFs the estimated betas are below one for all the funds during different economic cycles. In all cases beta is statistically insignificant except for the SRI Index during economic growth. In Table 3 regression results from CAPM are presented for the entire period of research.

Table 3. The Results of the one-factor model (CAPM) for the entire period of study

Portfolio Type	Alpha (α)	Beta (β_t)	R ² / Nr. Obs
JSE SRI Index	0.0285 0.0229	1.5437* 0.8694	0.0766 40
Conventional ETFs	-0.1920** 0.0863	-5.6138* 3.0283	0.1404 23
Difference	-0.0089 0.0202	57.7881 39.2207	0.0930 23
<p><i>In Table 3 the results of the one-factor model (CAPM) for equally weighted portfolios of SRI Index and conventional ETFs are presented. The 'difference portfolios' are constructed by subtracting the returns of conventional funds' portfolios from the returns of JSE SRI index. Standard errors are reported below their respective coefficients.</i></p> <p><i>*Coefficient is statistically significant at the 10% level.</i></p> <p><i>**Coefficient is statistically significant at the 5% level.</i></p> <p><i>***Coefficient is statistically significant at the 1% level.</i></p>			

Focusing on the entire period, the results from Table 3 show that the SRI Index outperformed the benchmark index (JSE All Share Index) but the results are not statistically significant. ETFs underperformed the JSE All Share Index, as the alpha coefficient is significantly negative. The difference in the performance of the SRI Index and ETFs shows that the SRI underperformed in relation to the SRI Index. However, the difference is not significant and therefore signifies that this underperformance does not deviate systematically from the exchange-traded funds.

Contrary to the results shown in Table 2, the estimated betas for both the SRI Index and ETFs were above one. In all cases beta is statistically

significant at 10% level. This implies that these investment instruments have a relatively higher risk than the market. Therefore further analysis was done using other risk-adjusted measures as indicated in the following section.

5.4 SRIs and ETFs' Sharpe ratio (SR), Treynor ratio (TR) and M-squared analysis

The analysis of the relative returns of the SRI Index and ETFs employing risk-adjusted measures which include the Sharpe ratio, the Treynor ratio and the M-squared measure are shown in Table 4.

Table 4. Results of other risk-adjusted performance measures by sub-periods

Portfolio Type	Sharpe ratio	Treynor ratio	M-squared
Panel A: Sub-period (2004 to 2007 and 2011 to 2014) – Economic growth			
JSE SRI Index	-5.1000	-0.0500	-0.0001
Conventional ETFs	-1.9807	15.3101	-0.0020
Difference	-3.1200	-15.3601	0.0021
Panel B: Sub-period (2008 to 2010) – Economic decline			
JSE SRI Index	-65312	-0.2552	-0.0005
Conventional ETFs	-1.8119	0.5329	-0.0001
Difference	-4.7193	-0.7881	-0.0004
<i>In Table 4 the results of the Sharpe ratio, the Treynor ratio and the M-squared risk-adjusted performance measures on SRIs and conventional ETFs are presented. These are presented in two sub-periods of economic growth and economic decline.</i>			

As can be seen in Table 4, the results for the sub-period (2004 to 2007 and 2011 to 2014) show that, in general, socially responsible funds underperformed in relation to the conventional exchange-traded funds under two risk-adjusted measures, namely the Sharpe ratio and the Treynor

ratio. The analysis of the sub-period (2008 to 2010) indicates that exchange-traded funds outperformed socially responsible funds under all measures. The results of the analysis that focused on the entire period of research are presented in Table 5.

Table 5. Results of other risk-adjusted performance measures for the entire period of research

Portfolio type	Sharpe ratio	Treynor ratio	M-squared
JSE SRI Index	-0.4498	-0.0074	-0.0001
Conventional ETFs	-0.0474	0.0661	-0.0002
Difference	-0.4024	-0.7350	0.0001
<i>In Table 5 the results of the Sharpe ratio, the Treynor ratio and the M-squared risk-adjusted performance measures on the JSE SRI Index and conventional ETFs are presented.</i>			

In the case of the Sharpe ratio and the Treynor ratio, as shown in Table 5, exchange trade funds outperformed the socially responsible funds on a risk-adjusted basis over the entire period. Although the M-squared measure shows that the SRI Index outperformed, the performance is close to zero and exceptionally weak.

The overall results indicate that the SRI Index performed poorly in relation to their exchange-traded funds. Similar results were obtained by Rathner (2013) and Bauer, Derwall and Otten (2007), who found that investing in SRI funds underperforms their conventional peer instruments.

Therefore these findings are inconsistent with the assumption reported by Bauer et al. (2005) that socially responsible mutual funds offer superior risk-adjusted performance compared to conventional funds. In all cases but one SRI mutual funds underperformed the conventional exchange-traded funds when measured as a single factor alpha, although not statistically significant in all the comparisons. This is a clear indication that the performance of the SRI stock indexes do not deviate systematically from the exchange-traded funds. However, the results indicate that the SRI

Index at 10% level significantly underperformed the ETFs during the period of economic decline.

Previous studies that attempted to analyse the performance of SRIs in relation to their conventional peers have often led to conflicting results due to small samples, use of different methodologies, and subjective environmental performance criteria. The contribution of this research to the body of empirical research lies therein that the data analysed was divided into two distinct periods: one of economic growth and the other a period of economic decline. In addition to the commonly used single-factor model, other risk-adjusted return models were used in the analysis of data in this research. Quarterly returns were also used, thus improving the quality of the time series. In the light of these findings a number of conclusions can be drawn and recommendations can be made, as discussed below.

6. Conclusions and recommendations

In the context of rapid growth in SRIs around the world as a result of the increasing of investors' awareness of ethical, social, environmental and governance issues, the aim of this research was to compare the performance of the JSE SRI Index with conventional ETFs during periods of economic growth and economic decline.

Using the single-factor model (CAPM) with the JSE All Share Index as the benchmark, the performance tests suggest that during the period of economic growth the JSE SRI Index neither significantly outperformed nor underperformed ETFs. This confirms the results of most of the earlier studies, namely that SRIs do not lead to a significant outperformance compared to conventional benchmarks.

However, the results indicated that the SRI Index significantly underperformed the ETFs during the period of economic decline. This is an indication that ETFs can systematically outperform the SRI Index during periods of economic decline. These findings are rather perplexing. Theoretically, one would expect that funds that are restricted according to social criteria besides the disadvantage of poor diversification would have a higher ability to explain the returns that are constructed on the basis of a restricted universe of stocks. The results also show that SRI Index and ETFs underperformed the market, as the alpha coefficients are significantly negative.

Results from other risk-adjusted return measures provided strong evidence that the JSE exchange-traded funds performed better than the JSE SRI Index over different periods of economic growth.

Overall, the findings of the research confirm various writers such as Bauer and Otten's argument that investing in SRI funds will always come at a

cost and hence will always underperform their conventional peer instruments. These authors contend that selecting securities based on a certain criterion entail forgoing other securities which do not meet the threshold of social, ethical and environmental screening, thereby forgoing the benefits of diversification.

This research has contributed to the body of knowledge through the use of the Treynor ratio, the Sharpe ratio and the M-squared measure as alternative performance measures other than the conventional, namely the Jensen's alpha. Economic cycles were also taken into consideration where the performance of SRIs and ETFs during the period of economic growth as well as period of economic decline was determined.

The research did not focus on differences in funds liquidity; therefore, it is suggested that future research be conducted to categorise funds into large-cap stock funds and small-cap stock funds. Other models like the multi-factor model may be utilised to help resolve the liquidity problem in gaining additional insight into the drivers of ETFs and SRI fund performance.

Based on the research outcome and discussions, it seems that the screening of funds on the basis of social, ethical and environmental factors does not count. With investors, what counts is not the understanding of the investment phenomenon or the ideology, but the return relative to risk. Therefore, in the world of investment everything that can be counted counts.

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