

Evaluating the impact of Responsible Investing strategies on fund performance

A half thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

in the

RHODES BUSINESS SCHOOL

by

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December, 2016

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ABSTRACT

Several studies have been undertaken to evaluate performance of responsible investments, that is, funds that integrate ethical as well as environmental, social and governance considerations in the investment process (ESG). Particularly to address the question whether it is possible for investors to do well while doing good.

Modern Portfolio Theory predicts sub-optimal performance for funds constructed on any basis other than risk-reward optimisation. These studies usually compare performance of responsible investments with conventional funds or an unrestricted benchmark portfolio.

The findings have been contradictory and on the main inconclusive. Underlying this contradiction is the treatment of responsible investments funds as a homogenous group of funds and not acknowledging their heterogeneity owing to methods and strategies used to construct them. This study seeks to address this gap in the literature by investigating the impact of responsible investment strategies on fund performance.

The performance of nine South African responsible investment funds constructed and managed using different responsible investing strategies are analysed over a five-year period from 01 October 2010 to 31 October 2015. Their performance is benchmarked against the JSE ALL Share Index (ALSI) and the FTES/JSE SRI index.

Specifically, the average monthly returns, variability and Sharpe ratio of the constituent fund is used to compare performance. Moreover, the CAPM based Jensen alpha is used to determine any significant under or overperformance of respective funds relative to the benchmarks.

The study found to be no difference in average monthly returns and risk relative to the two benchmark indices for all respective strategies. However, funds constructed using the negative screening strategy generally underperform. These funds overall deliver a statistically significant lower alpha. It is concluded that this RI investing strategy is not suitable for investors concerned about a trade-off between fund performance and ESG performance.

Acknowledgements

“At times our own light goes out and is rekindled by a spark from another person. Each of us has cause to think with deep gratitude of those who have lighted the flame within us.” – Albert Schweitzer

I could not find better words to express my gratitude to those whom without their contribution, support, guidance and inspiration this thesis would not have been possible. I am immensely grateful to my supervisor Prof. Owen Skae for not only providing guidance and inspiration but also opening my mind to a new world of thinking. I am also grateful to Nicole Craig for her tireless effort in getting me back on the rails when I had seemed to have veered off.

I am also thankful to Prof. Suzette Viviers who provided some pointers at the beginning of this project. Lastly, I am very thankful for the support I received from my family, particularly my sister and my partner Edwina. To my sister – you have been a great inspiration and pillar of strength. To Edwina – you have borne the brunt of this process and your patience tested to the limit, I am eternally grateful for your unfailing support.

1. Chapter 1 - INTRODUCTION

Responsible Investing (RI), also referred to as socially responsible investing (Sparkes and Cowton, 2004), sustainable investing (Wimmer, 2012) or ethical investing (Sparkes, 2001) is a growing form of investing (In, Kim, Park, Kim and Kim, 2014; Capelle-Blancard and Monjon, 2014) that has evolved from a fringe activity limited to faith-based investors (Viviers, Bosch, Smit and Buijs, 2009) into an investment philosophy that is gaining adoption in the mainstream investment community (Capelle-Blancard and Monjon, 2014; Wimmer, 2012; Sparkes and Cowton, 2004).

The global market for Responsible Investing (RI) funds is estimated to be worth USD 60 trillion USD in assets under management (AUM) representing a significant portion of the global market capitalization (UNPRI, 2016). These funds are said to be growing at considerably higher rate than conventional funds (Cortez, Silva and Areal, 2012). In Sub-Saharan Africa, this market is estimated to be worth USD 221 billion dollars (GSIA, 2012) with South Africa accounting for 95% of RI investments in this region (IFC, 2011). Further growth is expected in South Africa owing to amendment to Regulation 28 of the Pension Funds Act No. 24 of 1956 (Financial Mail, 2014). The act requires that financial intermediaries and asset owners consider non-financial attributes including ESG considerations which may materially impact the long-term sustainable performance of a fund's assets.

RI broadly refers to a set of investment approaches that integrate ethical as well as environmental, social and governance (ESG) considerations in the otherwise strictly financial investment analysis and decision making process (Viviers, Bosch, Smit and Buijs, 2009). RI strategies have their roots among faith-based investors who were the first group of investors to integrate non-financial considerations in the investment process (Renneboog, Ter Horst and Zhang, 2007; Sparkes and Cowton, 2004). They used ethical or moral screens to avoid investing in stocks of 'sinful' companies or in economic activities not consistent with their beliefs (Viviers et al., 2009; Sparkes, 2001).

Modern RI investors employ a broad set of strategies, that mainly includes variations of screening approaches, integrative analysis, impact investing and active ownership to construct and manage investment portfolios (UNPRI, 2016; Viviers et al., 2009). Screening entails either the inclusion or exclusion in an investment portfolio based on non-financial criteria.

However, a question arises as to whether the integration of non-financial considerations in the investment process improves or hamper portfolio performance (Capelle-Blancard and Monjon, 2014; Derwall and Koedijk, 2009; Kempf and Osthoff, 2007; Barnett and Salomon, 2006; Derwall et al., 2005).

The generally held view about RI funds is that they suffer from poor diversification and their performance inferior to that of conventional funds (Statman, 2007). Specifically, critics argue that investing on any other basis other than evaluating risk-return relationship violates central tenet of modern portfolio theory (Martin, 2009).

The responsible investing strategies adopted by RI funds are said to hurt portfolio performance in terms of both risk and return (Humphrey and Tan, 2014). Given that these strategies may lead to possible exclusion of an entire industry or sector, this reduces the portfolio's ability to diversify and consequently exposes the fund to increased specific risk which is not compensated by an increase in return (Barnett and Salomon, 2006; Biehl and Hoepner, 2010). Moreover, screening limits an investor's ability to maximise wealth across wealth creating opportunities and hurts return (Bello, 2005; Renneboog, Ter Horst and Zhang, 2008b, Biehl and Hoepner, 2010). For instance, Hong and Kacperczyk (2009) find that returns of sin stocks outperform comparable stocks by about 2.5 to 3.4 percent. Since these are generally excluded from responsible investors' portfolio critics assert therefore that it should not be possible for under-diversified RI funds to outperform an efficiently diversified portfolio or unscreened portfolios. It is expected that RI should deliver sub-optimal returns, that is, a higher level of risk for given level of return compared to conventional portfolios (Climent and Soriano, 2011). In this regard, RI investors are said to incur a penalty for incorporating non-financial consideration in the investment process. This is because their portfolios are not compensated for additional risk incurred since this risk does not arise from exposing the portfolio to the market, but rather from moving the portfolio away from the efficient frontier, a point wherein the risk-return relationship is optimised (Hoepner, 2010).

Earlier studies on risk-adjusted performance of RI funds have yielded contradictory results and overall inconclusive (Derwall and Koedijk, 2009; Kempf and Osthoff, 2007) These studies primarily compared performance between RI funds and conventional funds or between RI funds and an unrestricted benchmark. Their drawback however is that they treated responsible investment funds as a homogenous group of funds (Capelle-Blancard and Monjon, 2014) and do not take into consideration the inclusion or exclusion criteria they use (Humphrey and Tan,

2014), the rigour in the application of that criteria (Biehl and Hoepner, 2011) and how these processes affect the risk and return of these funds. Recent studies focus performance comparison between responsible investment funds to enable an analysis of selection criteria and fund performance (Capelle-Blancard and Monjon, 2014). These studies investigate certain features of RI funds and their effect on fund performance including fund screening intensity in terms of number of screens applied at the same time and the screening types (Barnett and Salomon, 2006, Renneboog, Ter Horst and Zhang, 2008), fund ESG ratings data (Kempf and Osthoff, 2007), screening strategies (Humphrey and Tan, 2014), quality of screening processes (Capelle-Blancard and Monjon). These studies find for instance to be a curvilinear relationship between screening intensity and fund performance, that is, returns reduce with a moderate increase in the number of screen but recover again as more screens are added (Barnett and Salomon, 2006); in contrast Renneboog, Ter Horst and Zhang (2008b) find a negative linear relationship between screening intensity but find that positive screening for community involvement increases return; Capelle-Blancard and Monjon (2014) find to be a curvilinear relationship between screening intensity and fund returns much like Barnett and Salomon (2006) but in addition find that negative screening for sin stocks or nuclear industry hurt fund returns; Humphrey and Tan (2014) find that negative screens do not significantly impact returns nor increase idiosyncratic risk nor that positive screening improve return or idiosyncratic risk.

Considering this new wave of research, it is argued that the debate on responsible investing should move away from whether it pays to do good to when does it pay to do good. This study seeks to fill this gap in the literature within a South African context. Much like initial studies of responsible investing internationally, South African studies compare performance between responsible investment and conventional funds. These studies do not different characteristics of responsible investments and their influence on fund performance. The primary aim of this study is to investigate the relationship between a responsible investing strategy and fund performance. The study has set out three objectives as follows:

- Understanding the impact of a fund's choice of RI strategy on fund returns
- Understanding the impact of a fund's choice of RI strategy on fund volatility

The This is important in the South African context given the relative size of the Johannesburg Stock Exchange (JSE) relative to other well established international stock exchanges (Viviers et al., 2008). The study hopes to contribute in the debate on the desirability of responsible

investments by shedding light on the impact of various responsible investing strategies on fund performance.

2. Chapter 2 - LITERATURE REVIEW

2.1. Defining Responsible Investing

There is no generally accepted definition to describe the genre of investments that seek to integrate non-financial considerations, namely, ethical as well as environmental, social and governance (ESG) considerations in the investment selection and management processes (Sandberg et al., 2009; Viviers and Firer, 2012). There also is a lack of consensus on the terminology to ascribe to it (Sparkes and Cowton, 2004; Sethi, 2005). Instead, it has been referred to using a wide variety of names including ethical investing, socially responsible investing (Wimmer, 2012; Capelle-Blancard and Monjon, 2012) responsible investing (van Duuren, Plantinga and Scholtens, 2015; Viviers et al., 2009), sustainable investing (Renneboog, Ter Horst and Zhang, 2008) social investing, green investing and community investing (Sparkes, 2001). In South Africa, it is also often referred to as targeted investing (Viviers et al., 2009). The terms socially responsible investing and ethical investing being the most commonly used to refer to these investment practices (Eccles and Viviers, 2011; Sparkes and Cowton, 2004).

This lack of definitional and terminological clarity poses several challenges, for instance, whether the different terms can be understood to be synonyms with the same conceptual meaning or merely similar names that mean different things; whether different commentators on the subject can be understood to be talking about the same thing (Eccles and Viviers, 2011). Also, comparing research may be difficult as the results may differ depending on the definition employed, and ascertaining the exact size and magnitude of this genre of investing is challenging given the definitional ambiguities (Sandberg et al., 2009).

According to Derwall, Koedijk and Ter Horst (2011) the definitional ambiguity has much to do with how this genre emerged. Owing to its roots in the faith based investor community, it is often assumed that this genre serves a homogenous group of investors who typically integrate ethical and ESG considerations motivated by social and personal values than financial considerations. This assumption is responsible for much of the conceptual fuzziness around what it is and what purpose it serves, whereas, it has now grown into investing practices serving a divergent group of investors with differing values and investing objectives.

In line with the postulations of Derwall, Koedijk and Ter Horst (2011), authors such as Sparkes (2001) argue for instance that the terms socially responsible investing and ethical investing

cannot be used interchangeably as usually is the case in the literature. Sparkes (2001) proposes the term ethical be used to describe investment activities of values-driven investors whilst the term socially responsible investing be used to describe the activities of profit-seeking investors who integrate ethical and ESG consideration with no anticipated sacrifice in expected return.

The core of Sparkes' (2001) argument is the contention that labeling something as ethical implies self-sacrifice or altruism and an existence of a normative and systematic code of conduct to guide investment decisions. According to Sparkes (2001) ethical funds run by commercial companies do not have an established code of conduct to guide ethical investing decisions and that these funds lack the capacity to deal with ethical dilemmas that may arise from investment choices. For instance, an investment in pharmaceuticals by one fund may be acceptable on the basis that it advances human development and welfare meanwhile the same investment may be rejected by another fund on the basis that it entails animal testing. On the contrary, investment decisions of values-based investors are guided by detailed ethical codes and principles based on accepted set of beliefs and supported by clear decision making mechanisms which can be applied consistently to resolve ethical dilemmas. Sparkes (2001) other contention is that there is no evidence to suggest an element of self-sacrifice in the activities of commercial RI funds, that is, making investment with an expected loss in pursuit of ethical principles. Instead, such funds are run by fund managers whose concern seems to be the maximizing of profits within a constrained investment universe with little explicit ethical awareness.

Similarly, Richardson (2009) asserts that the modern version of this investing genre has increasingly grown profit centric and in the process, downplays ethics. They state contemporary investors consider ethics and ESG issues in the investment process only because of their potential financial materiality, that is, the risks they pose or the profitable opportunity they present. Viviers et al. (2008) finds this to be consistent with ethical egoism, that is, considering ethics in one's actions only as a means of advancing self-interest. Eccles (2010) attributes this phenomenon to the emergence of the six principles for responsible investing (PRI) promoted by the United Nations. The core of the PRI's underlying philosophy is that risks arising from ESG issues may be financially material and as such should be considered in the investment process. This financial materiality is often used as a motivation for investors to adopt the UN's PRI. This is especially so in the case of institutional investors who usually cite conflict with fiduciary duty for their reluctance to integrate ethical and ESG issues in the

investment process. As such, these investors do not consider ethics and ESG issues out of ethical necessity but do so because it is financially beneficial. Richardson (2009) considers this a departure from traditional investors who addressed social and environmental issues in their investment decisions unconstrained by profit motive but out of moral desire and responsibility to improve the world.

In this regard, Derwall, Koedijk and Ter Horst (2011) proposes a segmentation of this genre according to investor type, that is, values-driven and profit-seeking investors. This is because the methods employed by each investor group to integrated their varying objectives in the investing process differ and so the implication on portfolio outcomes.

Apart from the peculiarities relating to investor motivations, there appears to be consensus as to the essence of this genre. For instance, Sandberg (2009, pp.521) states it is often described “as the integration of certain non-financial concerns, such as ethical, social and environmental in the investment process.”. Similarly, Sparkes (2001) recognizes that both the terms ethical investing and socially responsible investing entails in general the combining of social and environmental issues with a financial return but states that “the key distinguishing feature of socially responsible investment lies in its combination of social and environmental goals with the financial objective of achieving a financial return on invested capital approaching that of the market”.

For this reason, this study embraces the broader definition which describes this genre as the “integration of ethical as well as environmental, social and corporate governance considerations into investment analysis and ownership practices” (Viviers and Firer, 2012, pp. 2012). In addition, the term responsible investing is adopted as the overall term to refer to this genre due to its link with the PRI (Eccles and Viviers, 2011) and the widespread adoption of these principles by mainstream investing community (Eccles, 2010). The pecuniary and non-pecuniary motivations provide a basis for segmentation as sub-categories linked to a set of screening practices that serve distinct needs of values-based and profit seeking investors.

2.2. Responsible Investing Strategies

The key differentiator of responsible investment from conventional funds is that in addition to financial criteria they also consider moral, social and environmental performance when making investment decisions (Derwall and Koedijk, 2009). These funds employ a broad set of

strategies including screening, integrated analysis, impact investing and shareholder engagement to construct and manage investment portfolios (USSIF, 2016).

The different strategies in turn serve a diverse group of responsible investors who invest based on varying personal and social convictions (Renneboog, Ter Horst and Zhang, 2008). These investors are said to have a multi-attribute utility function that is not only based on pecuniary benefits but also derive non-financial utility from investing in line with their values. Traditionally, responsible investors have been thought to be a homogenous group willing to trade off financial performance in return for investing in line with personal convictions (Derwall, Koedijk and Ter Horst, 2011). However, latest trends indicate that responsible investing also accommodates conventional investors in pursuit of traditional investing objectives. According to Michelson et al. (2004) investors in responsible investing funds do not appear to invest exclusively on responsible funds but spread their investments across opportunities with different risk-return profiles; and it seems likely that well-performing responsible funds also attract investment from conventional investors. Modern responsible investing now caters to both the needs of traditional values-driven investors as well as to the contemporary profit-seeking investors (Derwall, Koedijk and Ter Horst, 2011). Values-driven investors do not only concern about the size of their expected return but also its source; they are prepared to receive a subnormal return in return for investing in return for satisfaction they derive from investing in line with their personal ethical and societal convictions. Whilst profit-seeking investors consider ethical and ESG attributes of their investments to mitigate risks and as a profiteering opportunity.

Screening entails either the inclusion or exclusion of companies in the investment consideration based on governance, environmental and social criteria (Michelson et al. 2004). Integral to this strategy is the development of investment screens which act as a signal to current and potential investors regarding a company's involvement in activities which are deemed to be of benefit or concern in environmental, social and governance terms. Table 1 provides a list of typical screens investors use to include or exclude investments. Typically, investors employ five or more screens in the investment process (Renneboog, Ter Horst and Zhang, 2011).

Investors can then choose to screen their investments positively, negatively or use a best-in-class approach based on the defined investment screens. Negative screening takes on an exclusionary approach (Sparkes and Cowton, 2004) by avoiding investments in companies, industries and countries that are considered morally and ethically undesirable (Viviers et al.,

2008; Sandberg et al., 2009). The negative screening approach is the oldest responsible investing strategy (Renneboog, Ter Horst and Zhang, 2008) and it is premised on the argument that holding a share and earning a return in a company that is involved in immoral or irresponsible business practices constitutes approval of that company's activities (Viviers et al., 2009). This strategy is mostly associated with values-driven investors (Derwall, Koedijk and Ter Horst, 2011) who use exclusion screens to rid their portfolios of sinful or unethical companies and sectors such as alcohol, gambling, armament and pornographic industries (Eccles and Viviers, 2011; Sparkes and Cowton, 2004; Renneboog, Ter Horst and Zhang, 2008). Investing guidelines are normally published by faith-based organizations to assist followers in making investment decisions consistent with their faith (Viviers et al., 2009). Islamic investors for instance invest in accordance to strict rules set out in the Islamic Shari'ah and screen their investments based on these principles (Usmani, 2014). They seek out companies who produce non-halal foodstuff, entities involved in alcohol, pornography and gambling as well as financial institutions involved in usury activities as is explicitly prohibited by the Qur'an. The negative screening RI strategy is less preferred by South African investors given the relative small size of the JSE (Viviers et al., 2009). These investors fear that the possible exclusion of companies and sectors may severely limit the ability to diversify. There is also criticism levelled against this responsible investing strategy. Critics argue that the use of this strategy applies a simplifying dichotomy wherein companies are deemed either sinners or saints and as such works against stated objectives of responsible investing which are to improve the quality of life for all (de Colle and York, 2008). de Colle and York (2008) argue that investors wishing to influence corporate behavior ought to be active stakeholders and must continuously engage unethical companies. The negative screening instead offers a false panacea to investors (de Colle and York, 2008) and does not necessarily reform these companies. They also argue that the screening on product type may be effective in withholding investment from a few unethical companies but it is just as likely that investment is being held back from ethically desirable companies too. For instance, ethical wine farmers may be excluded in the investment consideration for operating in sin industries despite ethical farming practices, their contribution to the environment and local communities.

It is also common that funds apply an exclusionary threshold, that is, a percentage of the company's total revenue may not be derived from an area that is considered undesirable (Viviers et al., 2009). This approach has not escaped criticism either; that it explicitly condones the presence of undesirable attributes in a portfolio, that the thresholds are arbitrary cut-off

points that are without justification, that it favors big companies even though their portion of undesirable activity may be substantial in absolute terms (Sparkes and Cowton, 2004).

Positive screening on the other hand takes on an inclusionary approach (Sparkes and Cowton, 2004). Investors who employ this strategy seek to include in their portfolios companies and sectors they consider to meet high standards of ESG performance (Eccles and Viviers, 2011; Sandberg, 2009). The most commonly used positive screens are corporate governance, labor relations, investment sustainability and diversity (Renneboog, Ter Horst and Zhang, 2008). In South Africa, investors screen for inclusion particularly companies that are doing well in the implementation of Black Economic Empowerment (BEE). (Viviers et al., 2008). The drawbacks to the positive screening strategy is that it is difficult to implement as investors must look beyond products and services to determine suitability, information on ESG is difficult and expensive to obtain and requires time and effort is required to monitor non-financial corporate performance (Viviers et al., 2009).

The best-in-class strategy is an extension of the positive screening approach, investors employing this strategy rank companies in each industry in terms of their ESG performance then proceed to select from each industry companies that meet set standards of ESG performance (Renneboog, Ter Horst and Zhang, 2011). The best-class strategy seeks to achieve a responsible portfolio balanced across industries and enable responsible investors to benefit from efficient diversification (Viviers et al., 2009). The best-in-class screening approach is preferable to some responsible funds because companies belonging in an undesirable industry are not automatically disqualified (Michelson et al., 2004). It also confirms the importance of seeking financial returns since sinful companies tend to provide above average returns (Statman and Glushkov, 2009).

Table 1 - Investment Screens

Screens	Definitions	Type
Tobacco	Avoid Manufactures of tobacco products	Negative
Alcohol	Avoid firms that produce, market, or otherwise promote the consumption of alcoholic beverages	Negative
Gambling	Avoid casinos and suppliers of gambling equipment	Negative
Defense/Weapons	Avoid firms producing weapons for domestic or foreign militaries, or firearms for personal use	Negative
Nuclear power	Avoid manufacturers of nuclear reactors or related equipment and companies that operate nuclear power plants	Negative
Irresponsible foreign operations	Avoid firms with investments in government-controlled or private firms located in oppressive regimes such as Burma or China, or firms which mistreat the indigenous peoples of developing countries	Negative
Ponography/adult entertainment	Avoid publishers of pornographic magazines; production studios that produce offensive video and audio tapes; companies that are major sponsors of graphic sex and violence on television	Negative
Abortion/Birth Control	Avoid providers of abortion; manufacturers of abortion drugs and birth control products; insurance companies that pay for elective abortions (where not mandated by law); companies that provide financial support to Planned Parenthood	Negative
Labour relations and workplace conditions	Seek firms with strong union relationships, employee empowerment, and/or employee profit sharing + Avoid firms exploiting their workforce and sweatshops	Positive
Environmental	Seek firms with proactive involvement in recycling, waste reduction, and environmental cleanup	Positive
Corporate Governance	Avoid firms producing toxic products, and contributing to global warming	Negative
	Seek companies demonstrating “best practices” related to board independence and elections, auditor independence, executive compensation, expensing of options, voting rights and/or other governance issues	Positive
Business Practice	Avoid firms with antitrust violations, consumer fraud, and marketing scandals	Negative
	Seek companies committed to sustainability through investments in R&D, quality assurance, product safety	Positive
Employment Diversity	Seek firms pursuing an active policy related to the employment of minorities, women, gays/lesbians, and/ or disabled persons who ought to be represented amongst senior management	Positive
Human Rights	Seek firms promoting human rights standards	Positive
Animal Testing	Avoid firms which are complicit in human rights violations	Negative
	Seek firms promoting the respectful treatment of animals	Positive
Renewable Energy	Seek firms producing power derived form renewable energy sources	Positive
Biotechnology	Seek firms that support sustainable agriculture, biodiversity, local farmers, and industrial applications of biotechnology	Positive
	Avoid firms involved in the promotion or development of genetic engineering for agricultural applications	Negative
Community Involvement	Seek firms with proactive investments in the local community by sponsoring charitable donations, employee volunteerism, and/or housing and educational programs	Positive
Shareholder Activism	The SRI funds that attempt to influence company actions through direct dialogue with management and/ or voting at Annual General Meetings	Positive
Non-Married Healthcare-Pharmaceuticals	Avoid insurance companies that give coverage to non-married couples	Negative
Interest Based Financial Institutions	Avoid healthcare industries (used by funds targeting the “Christian Scientist” religious group)	Negative
	Avoid financial institutions that derive a significant portion of their income from interest earnings (on loans or fixed income securities). (Used by funds managed according to Islamic principles)	Negative
Pork Producers	Avoid companies that derive a significant portion of their income from the manufacturing or marketing of pork products. (Used by funds managed according to Islamic principles)	Negative

This table was replicated from Renneboog, Ter Horst and Zhang (2008).

Impact investing also referred to as cause-based or targeted investment refers to investment with focus on solving social or environmental problems; it includes community investing or finance provided to businesses aiming at making social or environmental impact (GSIA, 2012; Viviers and Firer, 2012). In South Africa impact projects include broad based BEE and in energy. Impact investors generally seek a return comparable to that of the market but are occasionally willing to accept a marginally reduced return to support a specific cause.

Active ownership also referred to as shareholder activism entails using shareholder rights flowing from ownership of a company share to actively engage a company's management and board on a broad range of ESG issues (Viviers et al., 2009). Shareholder engagement should not however be confused advocacy campaigning. Sparkes (2001) argue that there is a difference between the concepts. They assert that shareholder activism is a tool used by shareholders to effect change on underperforming companies with the view that the resulting change will lead to a higher share price. In this context, active shareholders do so for financial motives and seek to influence corporate behaviour. This is in contrast with advocacy campaigners who purchase a company's shares, normally a nominal number, to gain access to a company's annual general meeting in order to raise questions or put media spotlight on certain corporate activities. Whilst active shareholders engage corporate executives for financial gain, active campaigners may even do so to cause harm to the company or to force a closure on certain company activities.

Lastly, integrated analysis also referred to as ESG integration or enhanced analytics refers to the explicit and systematic integration of ESG considerations in traditional financial analysis using ESG research data (KPMG, 2013; GSIA, 2012). The integrated analysis strategy considers ESG as part of stock selection and asset allocation decisions (UNPRI, 2016) which may result in the overweighting, underweighting or total exclusion of potential investment. This strategy is an extension of traditional fundamental investing that in addition includes ESG considerations as potentially financially material information (Eccles and Viviers, 2011). It has been linked with profit-seeking investors and critics assert that this class of investors use this strategy as a means to identifying arbitrage opportunities as markets adjust than marshalling investments to achieve societal and environmental performance.

2.3. History of Responsible Investing

The practice of integrating non-financial considerations in the investment process is not a new phenomenon (Knoll, 2002) but traces its origins to the Quakers as far back as the seventeenth century (Kinder and Domini, 1997). The Quakers, a religious organisation alternatively known as the Society of Friends (QuakerInfo, 2016), applied ethical screens to prevent investments in activities that they considered incompatible with their beliefs. For instance, they used screens to prevent investment in companies involved in slave practices. By the nineteenth century screening had become common practice among investment portfolios managed by faith-based organisations (Kinder and Domini, 1997). The Methodists for instance barred investments in securities of companies involved in the manufacture of alcohol, weapons, gambling and tobacco or companies in the gaming industry that they deemed to be sinful (Renneboog, Ter Horst and Zhang, 2007) whilst the Catholics shunned investments in hospitals that offered abortion services or companies involved in the manufacture of birth control drugs (Kinder and Domini, 1997). In 1928 the Pioneer Fund, the first modern mutual fund to screen investments based on religious principles was founded (Renneboog, Ter Horst and Zhang, 2008). However, it wasn't until 1971 though that RI made its entry into the mainstream investment domain with the launch of the first ethical unit trusts, the Pax World Fund by the Methodist Group (Sparkes and Cowton, 2004; Knoll, 2002). The fund was the first to be offered to the general public and it guaranteed investors that the fund's returns were not generated from companies involved in war.

Although faith based organisations pioneered investment screening based on religious principles, the anti-apartheid and anti-Vietnam war movements led to development of social screens. This marked a paradigm shift in responsible investing from investing on religious principles into investing for social change (Kinder and Domini, 1997). Campaigns by the anti-apartheid and the anti-Vietnam war led to an increasing awareness among investors of the social consequences of investment decisions (Renneboog, Ter Horst and Zhang, 2008). Human rights abuses in South Africa became a focal point of these campaigns and the international investor community were increasingly becoming concerned about profiting from practices that would otherwise be deemed unethical or illegal in their home countries (Kinder and Domini, 1997). This led to the development of a South Africa screen to screen investment in companies or portfolios that invested in companies with subsidiaries operating in South Africa (Knoll, 2002). Initially, exclusionary screening or total divestment was rejected by some sectors on the grounds that more could be achieved by constructive engagement with the apartheid regime.

This led to the development of the Sullivan codes, a code of conduct for US companies operating in South Africa, so named after Reverend Leon Sullivan, a retired General Motors executive. Companies were required to sign the codes and were rated annually against a set criteria specified in the code. These included diversity and access to job opportunities, better working conditions and social improvement. Although the codes delivered little in the way of meaningful change and soon made way for full divestiture, modern qualitative screen evolved from this screen (Kinder and Domini, 1997).

Until 2005, the practice of integrating ESG consideration was still much a niche activity and had not gone mainstream. Institutional investors were reluctant to adopt this practice questioning the compatibility of integrating non-financial considerations with their fiduciary duty (Martin, 2009). Fiduciary duty requires that assets held in trust by institutional investors be invested in the best interest of beneficiaries (Sandberg,2010). Many of the institutional investors argued that the integration of ESG consideration in the investment process will subject the investment decision to personal biases. That is, although fund managers may care about various social issues fiduciary duty prohibits the investing of beneficiary based on personal beliefs. Others argued that their fiduciary duty entail only the maximisation of returns on beneficiary investments and therefore rules out the incorporation of ESG considerations in the investment process. In this regard the United Nations (UN), commissioned an international law firm Freshfields Bruckhaus Deringer for a report to look at the legal and fiduciary duty aspects of integrating ESG considerations in the investment process (UNEP-FI, 2009). The report named the 'Freshfields report' found to be no conflict in integrating ESG considerations with fiduciary duty, on the contrary found it to be permissible and a requirement as a means of accurately predicting financial performance. The report culminated to the launch of the Principles for Responsible Investing (PRI) in 2006 by then Secretary-General Kofi Annan. The principles were developed by a group of institutional investors under the facilitation of the UN Environment Programme Finance Institute (UNEP-FI, 2009) and the UN Global Compact as guidelines to assist investors to integrate ESG considerations in the investment process. At launch in 2006, 32 institutional investors representing \$2 trillion dollars in assets under management (AUM) had signed up, South Africa's Government Employees Pension Fund (GEPF) was a founding signatory. As at the end of 2016 the number had grown to 986 signatories commanding a total of \$59 trillion dollars (UNPRI, 2016).

In South Africa, socially responsible investing traces its origins in the trade union movement in the early 1990s (Viviers et al., 2009) with the launch of Unity Incorporation an investment

group co-founded by a consortium of unions (Giamporcaro and Pretorius, 2012). Unity Incorporation sought to transform companies where workers pension funds were invested by raising issues of concern to workers such as poor labour practices and that workers should benefit from their investments through better working conditions.

In May 2004, the JSE launched the Socially Responsible Investment (SRI) index with the aim to recognise companies that were doing well on implementing the triple bottom, to provide a benchmark for comparison of socially responsible and non-socially responsible companies and serve as a credible source for responsible investors looking to invest in socially responsible companies (Gladyssek and Chipeta, 2012). To qualify for inclusion, potential candidates are assessed against Environmental, Social and Governance criteria based on publicly available information.

The 01st of July 2013 marked a critical turning point for South Africa's retirement fund industry when the amended Regulation 28 of the Pensions Funds Act No. 24 of 1956 became effective (Girdwood, 2013). Regulation 28 stipulates investing guidelines for retirement funds and aim to protect fund from poor diversification and over exposure to riskier and financial instruments by prescribing the maximum exposure various asset classes or individual asset. The amended regulation states that a fund has a fiduciary duty to act in the best interest of beneficiaries and this duty supports the adoption of a responsible investing approach. The regulation requires as part of prudent investing that retirement fund trustees consider issues that may impact the long-term performance of an asset including those of an environmental, social and governance nature before investing and during the term of the investment. Around the same period, on the 19th of July 2011, the Code for Responsible Investing in South Africa (CRISA) was launched (IODSA,2011). CRISA is a non-mandatory code of good governance much like the King Code, and is intended as a guide to institutional investors on how to carry out investment analysis and investment activities and exercise their rights flowing from ownership to promote good governance in investee companies. CRISA complements the King Code, whereas the King Code approaches governance from a board of directors' perspective, CRISA approaches it from the institutional investor perspective.

2.4. Extant theory on responsible investing

There are several theoretical arguments that both critics and proponents of RI investing advance either in favour or against the practice of integrating ESG considerations in the investment process. However, the main arguments include incompatibility with Modern Portfolio Theory; that RI practices conflict with fiduciary duty of institutional investors; the pool of companies that responsible investors select from are likely less profitable than their competitors given the extra cost of implementing CSR practices; and these are costly compared to none responsible companies, that taking to consideration non-financial matrices in investment decisions is inconsistent with fiduciary duty especially in the case of institutional investors.

2.4.1. Modern Portfolio Theory (MPT) and RI

The widely-held view of RI funds is that they suffer from poor diversification and their performance inferior to that of conventional funds (Statman, 2007). Specifically, critics argue that the integration of non-financial considerations violates principles of Modern Portfolio Theory (MPT) (Martin, 2009). MPT refers to a body of knowledge that has evolved over time on construction of investment portfolios and management, that is, what assets to include from available alternatives and in what proportions or allocation and how to evaluate portfolio performance (Shipway, 2009). This work based on the seminal work of Markowitz (1952) predicts that imposing constraints on the investable universe leads to poor performance (Drut, 2010; Derwall and Koedijk, 2009).

Allocating limited wealth across a universe of wealth-maximising opportunities constitutes a choice problem for an investor (Elton and Gruber, 1997). Markowitz (1952) frames this problem within a mean-variance framework, that is, a desirable portfolio is attained from a combination of mean and variance in line with an investors risk preferences. The mean-variance framework assumes the investor to be risk averse, that is, he/she prefers return and more of it and considers variance of return, a proxy for risk, an undesirable thing and wishes to minimise it. According to MPT an investor can maximise expected returns and reduce risk through efficient diversification of his/her investment. Firstly, total risk inherent in a portfolio is constituted of idiosyncratic risk and systematic risk. Idiosyncratic risk is risk relating to a specific firm whilst systematic risk is risk inherent in the entire market. An investor is able to minimise idiosyncratic risk to insignificant amounts by diversifying his/her investment across a number of assets that do not share similar economic characteristics such that the specific risk of one asset is offset by another in the portfolio (Barnett and Salomon, 2006). According to

Markowitz (1952) spreading the risk across a number of assets is not sufficient but it is important to understand the correlation between those assets. Secondly, having considered the covariance of assets for possible selection an investor has to ensure that a combination of the mean and return from these assets result in an efficient portfolio. A portfolio is considered efficient when there is no other portfolio from an attainable set that delivers a higher level of return for a given level of risk or delivers a given level of return for a lower level of risk. MPT posits that the market compensates an investor for his/her exposure to the market but offers no compensation for holding idiosyncratic risk since this type of risk can be diversified away.

Since screening practices adopted by RI funds may lead to possible exclusion of entire industries and sectors thus reducing a portfolio's ability to spread risk across unrelated industries, RI funds are thus said to suffer poor diversification and therefore exposed to more risk for a given level of return (Larsen 2013; Barnett and Salomon, 2006). Moreover, screening limits an investor's ability to maximise wealth-creating opportunities (Bello, 2005). For instance, Hong and Kacperczyk (2009) find that returns of sin stocks i.e. alcohol, tobacco and gaming outperform returns of comparable stocks by between 2.5 and 3.4 percent. It is expected therefore that RI funds would deliver sub-optimal risk-adjusted returns, that is, higher risk for a given level of return compared to conventional funds (Climent and Soriano, 2011). In essence, RI funds will not be compensated for the additional risk since that risk does not arise as a result of more exposure to the market but from moving the portfolio away from the efficient frontier position (Hoepner, 2010).

However, proponents of RI argue that MPT is subject to limitation since it cannot account for benefits of ESG screening on portfolio performance (Barnett and Salomon, 2006). They posit that MPT only considers a security's ability to sway the portfolio toward or away from the efficient frontier, a point wherein the risk-return trade-off is optimised, but ignores volatility brought about by ESG factors of underlying assets. SRI proponents argue that even though the investable universe of SRI investors is constrained they are likely to draw from a pool of stable and well-run firms and their funds should outperform conventional funds in the long run (Barnett and Salomon, 2006).

Another scepticism around the efficacy of RI funds is argued on the basis of market efficiency. Critics, argue that RI funds cannot yield abnormal risk-adjusted returns since portfolio screening is based on publicly available information (Renneboog, Ter Horst and Zhang, 2008). The efficient market hypothesis posits that security prices reflect all publicly available

information (Fama, 1991) and new information about individual securities or about the market as a whole is transmitted rapidly and is instantaneously incorporated in prices of securities (Malkiel, 2003). Therefore, it is not possible to use fundamental analysis which studies company information to find undervalued assets can enable an investor to achieve abnormal returns than holding a well-diversified portfolio.

2.4.2. Firm-level criticism of RI

At the firm level, critics of responsible investing argue that firms that engage in activities to improve their social performance incur additional costs compared to their counterparts who do not adopt such practices (Larson, 2013; Derwall et al., 2005). Thus, engaging in corporate social performance initiatives renders a firm uncompetitive in the market place (Renneboog, Ter Horst and Zhang, 2008). Given that responsible investors specifically select companies based on corporate social performance their portfolios inevitably include companies that are less profitable and thus should underperform conventional funds (Larsen, 2013; Barnett and Salomon, 2006).

Proponents argue however that CSR is necessary to mitigate the relationship between the firm and its broader environment. Stakeholder theory asserts that a firm is an integral part of a broader social environment, and in order to gain legitimacy and attract resources firms have to build relations with various stakeholders in this environment (Barnett and Salomon, 2006). Stakeholders are defined as individuals or group of individuals that may be impacted by policies, activities or decisions of the firm as well as individuals or groups who are important for a firm continued success (Lantos, 2001). Thus, SRI proponents argue that CSR is consistent with value-maximisation, strengthens a firm's brand and is a source of informational advantage (Renneboog, Ter Horst and Zhang, 2008) and it is a gauge of the firm's management talent depth (Barnett and Salomon, 2006). They assert that firms who do not engage in corporate social responsibility (CSR) may destroy firm value in the long run owing to potential litigation and reputational costs. Engaging in CSR helps a firm anticipate and minimise possible conflict with various stakeholders and when this conflict is minimised potential costs and risks are reduced and the firm value maximised. Also, CSR can help a firm build a strong brand that shields it from competition in the market place and enable it to command premium prices for its products which in turn lead to higher firm value. Thirdly, CSR can be a source of informational advantage to signal a firm's reputation, the quality of its products to customers and forward thinking management (Barnett and Salomon, 2006)

2.4.3. The error-in-expectation and the shunned-stock hypothesis

Derwall, Koedijk and Ter Horst (2011) posit that the presence in significant numbers of values driven investors and their actions in the stock market, as well as information asymmetry on responsible shares may explain the abnormal returns in both controversial and responsible shares giving rise to the ‘shunned-stock’ and the errors-in-expectation hypothesis.

According to the shunned-stock hypothesis, these shares trade at a discount because responsible investors shun them. The presence of responsible investors creates a shortage of demand responsible shares and demand shortage for controversial shares causing these shares to be neglected and trade at low values due to a low investor base. The expected returns of controversial stocks thus increase proportionally with the number of responsible investors.

On the other, the inability of the market to price value-relevant CSR practices cause responsible shares to trade below their intrinsic values giving rise to abnormal returns to the extent that investors do not expect them. The error-in-expectation hypothesis rests on two assumptions, that is, the firm’s future cash flows are directly linked to its CSR practices and that its share price does not yet reflect the value relevant CSR characteristics.

2.5. Empirical studies on Responsible Investing

The conflicting extant theory about the desirability of RI investing prompted a number of empirical studies dedicated to the subject (Derwall and Koedijk, 2009; Kempf and Osthoff, 2007). Capelle-Blancard and Monjon (2012) observe that between the period 1992 and 2011 over fifty academic papers dedicated to the study of RI fund performance have been published. These studies covered several hundred different funds in over twenty countries, their results have been contradictory though on aggregate their conclusion indicate that the risk adjusted performance of RI funds is no better or worse than that of conventional funds. Similarly, other studies find on aggregate to be no statistically significant difference in risk adjusted performance of RI funds and conventional funds (Chegut, Schenk and Scholtens (2011), Derwall and Koedijk (2009), Bollen (2007).

Previous research into the financial efficacy of ESG factors in investment performance fall primarily into three categories, that is, event studies, portfolio studies and regression analysis (Derwall et al. 2005). Portfolio studies compare financial returns of constrained SRI mutual funds with conventional funds over a given period, whilst event studies investigate the impact

of negative or positive ESG news on a firm's share price, wherein regression analysis investigate the relationship between corporate social performance and a firm's share price.

Although on aggregate empirical literature has not observed statistically significant difference in risk-adjusted performance between RI and conventional funds both critics and proponents have advanced different reasons as to why this is the case. Critics assert that in instances where empirical literature has found RI to outperform conventional funds this may have been the result of the usage of an incorrect performance attribution model in those studies (Knoll, 2002). For instance, where these studies have used the CAPM model, critics argue that the single factor model fails to control for other variables that could explain outperformance such as the size and book-to-market factors as noted by Fama and French (1993) and the momentum factor as noted by Carhart (1997). The CAPM formula states the return on an asset equals the risk-free rate plus the market risk premium, stated as: $e_i = r_f + \beta(r_m - r_f)$. The model implies that only the market risk factor explains return on an asset.

Knoll (2002) asserts that the screening process tends to introduce portfolio size bias as large and well-established firms tend to be eliminated and thus RI portfolios tend to be dominated by small and high growth companies. Fama and French (1993) note that size and book-to-market factors influence earnings and returns of securities. Specifically, Fama and French (1993) observe that in the long run average returns of firms with small market capitalization are higher than those with large market capitalization, and the returns of firms with higher book-to-market ratios are higher than those with low book-to-market ratios. This finding has implications for CAPM since the model implicitly assumes that returns are a function of beta (β) alone (Wang, 2000). Therefore, much of the outperformance observed in RI funds may be explained by the size and book-to-market biases not captured by the single factor CAPM. Proponents argue that contradictory results arise through failure to control for differences in the screening types and the number of screens employed by different funds and their effect on fund performance. For instance, Barnett and Salomon (2006) observe that the number and type of screens used in portfolio construction has a direct impact on portfolio performance. Whilst Derwall, Koedijk and Ter Horst (2011) observe that studies of SRI funds treat socially responsible investors as a homogenous group of investors with similar expectations and fail to acknowledge the multi-dimensional nature of socially responsible investing that serves a heterogeneous group of investors who derive different utility from their investment decisions.

2.5.1. Empirical Studies

Hamilton, Jo and Statman (1993) investigated whether the market does price the responsible feature in RI mutual funds. They compared performance of 32 socially responsible mutual with mutually responsible mutual fund against the NYSE portfolio and a self-constructed mutual fund of conventional stocks for the period between 1981 to December 1990. They found no statistically significant difference in the risk-adjusted performance of RI mutual funds compared to the market benchmark or to the self-constructed conventional mutual fund. They found that socially responsible characteristics do not affect expected returns or cost of capital of socially responsible companies. They concluded therefore that the market does not price social responsibility characteristics and investors incur no penalty nor accrue benefit by investing in socially responsible companies.

Diltz (1995) investigated the impact of social screening on portfolio performance by comparing performance of a set of hypothetical portfolios constructed using eleven social screens. The screens included environment, charitable giving, woman in management, minorities in management, animal testing, information disclosure, community outreach, South Africa, family benefits, military work and nuclear involvement. For each social screen Diltz (1995) created two corresponding portfolios, one ranked high and the other ranked low on that specific screen. The sample comprised 159 securities of companies ranked either high or low on the eleven social screens. In addition, monthly returns of these securities were obtained for the period 01 January to 31 December 1989. Using Jensen (1968) alpha to observe alphas between the respective portfolios Diltz (1995) only found statistically significant difference for only three of the portfolios ranked good on the environment, nuclear free portfolio and good on defence work. When comparing excess returns of the respective portfolios Diltz (1995) did not observe any statistically significant differences. They interpreted their findings to mean that social screening has no effect on portfolio performance that capital markets are sufficiently large and liquid to render screening irrelevant.

Statman (2000) analysed performance of the Domini Social Index (DSI), a market weighted index of 400 socially responsible stocks, against the S&P 500 for the period May 1990 through to September 1998. In addition, they also analysed performance of RI mutual funds against conventional funds of similar net asset values in the same period. The DSI uses both exclusionary and qualitative screens, it includes companies with companies with good ratings

on diversity, employee relations and similar criteria and excludes companies that derive more than 2 percent of their earnings from military industries or manufacture alcohol or tobacco products. An analysis of returns found the DSI to have slightly outperformed the S&P 500 but slightly underperformed on a risk-adjusted basis. Using eSDAR and the Sharpe ratio Statman (2000) found the DSI to be riskier than the S&P 500. A comparison of returns between RI mutual funds and conventional funds found that RI mutual funds slightly outperformed their conventional counterparts. They also found the RI mutual funds to be less risky than conventional counterparts. Both RI and conventional mutual funds underperformed the S&P 500. Overall Statman (2000) found the risk-adjusted performance of socially responsible to be no different to that of conventional funds.

Bauer, Koedijk and Otten, 2005 analysed risk-adjusted performance of RI mutual funds for the UK, US and Germany between 1990 and 2000 using the Carhart (1997) four-factor model. Their study found no significant differences in risk-adjusted performance between SRI mutual funds and conventional portfolios; that RI funds were less sensitive to market volatility than conventional funds; that SRI funds tended to be growth orientated and less value oriented than conventional funds. They also observed that RI funds under-performed their conventional counterparts in the early 1990's probably owing to learning but subsequently catching up in the period 1998 – 2001 to deliver returns matching those of conventional funds.

Bello (2005) investigated the extent to which ethical and moral screening impacted on the level of portfolio diversification and portfolio performance of Socially Responsible mutual funds. The study compared a sample of 42 RI mutual funds with 84 randomly selected conventional funds with approximately the same net asset values. The study observed monthly returns of the two groups of funds between the periods January 1994 to March 2001. In particular, Bello (2005) examined characteristics of assets included in the respective portfolios, the degree of diversification and overall portfolio performance. Bello (2005) used the S&P 500 and the DSI 400 to benchmark performance of the sample portfolios. The examination of asset characteristics by Bello (2005) did not find statistically significant difference in terms of securities and bonds held by the respective portfolios, or the market capitalization of companies they held, their total portfolio holdings nor any statistically significant difference on the portion of total assets invested in their top 10 holdings. Overall Bello (2005) did not find any evidence to suggest that the constrained universe of RI funds limited their investments into smaller

companies nor that the holdings of SRI funds were concentrated in fewer companies than their conventional counterparts with similar net asset values. They also did not find any statistically significant difference in terms of portfolio diversification as measured by residual variance and benchmarked against the S&P 500. Bello (2005) did not find any evidence to suggest that RI funds carry extra-market co-variance than conventional funds with similar net assets. With regards to investment performance Bello (2005) did not find statistically significant difference between the performance of RI funds and conventional funds for either Jensen (1968) alpha or eSDAR. Bello (2005) did find however that when using the Sharpe ratio and benchmarked against the DSI 400 that conventional funds underperformed their socially responsible investment counterparts. Overall, they found no statistically significant difference in the performance, asset characteristics and degree of diversification between socially responsible mutual funds and their conventional counterparts with similar net asset values.

Derwall et al. (2005) investigated whether a portfolio constituted of companies high on environmental performance earns a premium or incur a penalty compared to a portfolio constituted of companies with a low score on environmental performance. Over and above, whether such a portfolio would outperform or underperform a benchmark portfolio. Derwall et al. (2005) used eco-efficiency rating data to construct a High portfolio constituting of companies that had a high eco-efficiency rating and a Low portfolio constituting of companies that had a low eco-efficiency rating. Eco-efficiency scores measure the value added by a company through the production of goods and services relative to the waste it generates in that process (Derwall et al, 2005). The net asset value in each portfolio represented 30 percent of market capitalisation. The monthly returns of the two portfolios were observed for the period between July 1995 and December 2003. Firstly, using the single factor Jensen (1998) alpha the study found no statistically significant difference in risk-adjusted performance between the self-constructed portfolios and the market proxy. However, the High ranked portfolio produced higher risk-adjusted returns than the Low ranked portfolio though not statistically significant. In addition, a comparison of portfolio betas found no significant difference indicating a similar exposure to market risk for all portfolios. The Carhart (1997) four-factor model reported that the High portfolio delivered a significant risk-adjusted performance in comparison to the Low ranked portfolio after having adjusted for sensitivities in size, book-to-market and momentum. Derwall et al. (2005) posit that their findings corroborate the view about market failure to price eco-efficiency factor efficiently.

Until this point, studies on responsible investing mainly focused on comparing performance between RI funds and non-RI funds (Capelle-Blancard and Monjon, 2014). These studies assumed homogeneity of RI funds and ignored their differing features and their impact on fund performance. Thus, these features had a confounding effect on performance without however being accounted for. Owing to the seminal work of Barnett and Salomon 2006 and Renneboog, Ter Horst and Zhang, 2008b latter studies started to focus on the multi-dimensional aspects of responsible investment funds.

Barnett and Salomon (2006) hypothesised that stringent screening improves portfolio performance as stable and better-managed firms are selected and their returns likely offset losses owing to poor diversification. They hypothesised that losses owing to poor diversification of RI funds are likely offset by better performance as stable and better-managed firms are selected with increased screening intensity. In addition, that strong stakeholder relation is positively correlated with financial performance. Their study sought to explain contradictions in earlier empirical research investigating the relationship between RI screening practices and financial performance specifically to shed light on the impact of different RI social screens on fund performance. They suggest that contradictions in earlier research may have been due to previous researchers not acknowledging the heterogeneity in RI funds owing to differing screening strategies adopted by these funds and their varying impact on fund performance. Their study investigated the relationship between screening intensity and fund performance as well as the relationship stakeholder relations and fund performance. Screening intensity measured the number of screen types a fund applied in investment decision, one being the least and twelve being all screen types. Furthermore, they used three screening types i.e. labour relations, relations with local community and environmental performance as proxy for stakeholder relations. Their study observed monthly returns of 61 RI funds between the period 1972 and 2000. Firstly, they found to be a U-shaped curvilinear relationship between screening intensity and fund performance. They found that performance peaked for funds that employed a minimal number of screens, with a gradual decline as more screens are added to moderate levels before peaking again as screening intensified but not recovering to initial levels. Secondly, they found no significant relationship between labour relations and risk-adjusted performance however they found that funds that screened out companies with poor employment opportunity record incurred a financial penalty of 0,29 percent. Thirdly, they found no significant relationship between local relations, though they observed that funds that included companies with positive local community relations performed better. Lastly, they

found a negative relationship between environmental screen and risk-adjusted performance. Barnett and Salomon (2006) interpret their results to mean that funds that employ few screens enjoy the benefits of better diversification, whilst firms in the middle, suffer from constrained diversification whilst still maintaining underperforming companies in their portfolios whereas funds that apply extreme screening eliminate underperforming firms and superior financial performance from remaining firms compensate for reduced diversification.

Kempf and Osthoff (2007) investigated whether a trading strategy based on past RI rating data yield abnormal returns. They constructed hypothetical portfolios consisting of stocks with a high and a low ranking for RI performance using three screening strategies, that is, negative, positive and best-in-class screening. Their trading strategy entailed going long on stocks with high RI ratings and short on stocks with low rating. They observed performance of the three portfolios for the period 1997 to 2004 and measured risk-adjusted performance using the Carhart (1997) four-factor model. They observed that the positive and the best-in-class screening strategy yield a high alpha for both the high-rated and low-rated portfolios but a higher significant alpha on the high portfolio. The most underperformance, though not significantly different, was observed on portfolios constructed using the negative screens. They conclude that investors could earn abnormal risk-adjusted returns by using the best-in-class screening approach together with several other screens at the same time and restrict their selection to stocks with high ESG rating, but caution investors to avoid the negative screening approach.

Renneboog, Ter Horst and Zhang, 2008 investigated the relationship between screening intensity and fund performance. They found to be a negative linear relationship between returns and the number of screens the fund applied. They conclude that screening intensity constrains a funds risk-return optimising ability. They also found that funds investing in companies with community involvement increased returns.

Hong and Kacperczyk (2009) investigated the effects of social norms or discriminatory tastes arising from social norms on capital markets. Specifically, they investigated the costs incurred by investors for shunning and not investing in shares of companies that promote human vice i.e. companies involved in the production of alcohol, tobacco and gambling. Using time-series data between 1965-2006, they found that a portfolio long on sin shares and short their non-sin comparables yield a return of 26 basis points a month after adjusting for the Fama-French factors and the momentum factor. Using cross-sectional data over the same period they found

that sin shares outperformed comparables by 29 basis points a month or 2.5% per year. Also, they found the valuation ratios, that is, book-market ratios of sin-shares to be on average about 15-20% lower than that of comparables. Moreover, the sin-shares had an approximately 18% lower ownership ratio by institutional investors than comparables and that these shares received less analyst coverage in comparison. They postulate that the effect of neglect by a sizeable investor sector such as institutional investors induce sin-shares to trade below their fundamental values and owing to this neglect they have limited risk sharing opportunities which drives up their expected return. Given limited risk opportunities, CAPM no longer holds and idiosyncratic risk and not just beta becomes material in pricing sin-shares.

Capelle-Blancard and Monjon (2014) investigates screening intensity and fund performance. Similar to Barnett and Salomon (2006) they found to be a curvilinear relationship between in screening intensity and financial performance.

Humphrey and Tan (2014) investigated the impact of positive and negative investing strategies on fund performance. They compared positively and negatively screened funds with artificially constructed unscreened portfolios. They found to be no evidence to suggest the screening strategies harm or benefit portfolio performance.

South African studies of risk adjusted performance have not explored the heterogeneity of responsible investing funds. The studies by Viviers et al. (2008) and Viviers and Firer (2012) focus on risk-adjusted performance of institutional and retail responsible investment funds against conventional funds but do not explore features of these funds and their impact on fund performance.

Viviers et al. (2008) undertook the first analysis of RI fund performance in South Africa in 2008. Their study investigated the risk-adjusted performance of South African RI funds against the JSE SRI index, as well as the general equity FTSE/JSE All Share index. Their study spanned the period 01 June 1992 to 31 March 2006. They divided the observation period into three sub-periods to account for varying economic conditions in each sub-period. They found that RI funds underperformed the JSE SRI benchmark for the first two sub-periods but outperforming it for sub-period three. Performance analysis against the JSE All Share Index found that performance of RI funds was not significantly different for periods one and three, however the funds significantly underperformed the market benchmark for period two. According to Viviers et al. (2008) sub-period two September 1998 to August 2002 was characterised by high interest rates, depressed growth rates and unfavourable exchange rates

which all had an impact on performance of companies. Viviers et al. (2008) interpreted their results to mean support for the efficient market hypothesis, that is, actively managed funds cannot consistently outperform the market benchmark; that RI funds may have undergone a learning curve similar to the observation of Bauer, Koedijk and Otten (2005).

Viviers and Firer (2012) investigated the risk-adjusted performance between retail RI funds and conventional unit trusts between June 1992 and August 2011. They found that RI funds underperformed their conventional counterparts though without a statistically significant difference. A comparison of expense ratios found the expense ratios of retail RI funds to be slightly higher than those of conventional unit trusts but not significantly different. They found that most of the RI unit trusts in South Africa were based on the Islamic Shari'ah law and employed exclusionary screens whilst the remaining RI unit trusts screened for labour relations and social development.

3. Chapter 3 – DESIGN

3.1. Introduction

This chapter describes in detail the methods followed to conduct this study. In line with the study's aims and objectives, the risk-adjusted performance of a sample of South African RI funds employing varied RI strategies is compared with the market portfolio, the JSE All Share Index (ALSI) and the JSE/SRI index. To assess performance, the study employs two risk-adjusted performance measures, namely the CAPM based Jensen alpha and the Sharpe ratio. In addition, the RI funds' average monthly returns as well as the standard deviation, a proxy for risk, is compared to that of the benchmark indices to ascertain whether the funds are any riskier than their benchmarks. The period of observation is five-years from 01 October 2010 and 31 October 2015.

The chapter is structured as follows:

- Section 3.2 – **Research Hypotheses**. This section outlines the null hypothesis to be tested in line with the aims and objectives of this study.
- Section 3.3 – **Sample Formation**. This section provides details of the steps followed to construct the sample of RI funds used in this study.
- Section 3.4 – **Data Sources**. This section provides details of the type of data used in the study and from where it was sourced.
- Section 3.5 – **The Observation Period**. This section provides the reasons for the observation period chosen for the study.
- Section 3.5 – **Performance Measurement**. This section describes the methods and the risk-adjusted performance measures employed to analyse performance of respective RI funds in line with the aims and objectives of this study.
- Section 3.6 – **Limitations**. This section outlines the various limitations of the study to be considered when interpreting the study's findings.
- Section 3.7 -**Research Paradigm**. This section outlines the philosophical assumptions underpinning this study.

3.2. Research hypotheses

The study sets out to test the following assumptions underpinning the debate on responsible investing:

- It should not be possible for funds that exclude sinful industries or companies which have been shown to outperform comparables to do better than a well-diversified portfolio. Moreover, responsible investing funds include in their portfolios less-profitable companies that incur higher costs related owing to Corporate Social Responsibility(CSR) compliance.
- The screening process bias against large and well-established firms leaving volatile firms in their portfolios. In addition, the exclusion of industries and sectors increase the likelihood of inter asset correlation.
- Modern portfolio theory predicts that it is not possible for a constrained fund to outperform a well-diversified market portfolio. Also, the efficient market hypothesis posits that it should not be possible for an actively managed portfolio to outperform a well-diversified market portfolio using generally available ESG information.

For each responsible investing strategy, the following testable null-hypothesis are set out:

- $H_{0,1}$ - There is no significant difference in the average monthly returns of RI portfolios and the two benchmark indices
- $H_{0,2}$ - There is no significant difference in the variance of RI portfolios and the two benchmark indices
- $H_{0,3}$ - There is no significant difference in the alphas of RI portfolios and the two benchmark indices.

3.3. Sample Formation

The RI funds included in this study were drawn from a list of South African RI funds first compiled by Viviers et al. (2008) and updated by Viviers and Firer (2012) to include newly established funds. The list was the first ever compiled of RI funds in South Africa, prior to that the population of these funds were unknown (Viviers et al., 2008). The list identifies 25 RI funds, their respective RI strategies and their fund classification codes as designated by The Association for Savings and Investments South Africa (ASISA).

Given that the focus of the study is set in the South African context, and in particular seeks to establish risk-adjusted performance of portfolios primarily composed of equities, only funds therefore with ASISA fund classification South Africa-Equity-General were considered for inclusion. The ASISA South Africa-Equity-General classification identifies domestic funds that invest in shares across all industry groups as well as across large, mid and small cap shares with an objective of producing a risk-return profile comparable to the FTSE/JSE All Share Index (ASISA, 2014).

Based on the above criteria, eleven funds were drawn from the Viviers and Firer (2012) list. However, two of the funds had since been discontinued and one merged with another fund. Only the remaining eight active funds were selected for inclusion in the sample. To some extent, this list was still incomplete as it did not include funds managed using the integrative strategy.

Viviers et al. (2008, pp. 43) define RI funds as “any local collective investment scheme that employs a screening, shareholder activism and/or cause based investment strategy” and their definition consequently excludes funds managed using the integrative strategy. For completeness of the sample, additional funds for inclusion were sourced from those managed by South African signatories of The United Nations Principles for Responsible Investing (UNPRI). The signatories of UNPRI principles through principle one commit themselves to integrating ESG issues in the investment analysis and decision making processes (UNPRI,2016). In addition, their RI policies and fund fact sheets were reviewed to identify respective RI fund strategy.

3.4. Data Sources

The data required for the study was sourced from INET-BFA and the South African Reserve Bank. The data from INET-BFA comprised of net asset value (NAV) prices for the constituent RI funds as well as the index value for benchmark indices for the period 01 October 2010 and 31 October 2015. This data set was used to calculate the funds and the benchmark indices raw returns. The risk-adjusted performance measures selected for the study require the calculation of excess return, that is, the net return earned by the fund in excess to the risk-less rate.

Therefore, in addition to the return data the treasury bill (T-bill) rate with the longest to maturity for the corresponding observation period was sourced online from the Reserve Bank of South Africa. The T-bill rate is the proxy for the risk-free rate, that is, the return on a zero-risk

investment. It represents the minimum return an investor may expect for holding risky investments (Strydom and Charteris, 2013).

3.5. The observation period

The period of observation for the study represent a recovery and stabilisation phase post the global financial of 2007-2008. The period was chosen to avoid the confounding effect of the event on the study's findings. The length of the observation period also has significance on the study. The CAPM based Jensen alpha employed rely on the estimation of beta. There is consensus that betas are generally stable over five-five yearly periods (Bradfield, 2003). Estimates based on longer periods such as 10 years maybe irrelevant as the nature of business risks may have changed significantly over that period. The five-yearly periods are considered to provide a large enough sample size to enable a reasonable estimation and a short enough period for the beta estimate to be considered stable.

3.6. Performance Measurement

This section describes in detail the performance metrics used to evaluate performance and how their parameters were derived.

3.6.1. Monthly Returns

The following formula is used to compute the monthly returns of RI funds:

$$r_{i,t} = \frac{NAVprice_{i,t} - NAVprice_{i,t-1}}{NAVprice_{i,t-1}}$$

Where

- $r_{i,t}$ = the monthly rate of return of fund in period t;
- $NAVprice_{i,t}$ = the net asset value (NAV) price of fund i in period t
- $NAVprice_{i,t-1}$ = the NAV price of fund i in period t-1

3.6.2. Jensen Alpha

The following procedure is followed to obtain the Jensen alpha and also to estimate fund betas.

- For each fund the raw returns are calculated using the formula:

$$\frac{NAVprice_{i,t} - NAVprice_{i,t-1}}{NAVprice_{i,t-1}}$$

- For each index the raw returns are calculated using the formula

$$\frac{IndexValue_t - IndexValue_{t-1}}{IndexValue_{t-1}}$$

- The 91day T-bill rate is converted to monthly using the formula
=POWER((1+t-bill rate/100);1/12)-1
- For each fund the excess returns is calculated by subtracting the monthly 91day T-bill rate from the raw returns. The process is repeated for the ALSI and the JSI SRI indices.
- For each fund a regression run to estimate the alpha (α) and the beta (β). The CAPM formula states the fund's excess return is a function of alpha plus the market risk premium multiplied by the fund's beta expressed as $r_i - r_f = \alpha + \beta(r_m - r_f) + \varepsilon$.

Where

- r_i = the return on asset i ;
- r_f = the risk-free rate
- α = the fund's excess return
- r_m = the return on the market portfolio
- β = the beta of the fund
- ε = the error term

To obtain these values the RI fund returns (the dependent variable) are regressed on the market portfolio returns (the independent variable).

- The statistical significance of the alpha was set at 0.05 confidence level.

3.6.3. Average returns

The following procedure is followed to calculate average monthly and annualised returns for respective funds and the indices.

- For each fund the average monthly mean return is calculated using the AVERAGE function. The process is repeated for the two indices.
- For each fund the annualized return is calculated by multiplying the monthly mean average return by 12. The process is repeated for the two indices

3.6.4. Standard deviation of returns

- For each fund the monthly standard deviation is calculated using the STDEV function. The process is repeated for the two benchmark indices
- For each fund the annualized standard deviation is calculated by multiplying the monthly standard deviation using the formula $\times \sqrt{12}$.

3.6.5. Sharpe Ratio

- For each fund the Sharpe ratio to establish the unit of return per given level of total risk using the formula:

$$\frac{(r_i - r_f)}{\sigma}$$

Where r_i = annualised mean return on asset i , r_f = annualised mean rate of return on the risk-free asset and σ = the annualised standard deviation of return. The process is repeated for the two indices.

3.6.6. Hypothesis Testing

- To test $H_{0,1}$ – The monthly returns of responsible investing funds are compared against the monthly returns of the respective benchmarks. A two-tailed t-Test is used to test the significance of differences between the means. The p-value set at significance level of 0.05. The T-test is used in this study to test whether the mean returns of the RI funds are statistically different from those of the benchmark indices.
- To test $H_{0,2}$ – To test for equality of variance between responsible funds and the benchmark indices the F-test is used and the p-value set at significance level of 0.05. The F-test is used to test whether the RI funds and their respective benchmarks have the same variances.
- To test $H_{0,3}$ - The alpha is obtained by regressing the portfolio's excess returns against a market benchmark portfolio's excess returns to estimate beta. The intercept of the linear regression line gives the alpha. The statistical significance level was set at 0.05.

3.7. Limitations

The result should not be interpreted to mean long-term persistence in observed performance. Owing to scope constraints the study is limited to a five-year period. Secondly, the study period is not segmented into sub-periods of observation to account for different economic conditions that may impact on constituent funds' risk-adjusted performance. Thirdly, caution ought to be exercised concerning risk-adjusted performance based on the single factor CAPM as it assumes that returns are a function of exposure to market risk. However, this model fails to account for other risk premium factors i.e. size, book-to-market factors as observed by Fama and French (1997) as well as the momentum factor by Carhart (1997). Ideally, multi-factor models are suited to evaluate risk-adjusted performance of RI funds since screening tends to introduce size bias as large and well-established firms are eliminated leaving small cap and high growth firms (Knoll, 2002). Owing to data limitations required to estimate the size and the value premium factors as well as the momentum factor, the study opted for the simpler CAPM based alpha. Thirdly, the results may be subject to survivor-bias given the exclusion in the study of the RI funds that have since been discontinued or merged. Lastly, the study does not account for fund management fees, it is often argued that RI funds have higher expense ratio's than their conventional counterparts as they need to integrate non-financial ESG considerations in the investment decision and management processes (Renneboog, Ter Horst and Zhang, 2008; Viviers and Firer, 2012).

3.8. Research Paradigm

This study employs the Positivist research paradigm. The core philosophical assumption underpinning this paradigm is that of a possibility to measure and observe facts about a single observable reality that is independent of an observer's bias (Krauss, 2005). The quantitative method elected to carry out the study supports this empirical domain of discovery and it is consistent with the majority of similar studies in finance as observed by Ryan, Scapens and Theobald (2002) where robust tests, large data samples that are free from bias, as far as possible, are used to construct precise theories.

4. Chapter 4 – RESULTS

4.1. Introduction

This chapter presents the findings from the data analysis process in line with the methods outlined in Chapter 3. Descriptive statistical analysis was used including percentages, averages and standard deviations to describe the funds and benchmarks returns and risk characteristics. Inferential statistical analysis tools including the T-test and F-test were used to determine the differences and equality of variances in this data-set. The data is summarised into tables as follows:

- **Table 1** - Provides as summary of the average monthly returns for each fund and by category of RI strategy
- **Table 2** – Provides a comparison of the average monthly returns against the JSE ALSI index for each fund
- **Table 3** – Provides a comparison of the average monthly returns against the FTSE/JSE SRI index
- **Table 4** - Provides a comparison of the equality of variances between the RI funds and JSE ALSI index
- **Table 5** – Provides a comparison of the equality of variances between the RI funds and the FTSE/JSE SRI index
- **Table 6** – Provides the results of the Jensen alpha between the RI funds and the JSE ALSI index
- **Table 7** – Provides the results of the Jensen alpha between the RI funds and the FTSE/SRI index
- **Table 8**- Provides a ranking of the Sharpe ratio by respective

4.2. Average monthly returns

Table 1 show the result of average monthly returns by responsible investing strategy. The table show that funds constructed and managed using the negative strategy delivered the least monthly average returns at 0.56% underperforming the highest earning by about fifty basis points. The table show to be no much difference between the positive screening (1,07%) and the integrative analysis (1,01) responsible investing strategies with a difference of less than one basis points between the two strategies. Both the strategies closely tracked the ALSI average monthly returns at 1,00% and exceeding the JSE/SRI average monthly returns at 0.70%.

Table 1 - Average returns by Responsible Investing strategy

RI Fund	Avg. Monthly Return	RI Strategy
Afena Equity Fund	0,65%	Integrative Analysis
Investec Equity Fund	1,26%	Integrative Analysis
Prudential Equity Fund	1,12%	Integrative Analysis
Avg. Monthly Returns for the Integrative Analysis RI Strategy		1,01%
Element Islamic Equity Fund	0,14%	Negative
Kagiso Islamic Equity Fund	0,66%	Negative
Old Mutual Albaraka Fund	1,08%	Negative
Stanlib Shari'ah Equity Fund	0,36%	Negative
Avg. Monthly Returns for the Negative Screening RI strategy		0,56%
Comm Growth Fund	0,78%	Positive
Sasfin MET Fund	1,35%	Positive
Avg. Returns for the Positive Screening RI strategy		1,07%

4.2.1. Average monthly returns comparison RI Funds vs JSE ALSI

Table 2 and **table 3** outlines the average monthly returns earned by individual funds and their performance relative to the ALSI and the JSE/SRI indices respectively. A comparison of average monthly returns in table 2 show that five of the nine RI funds in the sample earned average monthly returns less than that earned by the ALSI. Of the underperforming funds, three are managed using the negative investing strategy. Two of the four RI funds that posted average monthly returns exceeding those of the ALSI are constructed and managed using the integrative analysis strategy.

Table 2 - Average Monthly Returns Comparison: RI Funds vs ALSI

	<i>Afena Equity Fund</i>	<i>Comm Growth Fund</i>	<i>Element Islamic Equity Fund</i>	<i>Investec Equity Fund</i>	<i>Kagiso Islamic Equity Fund</i>	<i>Old Mutual Albaraka Fund</i>	<i>Prudential Equity Fund</i>	<i>Sasfin MET Equity Fund</i>	<i>Stanlib Shariah Equity Fund</i>	<i>ALSI</i>
RI Investing Strategy	Integrative Analysis	Positive Screening	Negative Screening	Integrative Analysis	Negative Screening	Negative Screening	Integrative Analysis	Positive Screening	Negative Screening	
Avg. Monthly Returns	0,65%	0,78%	0,14%	1,26%	0,66%	1,08%	1,12%	1,35%	0,36%	1,00%
Difference (ALSI Returns)	-0,35%	-0,22%	-0,86%	0,26%	-0,35%	0,08%	0,11%	0,35%	-0,64%	
t-test	-0,63	-0,42	-1,49	0,45	-0,64	0,15	0,21	0,65	-1,16	
t-Critical two-tail	1,9804	1,9810	1,9803	1,9803	1,9806	1,9816	1,9806	1,9812	1,9806	
p-value	0,53	0,68	0,14	0,65	0,53	0,88	0,84	0,51	0,25	
Reject/Fail to Reject null-hypothesis	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	

4.2.2. Average monthly returns comparison RI Funds vs JSE SRI

A comparison of the average monthly returns against the JSE/SRI in **table 3** show that only four of the funds underperformed this index. Three of the four funds that underperformed this index are funds constructed and managed using the negative screening strategy. The result of the t-test in both table 3 and 4 show there to be no statistically significant difference between the average monthly returns of the funds regardless of responsible investing strategy and the benchmark indices. There was therefore failure to reject null-hypothesis $H_{0,1}$.

Table 3 - Average Monthly Returns Comparison: RI Funds vs FTSE/JSE SRI

	<i>Afena Equity Fund</i>	<i>Comm Growth Fund</i>	<i>Element Islamic Equity Fund</i>	<i>Investec Equity Fund</i>	<i>Kagiso Islamic Equity Fund</i>	<i>Old Mutual Albaraka Fund</i>	<i>Prudential Equity Fund</i>	<i>Sasfin MET Equity Fund</i>	<i>Stanlib Shariah Equity Fund</i>	<i>JSE/SRI</i>
RI Investing Strategy	Integrative Analysis	Positive Screening	Negative Screening	Integrative Analysis	Negative Screening	Negative Screening	Integrative Analysis	Positive Screening	Negative Screening	
Avg Monthly Returns	0,65%	0,78%	0,14%	1,26%	0,66%	1,08%	1,12%	1,35%	0,36%	0,70%
Difference (JSE/SRI Returns)	-0,05%	0,08%	-0,55%	0,56%	-0,04%	0,39%	0,42%	0,65%	-0,34%	
t Stat	-0,08	0,15	-0,93	0,96	-0,08	0,72	0,74	1,19	-0,59	
t-Critical two-tail	1,9806	1,9814	1,9804	1,9804	1,9810	1,9822	1,9810	1,9818	1,9808	
p-value	0,93	0,88	0,35	0,34	0,94	0,48	0,46	0,24	0,56	
Reject/Fail to Reject null-hypothesis	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	

4.3. Variance of returns

A comparison of variability between individual funds and the two benchmark indices was undertaken to establish if any of the responsible investing strategies induced the funds to any greater risk relative to the two indices.

4.3.1. Equality of Variances RI Funds vs ALSI

Table 4 show that the ALSI's standard deviation of monthly returns at 3,19% was higher than any of the responsible investing funds. Similarly, **table 5** show that the JSE/SRI's standard deviation at 3.38 was higher than that of any fund in the sample. An F-test Two Sample for Variance test was employed to test for differences between variances of the indices and respective RI funds. **Table 4** show that there were two instances where difference in variances was statistically significant, and in both cases the responsible investing funds registered significantly lower variances than the ALSI.

In the case of the JSE/SRI index, this benchmark also registered a higher standard deviation of monthly returns than any of the funds. In four out of nine instances. **Table 5** show that $H_{0,2}$ could only be rejected in two cases where one fund is managed using the positive responsible investing strategy and the other fund employing the negative screening strategy. Table 6 show that $H_{0,2}$ could only be rejected in four instances where two of the funds employ the negative screening strategy and the other two a positive screening strategy. In all instances where was rejected, the funds registered a statistically lower variance than the benchmark indices.

Table 4 - Equality of variance test responsible investing funds versus JSE-ALSI

	<i>Afena Equity Fund</i>	<i>Comm Growth Fund</i>	<i>Element Islamic Equity Fund</i>	<i>Investec Equity Fund</i>	<i>Kagiso Islamic Equity Fund</i>	<i>Old Mutual Albaraka Fund</i>	<i>Prudential Equity Fund</i>	<i>Sasfin MET Equity Fund</i>	<i>Stanlib Shariah Equity Fund</i>	<i>ALSI</i>
RI Investing Strategy	Integrative Analysis	Positive Screening	Negative Screening	Integrative Analysis	Negative Screening	Negative Screening	Integrative Analysis	Positive Screening	Negative Screening	
F	1,1904	1,4373	1,0529	1,0877	1,3082	1,6960	1,3133	1,5664	1,2732	
p-value	0,253	0,083	0,422	0,374	0,152	0,022	0,149	0,044	0,178	
F-Critical value	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	
Stdev (monthly returns)	2,93%	2,66%	3,11%	3,06%	2,79%	2,45%	2,79%	2,55%	2,83%	3,19%
Reject/Fail to Reject null-hypothesis	Fail-to- Reject	Fail-to- Reject	Fail-to- Reject	Fail-to- Reject	Fail-to- Reject	Reject	Fail-to- Reject	Reject	Fail-to- Reject	

Table 5 – Equality of variance test responsible investing funds versus JSE/SRI

	<i>Afena Equity Fund</i>	<i>Comm Growth Fund</i>	<i>Element Islamic Equity Fund</i>	<i>Investec Equity Fund</i>	<i>Kagiso Islamic Equity Fund</i>	<i>Old Mutual Albaraka Fund</i>	<i>Prudential Equity Fund</i>	<i>Sasfin MET Equity Fund</i>	<i>Stanlib Shariah Equity Fund</i>	<i>JSE/SRI</i>
RI Investing Strategy	Integrative Analysis	Positive	Negative	Integrative Analysis	Negative	Negative	Integrative Analysis	Positive	Negative	
F	1,3303	1,6063	1,1768	1,2156	1,4620	1,8955	1,4677	1,7506	1,4229	
p-value	0,138	0,036	0,267	0,228	0,074	0,008	0,072	0,017	0,089	
F-Critical value	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	1,53996	
Stdev	2,93%	2,66%	3,11%	3,06%	2,79%	2,45%	2,79%	2,55%	2,83%	3,38%
Reject/Fail to Reject null-hypothesis	Fail-to- Reject	Reject	Fail-to- Reject	Fail-to- Reject	Reject	Reject	Fail-to- Reject	Reject	Fail-to- Reject	

4.4. Jensen Alpha

4.4.1. Jensen Alpha, RI Funds relative ALSI

Table 6 shows that five of the nine funds generated negative alphas relative to the ALSI and therefore underperformed this index. Three of the underperforming funds are constructed and managed using the negative screening strategy whilst the other two funds employ the integrative analysis strategy and positive screening strategy respectively.

The results of hypothesis in table 6 show however that only two funds registered a statistically significant underperformance against the ALSI. In both instances the responsible funds that underperformed are constructed and managed using the negative screening strategy. The results of hypothesis testing also show that only one fund managed to outperform the ALSI and that fund is constructed and managed using the positive screening strategy. Based on these results, $H_{0,3}$ could only therefore be rejected therefore in only three of the nine instances. Six of the funds registered no statistically significant alphas for all the respective responsible investing strategies.

Table 6 Jensen Alpha – Responsible Investing funds vs ALSI

	<i>Afena Equity Fund</i>	<i>Comm Growth Fund</i>	<i>Element Islamic Equity Fund</i>	<i>Investec Equity Fund</i>	<i>Kagiso Islamic Equity Fund</i>	<i>Old Mutual Albaraka Fund</i>	<i>Prudential Equity Fund</i>	<i>Sasfin MET Equity Fund</i>	<i>Stanlib Shariah Equity Fund</i>
RI Investing Strategy	Integrative Analysis	Positive Screening	Negative Screening	Integrative Analysis	Negative Screening	Negative Screening	Integrative Analysis	Positive Screening	Negative Screening
Alpha	-0,0027	-0,0009	-0,0071	0,0033	-0,0019	0,0025	0,0021	0,0057	-0,0047
p-value	0,082	0,561	0,011	0,056	0,389	0,087	0,070	0,014	0,047
R- squared Adjusted R	0,85	0,818	0,570	0,827	0,659	0,796	0,909	0,564	0,614
Reject/Fail to Reject null- hypothesis	Fail-to- Reject	Fail-to- Reject	Reject	Fail-to- Reject	Fail-to- Reject	Fail-to- Reject	Fail-to- Reject	Reject	Reject

4.4.2. Jensen Alpha, RI Funds relative JSE/SRI

The results in table 8 show that two of the funds underperformed the JSE/SRI index, in both instances the funds are constructed and managed the negative screening strategy. Seven of the nine funds registered a positive alpha relative to this index. The results of hypothesis testing show however that of the two fund that underperformed none them registered a statistically significant underperformance. Instead, four of the nine funds registered a statistically significant outperformance against the JSE/SRI index. $H_{0,3}$ could be rejected in the four

instances of outperformance. Two of the funds that outperformed are constructed and managed using the integrative strategy, whilst another uses the positive screening strategy and the last one employing the negative screening strategy.

Table 7 - Jensen Alpha- Responsible Investing funds vs JSE/SRI

	<i>Afena Equity Fund</i>	<i>Comm Growth Fund</i>	<i>Element Islamic Equity Fund</i>	<i>Investec Equity Fund</i>	<i>Kagiso Islamic Equity Fund</i>	<i>Old Mutual Albaraka Fund</i>	<i>Prudential Equity Fund</i>	<i>Sasfin MET Equity Fund</i>	<i>Stanlib Shariah Equity Fund</i>
RI Investing Strategy	Integrative Analysis	Positive	Negative Screening	Integrative Analysis	Negative Screening	Negative Screening	Integrative Analysis	Positive Screening	Negative Screening
Alpha	0,0000	0,0015	-0,0048	0,0061	0,0003	0,0048	0,0048	0,0076	-0,0047
p-value	0,999	0,302	0,063	0,003	0,867	0,004	0,001	0,002	0,223
R- squared Adjusted	0,86	0,82	0,61	0,76	0,70	0,75	0,87	0,53	0,68
R	0,854	0,82	0,60	0,76	0,70	0,74	0,86	0,52	0,67
Reject/Fail to Reject null-hypothesis	Fail-to-Reject	Fail-to-Reject	Fail-to-Reject	Reject	Fail-to-Reject	Reject	Reject	Reject	Fail-to-Reject

4.5. Sharpe Ratio

To provide insight regarding risk-adjusted performance for each of the funds managed using a different responsible investing strategy, the study uses the Sharpe ratio for this measurement. The Sharpe ratio is a measure of excess return per given level of fund risk.

In this regard, table 9 provides a ranking of Sharpe ratios earned by respective responsible investing funds. The table also outlines the differences between that earned by these funds and the two benchmark indices. Four of the nine funds underperformed the ALSI with respect to Sharpe ratios. Three of the four funds that earned a Sharpe ratio lower than that of the ALSI are funds constructed and managed using the negative screening strategy. The fourth underperforming fund is a fund constructed and managed using the positive screening RI strategy.

A comparison of RI funds' Sharpe ratios against the JSE/SRI index show that three of the funds underperformed this benchmark index with two of the underperforming funds managed and constructed using the negative/exclusionary screening RI strategy with the third fund employing an integrative analysis RI strategy. Lastly, a ranking of the Sharpe ratio shows that

the fund with the highest Sharpe ratio employs a positive screening RI strategy and that the top five section is occupied by two funds managed using a positive screening RI strategy, another two using the integrative analysis strategy and one fund employing the negative/exclusionary strategy.

Table 8 - Sharpe Ratio Ranking

RI Fund	Avg. Monthly Return	RI Strategy	RI Fund Ranking	ALSI Sharpe	Difference	JSE SRI Sharpe	Difference
Afena Equity Fund	0,24	Integrative Analysis	7	0,60	-0,36	0,26	-0,02
Comm Growth Fund	0,43	Positive Screening	5	0,60	-0,17	0,26	0,17
Element Islamic Equity Fund	-0,34	Negative Screening	9	0,60	-0,94	0,26	-0,59
Investec Equity Fund	0,92	Integrative Analysis	2	0,60	0,32	0,26	0,66
Kagiso Islamic Equity Fund	0,26	Negative Screening	6	0,60	-0,35	0,26	0,00
Old Mutual Albaraka Fund	0,90	Negative Screening	3	0,60	0,30	0,26	0,64
Prudential Equity Fund	0,83	Integrative Analysis	4	0,60	0,23	0,26	0,57
Sasfin MET Fund	1,22	Positive Screening	1	0,60	0,62	0,26	0,97
Stanlib Shari'ah Equity Fund	-0,11	Negative Screening	8	0,60	-0,71	0,26	-0,36

5. Chapter 5 - DISCUSSION

The results show that employing a negative screening strategy will likely earn the least returns. These findings are in line with the assertion that the use of sin screens by values based investors adversely impact fund performance in the form of reduced returns. This is because the screening process not only limits diversification opportunities but may lead to financially attractive firms being excluded from investment consideration. The study observed performance of Islamic funds employing religious screens in accordance with Shari'ah law. In addition to sinful companies and industries, the Shari'ah law forbids leverage, short-selling, margin trading and speculative activities which further limits profit making opportunities for Islamic funds (Nainggolan, How and Verhoven, 2014). Hong and Kacperczyk (2009) show that sin stocks tend to outperform comparable stocks which means that excluding them may disadvantage responsible investors. The findings in this study are in line with those of Nainggolan, How and Verhoven (2014) who find that Islamic funds generally underperform their conventional counterparts by 40 basis points per month.

Worthy of consideration however is that despite an underwhelming performance of the funds employing the negative screening RI strategy, one of the funds within this category, the Old-Mutual Albaraka fund registered a statistically significant outperformance against the two benchmark indices. This finding may be suggestive that even in a constrained investing universe there may exist conditions when it is possible for values-driven investors to pursue investing objectives consistent with their beliefs without having to forego a financial return. It is difficult however to explain the fund's outperformance without employing a multi-factor model such as the Fama and French (1993) or Carhart (1997) for performance attribution. Also, an understanding of the economic significance of the sinful sector might provide further insight. For starters, the outperformance may be owing to risk premium factors not captured by the single factor CAPM based model employed in this study. Understanding the fund manager's investing style might better explain this fund's outperformance relative to underperforming funds within the same category. Secondly, if the excluded sinful industries are not economically significant then negative screening would have had limited impact on fund performance. The gap in performance between the Old Mutual Albaraka fund and the underperforming funds may point to a heterogeneity in Islamic equity funds that is worth exploring in the quest to better understand their returns behaviour.

Overall, empirical results from this study suggest that portfolio performance is adversely impacted by a negative screening strategy. In addition, the results are supportive of the efficient market hypothesis, that is, it is not possible for constrained funds to outperform a well-diversified market portfolio. These results are however to be read with caution since the coverage of negatively screened funds in this study is far from comprehensive as it is limited to only Islamic equity funds. Owing to unclear categorisation, these were the only negatively screened funds that could be identified for inclusion. There may as well be values-driven investors who do not take issue with sinful industries but have a strong aversion toward companies with a poor track record on environmental performance, employer relations, governance or community relations. These investors may opt to employ a negative screening strategy to exclude irresponsible companies from their investment. Despite an overall poor showing, the contribution of Islamic equity fund in the overall health and governance of financial markets should not be downplayed. The prohibition on short selling and margin trading serves as a strong governance mechanism against excessive risk taking by fund managers keen on exploiting market inefficiencies for profit. For instance, Nainggolan, How and Verhoven (2014) find that during the global financial crisis of 2007, Islamic equity funds outperformed conventional counterparts by between 50 to 90 basis points owing to minimum exposure to conventional financial institutions. They conclude that Islamic equity funds to be safe investments during times of financial crises. Although not a very attractive investment in isolation, Islamic equity funds may be worth considering profit-seeking investors as a part of a portfolio made of other funds e.g. a fund of funds.

Reflecting on performance of funds employing a positive screening RI strategy, the results from this study infer that this strategy likely has a neutral and at best a positive impact on portfolio performance. In this case, responsible investors do not appear to incur a penalty for integrating non-pecuniary objectives in the investment decision. Importantly the results likely reflect a less constrained investing universe from which responsible investors select investments. In this instance, responsible investors seek to encourage companies making an effort in improving their environmental, social and governance performance by investing in them. This approach contrasts negatively screened funds which are criticized for employing a simplifying dichotomy of saints and sinners in selecting or excluding investments (de Colle and York, 2008). This is because funds employing a negative strategy place emphasis on a company's products and services and likely ignore the company's positive contribution to the environment and other stakeholders. The case in point being that of wine farmers who are

committed to ethical farming methods, contribute positively to the landscape and make an economic contribution to economies of rural communities. However, owing to their categorisation as sinful, these companies likely would be excluded from funds employing negative screening strategy regardless of their contribution. Positive screening of funds itself isn't free of criticism despite its intentions. The main criticism stem from the inclusion in portfolios companies that ought to not have been included owing to less than glamorous record on ESG performance. In terms of this approach investment in mining companies would be allowable provided these companies sought to be socially responsible through the adoption of safe operating practices and commitment to environmental rehabilitation post mine closure (Michelson et al., 2004). In the same spirit, Lonmin has been a constituent of the JSE/SRI index from 2007 to 2014, and in addition has been named in the best performer category of the index for the years 2008 to 2011 as well 2014. The inclusion of Lonmin in the JSE SRI index came under spotlight when in August 2012 thirty-four miners were gunned down during a strike for basic pay (AfricaSRI, 2016). Poor living conditions were also cited as a motivator for the strike. The investigations of a commission of inquiry appointed to investigate the tragedy revealed that the company had failed to honour commitments of its social and labour plan (SLP). South African mining laws require that mining firms submit an SLP prior to mining rights being granted. In their SLP, Lonmin had committed to building 5500 houses but had only managed to construct three of these. This was despite an IFC's USD 50 million towards this objective (AfricaSIR, 2016). This elicited criticism with commentary in the media pointing to the glaring irony (Daily Maverick, 2012) with others labelling the JSE SRI as outright greenwash and that inclusion is nothing but an award for good story telling (IOL, 2013).

As in the case of funds employing a positive screening strategy, funds constructed and managed using an integrative analysis RI strategy do not appear to incur a penalty for integrating non-financial considerations in the investment decision. The departure from traditional screening practices to considering materiality of ESG issues on fund performance may well offer newer avenues particularly for responsible investors concerned about a trade-off between social goals and financial performance. Eccles's (2012) criticism of this approach for relegating the importance of ethics when these are not deemed material to fund performance is not without merit. In the South African context for instance, the conduct of the controversial Gupta family and their related businesses has been well publicised, however, banks and related service providers appear to have sought to cut ties with the family and their businesses only when reputational risks became apparent (Rand Daily Mail, 2016). On the other hand, reflecting on

Lonmin, a thorough scrutiny of ESG risks as part of fundamental analysis might have led fund managers to a different investing decision. The pricing of ESG risks would have likely raised the cost of capital for Lonmin and rendered the project less attractive. The prospects of a higher discounting rate seem a more effective approach than merely engaging a company with the hope of changing their attitude towards ESG issues. In comparison to the more objective integrative analysis RI strategy, positive and negative screening presents problems for fund managers leaving them to make difficult judgement calls in an area fraught with subjectivity. Once again considering the Lonmin case this would have entailed the balancing of such issues as employment creation, poverty alleviation against negative social and environmental impact of mining activities.

The study's findings also shed some interesting insights as to the riskiness and volatility of RI funds. The study found the RI funds to be no more volatile and their standard deviation lower than the unrestricted benchmark indices. Modern portfolio theory would suggest that the elimination of sectors and industries particularly in the case of Islamic equity funds would increase asset correlation and thus fund volatility. The findings of the study are however contrary to this assertion. This may be an indication that whilst the JSE is relatively small in comparison to other developed stock exchanges it nevertheless can still provide room for adequate diversification despite a contracted investing universe. Secondly, the finding possibly supports the claim by proponents of RI investing that screening cleanses the portfolio of undesirable companies and leaving only stable and well governed firms.

6. Chapter 6 - CONCLUSION

This study contributes to the understanding of responsible funds within the South African context and evaluates the impact of choice of responsible investing strategy of fund performance. The performance of nine responsible investing funds constructed and managed using different strategies is evaluated and benchmarked against the All Share Index as well as the JSE SRI Index. The study finds that the negative screening strategy overall yields the least returns and appear to harm portfolio performance. Therefore, profit-seeking and institutional investors who invest funds on behalf of beneficiaries ought to steer away from this strategy. The study finds to be not much difference between funds managed using the positive screening and the integrative analysis strategy against the two indices. It is suggested however that profit-seeking investors and large institutional investors consider the integrative analysis strategy over positive screening. The focus on materiality of risks ensures relevant risk factors are priced in for asset pricing and avoids difficult subjective judgements inherent in positive screening.

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