**The market performance of Socially Responsible Investment during periods of the economic cycle - illustrated using the case of FTSE**

**Abstract**

The debate about socially responsible investment (SRI) portfolio performance compared with its non-SRI counterparts remains inconclusive. This paper contributes to the debate by adding a new approach, examining the issue of a full economic circle through economic boom, recession and recovery. We compare stock performance of two value-weighted investment portfolios: FTSE4Good (SRI portfolios) and FTSE 350 (conventional portfolios) from 2004 to 2011 including 2007 to 2009 financial crash. The results indicate the SRI portfolio performed better and recovered its value quicker in post-crisis than the non-SRI portfolio, indicating that SRI portfolios are more resilient to economic turmoil and market shocks.

**Key words**: Socially Responsible Investment (SRI), Investment performance, Economic cycle, Financial crisis, Recession, FTSE4Good.

## 1. Introduction

Socially Responsible Investment (SRI) is a set of investment strategies and approaches which include environmental, social and corporate governance (ESG) considerations when used to inform investment decisions. Over the last 20 years, SRI has been a fast and steady growing segment of the capital investment market and a hot topic in academic debate (Perks et al., 1992; Cowton, 1999; Friedman and Miles, 2001; Sparkes and Cowton, 2004; Kempf and Osthoff, 2007, 2008; Capelle-Blancard and Monjon, 2012; Cassimon et al., 2015). Significant numbers of studies in this field have focused on comparing the financial performance of SRI funds or SRI indices against conventional ones to understand whether SRI adds additional financial costs which imped financial/market performance or whether SRI perform better in the market due to the extra reputational value associated with the investments (see examples, Luther et al., 1992; Luther and Matatko, 1994; Kreander et al., 2002; Mallin et al., 1995; Gregory et al., 1997; Kreander et al., 2005; Kempf and Osthoff, 2007, 2008; Collison et al., 2008). However, the empirical evidence to date is inconclusive and even contradictory. Some evidence suggests that SRI funds/indices outperform non-SRI funds/indices (i.e. a positive relationship between SRI and financial performance) while other evidence suggests a negative relationship or no significant difference in performance (a neutral relationship). Despite researchers attempting to interpret their findings in the context of their studies, a real consensus has not yet arrived (Capelle- Blancard and Monjon, 2012; Revelli and Viviani, 2015). Some authors argue that the ambiguity may be due to heterogeneous studies, e.g. differences in context, sampling and even methodologies, and call for more research from new perspectives and different approaches to the analysis (Cowton, 1991, 2004; Godfrey, 2005; Kurtz, 2005; Renneboog et al., 2008).

By addressing the weakness from previous meta-analyses in Frooman (1997) and Margolis et al. (2007), Revelli and Viviani's (2015) recent meta-analysis aggregated 85 published international studies in this area covering 190 experiments across 40 years (1972–2012), although the majority of the publications are in the last 20 years) in an attempt to answer why there is a lack of consensus from these studies which used "close research design but distant sampling and methodological skills" (p. 159). Their study

included a wide range of research considering of different dimensions of SRI (i.e. markets, financial performance measures, investment horizons, SRI thematic approaches, family investments and journal impact), heterogeneous results, and different methodologies over a long time period. Their main conclusion is that there is no significant relationship between SRI and performance in a global context, i.e. the adoption of corporate social responsibility (CSR) does not generate notable costs or benefits for investors, and the contradictory results are mainly caused by the methodological choices in different studies (in many cases were led by 'data-driven' or 'data-mining'). Along with the main findings, Revelli and Viviani (2015) emphasized that the investment horizon is a key factor which influences the financial performance of SRIs. This is because investment duration is closely related to the theory of SRI 'cost' which suggests that SRIs tend to underperform in the short term when compared to their conventional counterparts because they need to pay higher fees in gathering information and meeting ESG criteria. However, a reduction in costs in the medium term tends to help SRIs outperform conventional investments in the long run (Bauer et al., 2005, 2006). Revelli and Viviani (2015) suggesting that when looking for the financial performance difference between SRI funds/indices and non SRI funds/indices, a long term investment horizon should be considered because it can "isolate the special effect of CSR on performance" or "transitory factors" (p. 162) and minimise sample selection bias. In short, a long term study can lead to robust and reliable results.

However, we argue that in a long time horizon, investment portfolios could perform differently in varying periods/stages, e.g. when the market suffers shocks by external or contingent factors. For example, in a financial crisis share prices can become turbulent. As such, the comparison of financial performance between SRI funds/indices and non SRI funds/indices should be further extended to examine the relative performance over different periods/stages. Some empirical studies provide evidence which supports linking the performance of portfolios to different periods of economic development. For instance, Ellis and Bastin (2011) found that during periods of financial crises, there were increasing awareness and discussions about sustainability and sustainable business practices as opposed to simple CSR policies. A study by Ducassy (2013) found a significant positive relationship between CSR and financial performance at the beginning of the recent financial crisis (the second half of 2007) but found no positive

correlation between these two variables after that (to mid 2009). Another study by Charitoudi et al. (2011) which examined 110 companies from the GRI guideline and 73 firms from BITC indices covering the period of 2007-09 indicated increased CSR performance from both groups. Notably, these studies only looked at the period of the financial crisis in 2007-09. Moreover, these studies did not look into how external or contingent factors such as institutional changes and changes in investors' behaviour can affect the speed and process of SRIs being incorporated into mainstream investments.

This study intends to address the research gap identified above by proposing a new approach which examines how SRI portfolios perform during different periods of an economic cycle, i.e., boom, slump, recession and recovery, in the comparison to non SRI portfolios. This study will explain the reasons the differences in the performance of SRI and non SRI portfolios in the context of institutional changes and changes in investors' behaviour, with particular attention paid to the period of economic recession. This, to our best of knowledge, is the first attempt to conduct this research. We aim to make a contribution to this important debate by starting research from a single stock market (i.e. FTSE in the UK) and from the economic cycle which includes the recent financial crisis (2004-2011). We set out the FTSE4good index as our SRI portfolio and FTSE 350 as the comparator. Using a matching method by considering operational similarity[1] as a criterion, a SRI sample of 99 companies listed in the FTSE4Good UK are compared against a non-SRI sample of 99 companies listed in the FTSE350. The multivariate statistical findings reveal that the "SRI portfolio" generally achieved higher returns than the "non- SRI Portfolio" in the examined period of eight years (2004-2011) partly due to the adverse effect that the financial crisis has had on the non-SRI sample. In addition, the "SRI portfolio" recovered its value much quicker from the financial crisis. This highlights that those companies with CSR reputation can be less affected by economic fluctuations. Our findings have implications for policy makers as well as investors and a detailed explanation is set out in the final section.

The structure of this paper is organised as follows:

Section 2: discusses the types of investors and their investment attitudes;

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[1] i.e. industry, number of employees, market capitalisation and dividend yield .

Section 3: sets out the theoretical underpinning and hypotheses development;

Section 4: sets out the methodology used and data analysis; and

Section 5: concludes results and discusses the implications and limitations of this study.


## 2. Types of investors and their associated investment behaviours

Investors can be classified into different types based on different criterion. In terms of investment attitudes in relation to time horizon, institutional investors can be categorised as 'transient' and 'dedicated'. Transient investors include: open-end mutual funds; life insurance funds; and externally managed pension plans. Dedicated investors include: different in-house-managed pension plans, as well as public and private sector pension plans (Bushee, 1998; Cox and Wicks, 2011). Dedicated pension institutions have a propensity to spend time and resources on research and development and long-time investment strategies to meet the multiple expectations of key stakeholders (Hoskisson et al., 2002; Cox and Wicks, 2011). When doing this, they expect to achieve better returns through holding significant shares of targeted corporations for the long-term, improving the relations with corporates to monitor risk. As such, they value corporates' social responsibility more than their market liquidity. In contrast to their counterparts, transient investors have a propensity to make maximum return within a short time period. They care about trading cost and speed but value engaging with corporates less (Bushee, 1998; Hendry et al., 2006). These arguments are confirmed in Cox and Wicks's (2011, p. 144,) findings suggesting "for all categories of dedicated institution, corporate responsibility influences the demand for shares more than market liquidity" and "for all transient institutions, the lowest ranking factor in the demand for shares is corporate responsibility".


Based on their investment strategies and priorities, Kinder (2005) grouped investors into three main types: value-based; value-seeking; and value-enhancing (Oh et al., 2013). The value-based investors are individual and institutional investors whose investment decisions are based on religious beliefs and/or ethical criteria and values. Their investment decisions are socially responsible, based on moral standards and they are very much concerned about the ethical or social aspects of their investment portfolios

(Renneboog et al., 2011). The value-based investors are currently a small but growing proportion of the stock market and are the key pillars in SRI funds/indices.

The value-seeking investors invest mainly in order to maximise their returns by enhancing their fund/portfolio's performance. These investors are also known as conventional investors and can be either individuals or institutions (e.g. mutual funds and externally managed pension funds mentioned above) that are making their own investments decisions or through their fund managers. The value-seeking investors are the main players in the stock market and are "self-concerned".

Finally, value-enhancing investors tend to be rich individuals and large institutional investors that improve their investment value through shareholder engagement with companies. For large institutional investors like in-house managed pension funds, it is very difficult to switch their portfolios without losing a large amount of value (Ahmed et al., 2014).  Therefore, participation in corporation management to enhance the value of invested companies is their common investment strategy. Value-enhancing investors are the main force of long term investment and they normally pay more attention to CSR approaches and ESG ratings.

### 3.   Theoretical underpinning of CSR/SRI

Several theoretical frameworks have been used to examine CSR, and to some extent, SRIs. Three of the most cited theories are the Stakeholder Theory, the Institutional Theory and the Resource Based View (RBV, or Resource Dependency). Stakeholder theory has been developed for 30 years since Freeman (1984) by addressing business ethics and moral values in operating a corporation. Although recognised as a key theory which enables CSR decision making and responsible strategic development, stakeholder theory has been identified as a vague and contestable concept with 885 definitions which were classified into 16 categories by Miles (2015). The main critique of stakeholder theory focuses on its ambiguity in scope and interpretations (Fassin, 2009; Crane and Ruebottom, 2011; cited in Miles, 2015). Indeed, if firms do not identify their definitive stakeholders (e.g. shareholders, fund managers in the case of investment decision) and dependent stakeholders (e.g. customers and employees), how can they prioritise

strategies and policies which are in line with the needs of key stakeholders and monitor the conflicts between all types of stakeholders?

In addition, the interests of the stakeholders need to be protected and guaranteed by a sound social structure and an institutional environment of schemes, rules, norms, and routines. The legitimacy of these institutional norms becomes the centre of the Institutional Theory which argues that the institutional environment in which an organisation operates can be more powerful than market pressure in the development of formal structures (Meyer and Rowan, 1977; DiMaggio and Powell, 1983). Institutional theory emphasises the established authoritative guidelines for social behaviour (i.e. legitimacy represented by the rules and belief systems) and the moral rules and values that are widely recognised as "good faith". It is argued that conforming to these rules and belief systems and taking stakeholders' perspectives into consideration will earn firms legitimacy in the institutional environment and ensure their survival (Scott, 1994).

Finally, the Resource Based View argues that establishing a formal structure of legitimacy and meeting stakeholder demands requires resources which is key for a firm's competitive advantage and therefore the process of implementing legitimacy can reduce a firm's efficiency in their technical environment (Wernerfelt, 1984). Later, other researchers also confirmed that involving CSR activities can improve firms' returns while irresponsible companies can find it hard to raise money (Frooman, 1999; Ferrell, 2001; Knox et al., 2005).

We argue that in the context of SRI, the relationship between stakeholder theory, institutional theory and RBV is based on the debate over whether socially responsible investments not only bring financial returns but also strategic value to the firm. This is because the right strategies and policies can assure the firm sustainability with good financial returns in long run. In practice, it requires the firm to have a good governance framework and a corporate responsibility culture which responds quickly to stakeholders' needs and uses limited corporate resource effectively while implementing CSR activities smoothly.

Other associated theories include moral reasoning/development (Kohlberg, 1973; Gibbs, 2003) and theories that can explain investors' behaviour in making investment choices. For example, Shavit and Adam (2011) propose a preliminary framework to understand how and why investors are influenced by a mix of rational and non-rational factors in corporate responsibility investment. They argue that when investors make investment decisions they are sensible in the consideration of rational factors such as moral choice, risk management, whether the investment requires changes in corporate structure and/or production process, and whether the investment could bring long-term/short-term profit/loss. However on the other hand, their behaviour is also unrealizably driven by non-rational factors, i.e. their attitude to risk (risk-seeking or risk-averse), status quo bias (i.e. being a change-avoider) and subjective time discounting (i.e. paying attention to "the marginal rate of substitution between current and future consumption", p.210) and myopic loss-aversion (i.e. avoiding losses in the short run though it might gain in the long run). Shavit and Adam suggest that "each rational factor is complemented by a non-rational factor" (p.206), e.g. the matched pair are risk management and attitude to risk, required changes and status quo bias, long-term consideration and subjective time discounting, and short-term consideration and myopic loss-aversion.

4. Hypotheses development

As mentioned above, an economic cycle normally consists of economic boom, economic slump, economic recession and economic recovery. The slump stage can be obviously visible in some circles but might also be invisible in others, e.g. in the case of a contingent event, the economy can quickly fall from boom into recession. In our investigation circle (2004-2011), the stage of economic slump is not obvious and can be treated as the beginning of the economic recession (see Figure 1). As such, our discussion will be concentrated on three stages of economic boom (pre-crisis), economic recession (in-crisis) and economic recovery (post-crisis).

*Market performance of SRI portfolios versus Non SRI counterparts in the period of economic boom*

During the economic boom the macroeconomic environment is stable, the economy grows in real term, and investors can easily and cheaply borrow money to invest in the stock market and achieve high returns. Under a liberal institutional environment with limited government interventions and stakeholders' pressure, investors are relatively free to select investment portfolios based on their value orientation and investment attitudes over a time horizon. To illustrate[2], value-seeking investors can easily achieve high returns from investing in conventional portfolios in the short term with little pressure to consider the choices of SRI portfolios; while value-enhancing investors can continue their routine practice in the CSR engagement with corporates to achieve better returns in the long run. Therefore, when comparing financial performance for aggregated SRI portfolios and conventional counterparts in such a stable 'normal period', there should not be a significant difference.

Studies in this field do not normally distinguish between different stages of economic development and are carried out in in stable economic growth periods. As mentioned earlier, their results are inconclusive for different reasons and academics have not agreed upon a reason for the inconclusive results. Some academics assert that socially responsible companies should perform well because their engagement with CSR activities earns them a good reputation and a sustainable competitive advantage (see Cornell and Shapiro, 1987; Mallin et al., 1995), Gray et al., 1996; Gregory et al., 1997; Hooker, 1998; Kreander et al., 2005; Schroder, 2007). Other academics assert that socially responsible investing can be costly and resource consuming due to the gathering of additional information and analysis (Schotland, 1980; Cooper and Schlegelmilch, 1993; Sparkes, 1994; Cowton, 2004; Clacher and Hagendorff , 2012); however, these costs have been significantly reduced in recent years due to the increasing number of companies included in the existing SRI portfolio indices. Finally some  take the view of the general equilibrium principle and suggest that the costs and benefits from socially responsible investing should be cancelled out and therefore the investment returns for socially responsible investors should be the same of those of the non-

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[2] Value-based investors invest consistently all the time and their investment behaviour is not influenced by the different stages in the economic cycle. As such, our illustration only relates to value-seeking and value-enhancing investors.

socially responsible investors (Curran and Moran, 2007; Ducassy, 2013). Following this line of reasoning, we propose that the first hypothesis:

*H1: The market performance from SRI portfolios will have no significant difference as compared to their non- SRI counterparts in the time of economic boom.*

*Market performance of SRI portfolios versus non SRI counterparts in the period of economic recession*

The institutional environment in an economic recession following a financial crisis is fundamentally different to the institutional environment of the boom period because institutional and individual investors face challenges due to extreme market volatilities. Taking 2007-09 financial crisis as an example, the weak performance in stock markets and the low confidence levels, led to public and the investors' attention moving towards more ethical, regulatory compliant, and responsible investments. The crisis created a need for damage limitation via immediate adaptive responses such as short run asset switching strategies and liquidity conservation/management. At the same time investors were required to consider longer term strategies. Therefore, risk, leverage and the relative returns on different assets classes all became subject to significant changes. Capelle-Blancard and Monjon (2012) argued that stakeholders of companies were largely in consensus that CSR compliance and/or SRI would be a prudent solution for companies to conciliate their finance and ensure a sustainable future. This is in line with the institutional theory which suggests that when firms are under high uncertainty and/or highly dependent on the institutional environment, the rate of institutional isomorphism will be increased (DiMaggio and Powell, 1983). Specifically applying it in the context of financial markets, among institutional pressures, coercive pressures mainly come from external legal mandates through tight financial market regulations. There are also mimetic pressures largely arising from internal stakeholders who demand that fund trusts or fund managers should invest in companies with strong CSR compliance in order to minimise the risks associated with uncertainty. Similarly, professional groups such as fund managers and securities analysts may also be under pressure to change their investment attitudes towards a more balanced approach and their advice to clients is a kind of normative pressure. With regards to the changes of propensity to invest for different types of investors, the financial crisis did not affect value-

based and value-enhancing investors' confidence in SRI portfolios but strengthened even further their focus on SRIs. However for value-seeking investors, the financial distress would lead them, to some extent, to switch from non-ethical to ethical funds, increasing ethical constituents in portfolios, diversifying portfolios or a combination of the above. As a result, investors have more recession proof capital assets in their portfolios serving as a buffer against future losses (Ducassy, 2013). According to Peteraf (1993), this change enables investors to transform short term returns into longer term competitive advantage. Therefore as argued by Ducassy (2013) and Peteraf (1993), longer term strategies including SRI are likely to be more sustainable and resilient investments. In addition, the steady growth in demand for SRIs is likely to ensure the good performance of those investments.

From the limited research on ethical investments, Lourenço et al. (2012) and Ducassy (2013) argue that they perform significantly better than non-ethical investments during periods of recession, though these studies were focusing on ethical investments rather than SRIs. However, the argument and discussion led to the second hypothesis:

*H2: The market performance from SRI portfolios are likely to achieve a better performance as compared to their non- SRI counterparts in the time of economic recession.*


*Market performance of SRI portfolios versus non SRI counterparts' in the period of economic recovery*

Following from the economic recession there is a gap before the beginning of the next boom which is defined as economic recovery. The lengths of the recovery period vary in different economic cycles in different countries. Normally after an economic downturn, governments would prefer implementing expansionary monetary policy and fiscal stimulus to drag the economy out from the trough. However, after a major stock market liquidity shock, in particular when public money is spent bailing out the failed financial sector like the case of the 2007-09 financial crisis, governmental policy attention has also got to be focused on restoring public trust in institutions and investors' confidence in the market (Herbst et al., 2012). As such, new regulations and control measures will be introduced to restrict aggressive investment behaviour and rebalance proper risk-seeking and risk aversion attitudes towards a stable risk-attitude

economy and resilient market mechanism (Herbst et al., 2012; Anand et al., 2013). Especially, in the post crisis period when returns were liable to be lower, investors started exercising greater scrutiny of their investment holdings. This greater scrutiny was even further encouraged by new directives from governments and central banks.[3] This has, in turn, created greater scope for and interest in SRI.

The institution investors are the main players in the stock market and thus the main power for a resilient market, particularly those buy-hold institutions who serve as long-run liquidity providers in the market such as mutual funds and pension funds (Anand et al., 2013). As argued before, investors' propensities to invest and risk attitudes hinge on their value orientations. Value-based investors are in a small proportion in SRI but their ethical investment value and risk attitude will not be altered in all stages of an economic cycle. A large proportion in SRI portfolios are those in-house managed pension funds and institutions who are value-enhancing and have generally higher risk-aversion attitudes and can accept lower stock market returns after an economic recession. This type of investor will firmly stand for SRI policies by staying with SRI portfolios. On the contrary, some of the value-seeking conventional investors (e.g. mutual funds and externally managed pension funds) may start their short-term value investing again in the partially recovered stock market by switching back from SRI portfolios to conventional ones while others may adopt a more risk-averse attitude by continuing to stay with SRI portfolios. Some value-seeking investors may also hold more SRI shares than before as a result of learning the lesson from previous aggressive attitudes. New institutional policies and market regulations will therefore encourage responsible investment and restrict aggressive investment behaviour.

The relevant research in this field is scant but Anand et al. (2013) investigated the trading pattern changes of buy-side institutions during normal economic conditions and altered preferences during periods of market stress (2007-09 financial crisis) to understand how such altered preferences influenced the speed

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[3] Some new regulations, policies and standards include: IFRS 9 (Financial Instrument) by the IASB in 2009; the amended "Directives 2006/48/EC" by European Commission in 2010; Basel III regulatory reforms; etc. For instance, the Bank of England indicates that the financial crisis led to the largest UK government intervention in financial markets since the outbreak of the World War I. Bank of England (2008). Financial Stability Report, October 2008, Issue No. 24. London: Bank of England

of recovery and the establishment of a resilient market. The findings proved that buy-hold institutions have a major part in restoring the resiliency of a market after a painful financial crisis. Findings also validated the prediction from other studies that tightening risk management and higher volatility during a market stress can increase investors' risk aversion (Garleanu and Pedersen, 2007; Huang and Wang, 2009; cited in Anand et al., 2013). Lee et al. (2015) also found that the higher risk aversion, the lower stock market expectations are.

To summarise the discussion, we can expect the third hypothesis:

*H3: The market performance from SRI portfolios will achieve higher performance compared to their non- SRI counterparts in the time of economic recovery.*

## 3. Method

*Sample selection procedure*

The prime purpose of this research is to determine whether the market performance from investments in socially responsible firms compared to their non SRI counterparts is different in different stages of the economic cycle i.e. booming, recession and recovery economies. We examine market performance from the FTSE indices by selecting the FTSE4Good UK index as a proxy of the measure of SRIs with consideration of CSR meeting ESC requirements. The non-SRI portfolio is taken from the FTSE350 index as it represents a benchmark of conventional investments. The choice of the FTSE4Good is because since its launch in 2001,  the FTSE4 good index has become a robust and credible index. FTSE4Good inclusion has been used by more and more investors and fund managers as a criterion for integrating ESG ratings into their investment analysis and decision making process (Kempf and Osthoff, 2007, 2008; Adam and Shavit, 2008; Collison et al., 2008; Clacher and Hagendorff, 2012). However, it has been criticised for overly focusing on disclosing companies' policies (Warwick-Ching, 2004).

This study adopts a matching portfolio method recommended by Kane and Enos (2010) and Nakajima (2011) to mimic two dedicated portfolios: SRI portfolio and non- SRI portfolio. The benchmark non- SRI/CSR portfolio was constructed as the 'matching' portfolio for the SRI portfolio with the

characteristics as similar as possible without being identical to it. The sample selection was treated carefully in order to be reliable and unbiased followed these procedures:

- All selected companies had never been deleted from FTES4Good UK and FTSE350 respectively during the examined period 2004-2011 and they were active until the last day of the period.

- Similar to the work of Kempf and Osthoff (2007), investment performance was measured by share price which in theory relates to a company's long-term earning potential.

- The sampling frame took into account the matching of the sectors and the operational similarity[4] of their clientele.

- Then a 'Nearest Neighbours' methodology used by Kane and Enos (2010) was applied to each of the securities in the 'SRI portfolio' and was compared to the candidate securities for inclusion in the 'Non- SRI Portfolio' based on the number of employees, market capitalisation and dividend yield on 31$^{st}$ December 2003. This process was used in order to minimise Euclidean geometric distance on the attributes mentioned between the samples from the two portfolios and ensure they are comparable. The formula of 'Nearest Neighbours' used is:

$$\left| p_i - q_j \right| = \left( \frac{Nemp_i - Nemp_j}{Nemp_i} \right)^2 + \left( \frac{Mcap_i - Mcap_j}{Mcap_i} \right)^2 + \left( \frac{Dyield_i - Dyield_j}{Dyield_i} \right)^2 \quad (1)$$

where $\left| p_i - q_j \right|$ is the distance of each of the FTSE4Good UK securities (*pi*) from each of the FTSE350 securities (*qi*), Nemp is the Number of Employees, Mcap is the Market Capitalisation and Dyield is the Dividend Yield. To remove the impact from the different scaling in each of the attributes (employees, market cap, dividend yield), all the first differences in the equation with the first term (i.e. (Nempi-Nempj)/ Nempi) were divided. In addition, to remove the effect of positive and negative differences, all scaled differences were squared. The result was an index with an absolute number for each SRI portfolio firm, where the closest to zero indicates a close neighbour and a suitable substitute in the matching portfolio. Then all the conventional portfolio firms based on their distance from each of the SRI firms were ranked in order to select the closest. In the case that a control security in the non- SRI portfolio was closer to two SRI

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[4] i.e. number of employees, market capitalisation and dividend yield.

portfolio firms, the closest case was selected. In this way, 99 firms from each portfolio were

selected from the sectors that are summarised in Table 1.

**Table 1: Sample included in SRI and Non-SRI portfolios**

| Sector | Numbers in SRI portfolio | Numbers in Non-SRI portfolio |
|---|---|---|
| Industrials | 27 | 27 |
| Consumer services | 24 | 24 |
| Financials | 24 | 24 |
| Consumer goods | 5 | 5 |
| Basic materials | 4 | 4 |
| Health care | 4 | 4 |
| Technology | 4 | 4 |
| Utilities | 3 | 3 |
| Oil and gas | 2 | 2 |
| Telecommunications | 2 | 2 |
| **Total** | **99** | **99** |

Once samples were selected, a calculation of the weight for each sample firm in the SRI portfolio and

conventional portfolio was carried out to ensure the relatively larger and smaller firms within the

portfolios get equal weights. The formula used to calculate the weights is:

$$Wi = \frac{Mcap_i}{\Sigma_{i=1}^{99} Mcap_i} \; , \qquad\qquad (2)$$

where $Mcap_i$ is the Market Capitalisation of a security in the two portfolios on 31 December

2003. In this way, two comparable value weighted portfolios are ready for data analysis.

***Separation of analysis periods and data collection***

This research intends to contribute to the debate of whether SRIs perform better in an economic cycle, i.e.

economic booming, economic downturn and economic recovery. This can be assessed by looking at

investors' behaviour on SRI portfolios consistently in terms of different stages of the economic cycle.

The sample was selected from FTSE4Good and FTSE350 and in order to ensure objectivity, the FTSE100 index was thus used as the benchmark (see Figure 1). The trend of FTSE100 clearly shows that 2003 is a point whereby share price started rising. The share performance steadily went up between 2004 and 2006 and this trend allows us to define 2004-06 as economic boom years. As illustrated in Figure 1, from 2007 the economic performance became 'bearish' due to the financial crisis and therefore 2007-09 can be chosen as a representative period of economic recession. From 2010 to 2011, the stock market had a slow recovery from the crisis and the share prices went up but not as high as they were in the period of the economic boom, i.e. 2004-06. The recovery was volatile as it fell again in 2012. Therefore 2010-11 was a short period of economic recovery.
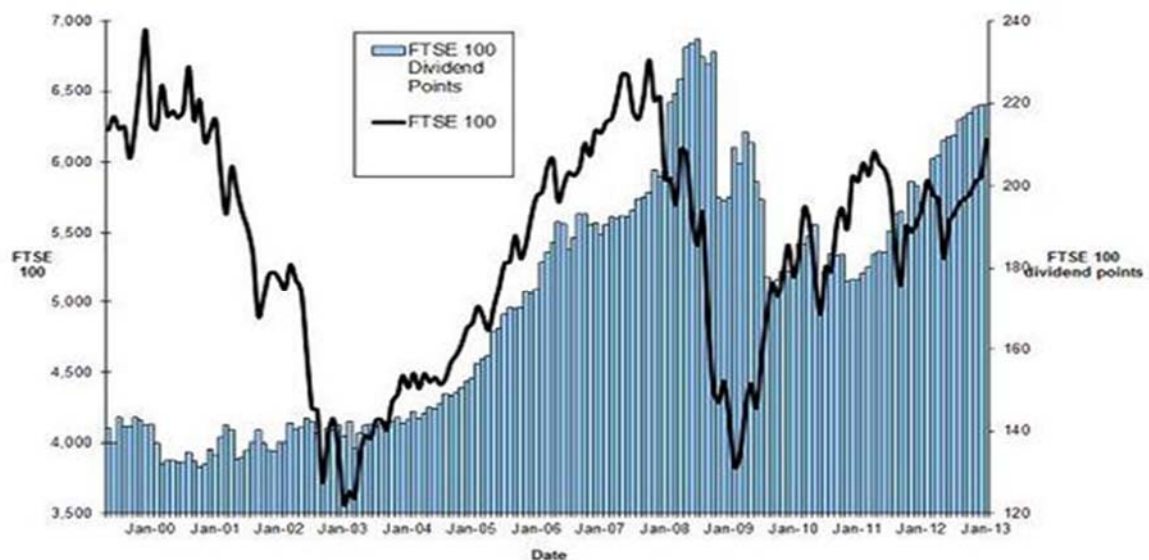


**Figure 1:  The share price trend of FTSE100 index 2000-2012**

(Source: Bloomberg Financial Times)

The analysis was based on monthly data covering the following three periods: pre-crisis (2004-06) as economic booming, in crisis (2007-09) as economic downturn and post crisis (2010-11) as economic recovery. Statistical analysis was carried out to provide empirical evidence. The results are presented and discussed in the following section.

## 4.  Results and Discussion

*Descriptive analysis*

Initially descriptive statistical findings of the mean and standard deviation (SD) were computed to identify the variation of the share price for the two portfolios investigated covering 2004-2011. The results are highlighted in Table 2 which suggests that the share prices of firms selected in FTSE4Good are generally and consistently higher than those of the selected firms in the conventional portfolio except 2007. The results also show that SRI firms have recovered their share prices much faster than the non SRI companies after the global recession and the standard deviation of the SRI share priced companies is much more consistent than that of the non-SRI share priced companies. The results are also illustrated in Figure 2.

**Table 2: Descriptive statistics of share prices of SRI and Non SRI portfolios**

| Year | SRI portfolio | | Non SRI portfolio | |
|------|------|------|------|------|
| | Mean | SD | Mean | SD |
| 2004 | 622.81 | 24.81 | 438.35 | 22.54 |
| 2005 | 735.33 | 53.73 | 503.78 | 38.92 |
| 2006 | 809.82 | 25.48 | 746.59 | 62.48 |
| 2007 | 775.92 | 46.56 | 906.20 | 102.74 |
| 2008 | 660.06 | 38.63 | 459.27 | 83.76 |
| 2009 | 626.68 | 59.99 | 369.60 | 29.26 |
| 2010 | 694.04 | 34.77 | 360.19 | 18.89 |
| 2011 | 784.42 | 42.81 | 480.60 | 31.69 |

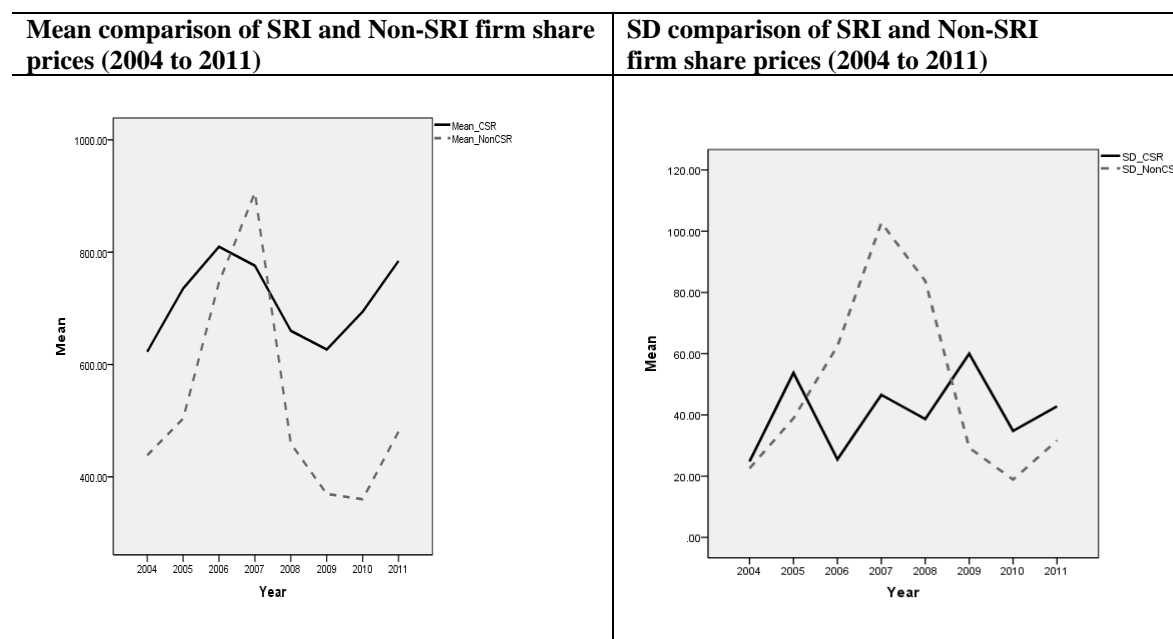| **Mean comparison of SRI and Non-SRI firm share prices (2004 to 2011)** | **SD comparison of SRI and Non-SRI firm share prices (2004 to 2011)** |
|---|---|



**Figure 2: Graphical comparison of share price Mean and SD of SRI and Non SRI portfolios**

*Paired comparisons*

In order to test if the results presented for each of the two portfolios are significantly different between them (see Table 2), a paired t-test statistical analysis was carried out. The means of SRI and non- SRI share prices year by year from 2004 to 2011 were compared and the results in Table 3 reveal that there is a significant difference between the means of share prices of SRI and non- SRI portfolios for almost every year except 2007. The share price of the SRI portfolio is significantly higher than the share prices of the non- SRI portfolio with a very large rise in the difference of average share prices from 2009 to 2011 which provides evidence of a much faster recovery of the SRI portfolio in relation to the non- SRI portfolio after the financial crisis. This provides evidence to support Hypothesis 3.

**Table 3: Mean differences of share prices of SRI and Non SRI portfolios by paired years**

| | | Paired differences | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean differences | SD | Std. Error mean | 95% confidence interval | | t | df | Sig. |
| | | | | | Lower | Upper | | | |
| Pair 1 | SRI_2004 – Non SRI_2004 | 184.45 | 35.03 | 4.86 | 174.70 | 194.21 | 37.97 | 51.00 | 0.00 |
| Pair 2 | SRI_2005 – Non SRI_2005 | 231.54 | 33.08 | 4.59 | 222.33 | 240.75 | 50.48 | 51.00 | 0.00 |
| Pair 3 | SRI_2006 – Non SRI_2006 | 63.22 | 80.37 | 11.15 | 40.85 | 85.60 | 5.67 | 51.00 | 0.00 |
| Pair 4 | SRI_2007 – Non SRI_2007 | -130.28 | 69.26 | 9.6 | -149.56 | -111.00 | -13.56 | 51.00 | 0.00 |
| Pair 5 | SRI_2008 – Non SRI_2008 | 200.78 | 75.79 | 10.51 | 179.68 | 221.88 | 19.10 | 51.00 | 0.00 |
| Pair 6 | SRI_2009 – Non SRI_2009 | 257.08 | 63.22 | 8.77 | 239.48 | 274.68 | 29.32 | 51.00 | 0.00 |
| Pair 7 | SRI_2010 – Non SRI_2010 | 333.85 | 26.04 | 3.61 | 326.60 | 341.10 | 92.44 | 51.00 | 0.00 |
| Pair 8 | SRI_2011 – Non SRI_2011 | 303.82 | 21.71 | 3.01 | 297.78 | 309.86 | 100.91 | 51.00 | 0.00 |

*ANOVA test*

An ANOVA test was executed using 2011 as the control year in order to explore any 'bullish' or 'bearish' trends in the share prices of the portfolios over the periods of this study. The results are reported in Table 4 which reveals that the share prices for SRI companies in 2011 have increased significantly in relation to the share prices for most of the previous years except for 2006 and 2007. In addition, the share

prices have risen significantly in the last three years, but the rise for the non- SRI portfolio has only been in 2009 and 2010.

**Table 4: Comparison of average share prices of each year against 2011**

| SRI portfolio | | | | Non-SRI portfolio | | | |
|---|---|---|---|---|---|---|---|
| Controlling year | Comparison year | Mean difference (controlling year – comparison year) | Sig. | Controlling year | Comparison year | Mean difference (controlling year - comparison year) | Sig. |
| | 2004 | 161.61 | 0.00 | | 2004 | 42.24 | 0.05 |
| | 2005 | 49.09 | 0.00 | | 2005 | -23.18 | 0.74 |
| | 2006 | -25.39 | 0.24 | | 2006 | -265.99 | 0.00 |
| 2011 | 2007 | 8.5 | 0.99 | 2011 | 2007 | -425.6 | 0.00 |
| | 2008 | 124.36 | 0.00 | | 2008 | 21.32 | 0.82 |
| | 2009 | 157.74 | 0.00 | | 2009 | 111 | 0.00 |
| | 2010 | 90.38 | 0.00 | | 2010 | 120.41 | 0.00 |

*Risk-adjusted analysis*

Risk adjusted return is a concept that refines investment returns by measuring how much risk is involved in producing these returns, which is applied to individual securities and investment funds and portfolios and generally expressed as a number or rating. In this case, two technical risk ratios: Alpha and Sharpe, are considered. According to Jensen (1968), Alpha is used to compare its risk-adjusted performance to a benchmark index by taking the volatility (price risk) of a fund. The excess return of the fund in relation to the return of the benchmark index is a fund's Alpha. The higher the Alpha of a portfolio, the better its risk adjusted performance. Similarly, Sharpe ratio indicates how much a portfolio's returns are associated with additional risk: the greater a portfolio's Sharpe ratio, the better its risk-adjusted performance has been. The formulations used to calculate Alpha and Sharpe are presented below. The results of Alpha and Sharpe ratios are summarised in Table 5.

$$Alpha = R_p - [R_f + \beta_p(R_m - R_f)],$$

$$Sharpe = \frac{R_p - R_f}{\sigma_p},$$

Where $R_p$ represents the portfolio's return and $R_f$ the risk free rate return and $R_m$ the market rate of return. Also, $\sigma_p$ is the Standard Deviation of portfolio's returns and $\beta_p$ the beta factor of each portfolio.

**Table 5: Comparison of Alpha and Sharpe ratios of SRI and Non-SRI portfolios**

| *Annual Alpha Ratios* | | | | *Annual Sharpe Ratios* | | | |
|---|---|---|---|---|---|---|---|
| **SRI Portfolio** | **Alphas** | **NSRI Portfolio** | **Alphas** | **SRI Portfolio** | **Sharpe** | **NSRI Portfolio** | **Sharpe** |
| 2004 | -4.4% | 2004 | -0.2% | 2004 | -0.71 | 2004 | 1.52 |
| 2005 | -2.4% | 2005 | 0.1% | 2005 | 6.43 | 2005 | 6.49 |
| 2006 | -0.6% | 2006 | 6.3% | 2006 | 1.84 | 2006 | 5.84 |
| 2007 | -2.9% | 2007 | -8.0% | 2007 | -2.18 | 2007 | -4.28 |
| 2008 | 4.2% | 2008 | -19.3% | 2008 | -6.82 | 2008 | -10.84 |
| 2009 | 0.1% | 2009 | -1.8% | 2009 | 7.34 | 2009 | 5.55 |
| 2010 | 2.7% | 2010 | 11.1% | 2010 | 3.59 | 2010 | 7.24 |
| 2011 | 0.2% | 2011 | 3.9% | 2011 | -2.56 | 2011 | -0.87 |
| *Alphas pre, during and post the crisis* | | | | *Sharpe pre, during and post the crisis* | | | |
| **SRI Portfolio** | **Alphas** | **NSRI Portfolio** | **Alphas** | **SRI Portfolio** | **Sharpe** | **NSRI Portfolio** | **Sharpe** |
| 2004-2006 | -9.3% | 2004-2006 | 6.3% | 2004-2006 | 10.25 | 2004-2006 | 16.93 |
| 2007-2009 | 4.1% | 2007-2009 | -30.1% | 2007-2009 | -5.62 | 2007-2009 | -14.45 |
| 2010-2011 | 3.2% | 2010-2011 | 14.6% | 2010-2011 | 1.15 | 2010-2011 | 6.10 |

After adjusting risk, the returns from the two portfolios in Table 5 provide further confirmation of the results from the statistical analysis, providing support for the three hypotheses. The results detailed in Tables 2-5 provide evidence that companies in the SRI portfolio performed better than their counterparts, the non- SRI portfolio, in some cases of analysis but not in others over the years of the economic boom (2004-06). In some cases (see Tables 3 and 4), the differences are statistically significant. This conclusion is consistent with a number of previous studies which suggest that SRIs may not be financially advantageous in a "bullish" market or in a short period of time. This finding can also be treated as additional proof that inconsistent findings from SRI performance related studies may be caused by methodological assumptions. Moreover, the sample selected as well as internal organisational factors of the selected firms can affect the findings and in particular the performance of their share prices. The most

common organisational changes are mergers, acquisitions, divestments, management buyouts and restructuring. However, the empirical evidence still supports Hypothesis 1.

Similarly, with regards to the findings in relation to Hypothesis 2, there is evidence presented in Tables 2-5 which indicates that firms in the SRI portfolio were much less adversely influenced by the financial turmoil apart from two incidents in Tables 2 and 3 in relation to 2007 share performance data, which show that the mean of the share price from the SRI portfolio is lower than that of the non- SRI portfolio. This may be because the financial crisis started in the second half of 2007 and its impact on share prices was reflected from the second half of 2007. Therefore the 2007 data can only be partially used to tell the story, even though we can see that the SRI portfolio significantly outperformed its counterpart either before risk adjustment or after. As such with some caution, we can assert that our findings support Hypothesis 2.

The results relating to Hypothesis 3 which focuses on the period of economic recovery (2010-11) are somewhat divided. Despite the mean of the share price for the SRI portfolio being continually higher than that of the non-SRI portfolio (see Table 2), the difference is narrowing (see Table 3). Towards the end of 2011, the non-SRI firms outperformed their SRI peers (see Tables 4-5). After adjusting the risk, this trend is even bigger (see Table 5). This is an interesting finding which appears to suggest that the stock market had finished a 'bearish' trend at this point and was heading towards a 'bullish' market. In other words, the economy had recovered to a large extent and was beginning a boom cycle. The statistically significant results reveal that the SRI portfolio has achieved a much faster and higher recovery after the period of recession (namely economic recovery) and thus supports Hypothesis 3.

### 5. Conclusion, implication and future research

The debate on which type of investment portfolios (SRI or Non-SRI) should perform better than the other is divergent and inconclusive. This paper contributes to the theoretical literature by adding a new approach on examining the issue through a full economic development circle including economic boom,

recession and recovery. This long time horizon approach attempts to provide more reliable results and discussions in the topical area. From the case of an economic circle covering the recent global financial crisis from the FTSE market in the UK, our results suggest that despite the financial crisis has been in many respects a devastating event, it however provides also the potential for greater acceptance of and interest in socially responsible investment as the result of changes in institutional environment, stakeholders expectations and investors risk attitudes. In other words, investing in SRI portfolios will increase risk proof capital assets which can help corporates repel risks in economic recession and quickly recover afterwards. The findings thus have important policy and managerial implications. If this issue should be observed from a long run perspective, then governments' strategies and policies should focus on how to create an appropriate and consistent institutional environment to promote SRI rather than only implement remedy measures after an economic turmoil. Furthermore as SRI portfolios can bring strategic value to institutions though risk aversion in hard time and recovery, then conversional investors or fund managers should adopt their investment propensities and invest in or hold more shares for SRI portfolios.

As with that in other studies, our research exhibits a number of limitations with reference to a single stock market, a restricted set of measurement variables, a small sample size, some fairly rudimentary statistical analyses, and one economic cycle. However, these limitations notwithstanding, this study remains valuable as a point of departure, in so far as it invites further research that transcends the limitations of our own. We suggest future research should address the heterogeneity of SRI market performance identified by Revelli and Viviani (2015). For example, future research should be extended to other geographical stock markets as each SRI market is unique which might be fundamentally different in selection approaches (e.g. negative or positive screening, or mixture, or best-in-class), types of investment family (e.g. bonds, shares or mixed), ESG criteria and proportions of SRI portfolios. The similar research should also be conducted for other economic cycles to bring new insights into different institutional context.

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