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SRI IN THE NORDIC COUNTRIES – A PROFITABILITY ANALYSIS

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ABSTRACT

The world is facing challenges with climate change. People are willing to advocate a good cause and fight against rising temperatures, as well as many societal and governmental issues. This has created a demand for more sustainable investment solutions and solid CSR practices. Therefore, socially responsible investing (SRI) has become very popular during recent years, for example, the US is capturing every fifth dollar invested under professional management.

In this study, three Nordic (Danish, Finnish, Swedish) stock portfolios are constructed: an environmentally, socially and governmentally (ESG) responsible portfolio and its matched conventional counterpart (non–ESG) and a Nordic large cap portfolio as a benchmark. These portfolios are examined to find any differences in the performance. The methods used are the CAPM and the Fama–French five factor model. The time period is split according to the financial crisis to see if there are any differences in performance during the crisis or normal times.

Two hypotheses are tested. Firstly, some of the previous studies suggest that ESG stocks act as a buffer in an economic downturn. The first hypothesis is in accordance. However, only weak evidence can be found to support the hypothesis that the ESG portfolio performs better in comparison to the conventional one during the financial crisis. Thus, the first hypothesis can be rejected due to the lack of statistical significance.

Secondly, many studies find the investment universe of the SRI investors to be limited, which may lead to lower profits. Therefore, the second hypothesis examines whether the conventional portfolio performs better compared to its responsible counterpart. It can be stated that at least during normal times, strong evidence can be found to support this hypothesis. The conventional portfolio yields an economically and statistically significant annual alpha of 7.7 percent for the whole time period examined, while the alpha for the ESG portfolio is smaller in size and not statistically significant.

However, the results should be taken with precautions, since the alpha for the non–ESG portfolio is large and negative in the crisis period, although lacking the statistical significance. For further research, it might be beneficial to use weekly data in order to confirm the negative alpha for the crisis period and the possible shielding effect for the ESG portfolio during the crisis.

KEYWORDS: Socially responsible investing, Responsible investing, Corporate social responsibility, Corporate social performance, Positive screening, Portfolio management.

1. INTRODUCTION

The earth is under tremendous threat against global warming. The temperature in our planet is expected to rise by 2.5 to 10 Fahrenheit over the next century because of our actions. This will cause droughts, melting of the glaciers, rising of the sea level, extreme heat waves and many other severe problems (NASA 2017). Furthermore, given that most of the largest cities are grounded on a seaside, the thread is evident. As the environmental concerns have invaded our everyday life, investing is no exception. It is no wonder that socially responsible investing (SRI) has become more and more popular as the fight against climate change continues.

Alongside environmental issues, SRI takes into account social and governmental aspects. It seems evident that investors are willing to advocate issues they consider important in their local community as well as in the national and the international level. Well planned environmental, social and governmental (ESG) practices have become an important way for corporations to show their concerns over these issues and simultaneously capture the interest of the investors looking for responsible companies to invest in, in the global stock market.

There are many ways of evaluating the responsibility of a company. For example, the United Nations (UN) has created its own principles of responsible investing (PRI)[1]. The figure 1. illustrates the growth of signatories of these practices and the growth of the assets under management of the companies engaged. There has been a substantial growth in both, and today there are more than 1400 trillion US dollars invested worldwide using the PRI practices. (Principles of responsible investing 2016.)

[1] Principles of responsible investing (2016):
1. We will incorporate ESG issues into investment analysis and decision-making processes.
2. We will be active owners and incorporate ESG issues into our ownership policies and practices.
3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.
4. We will promote acceptance and implementation of the Principles within the investment industry.
5. We will work together to enhance our effectiveness in implementing the Principles.
6. We will each report on our activities and progress towards implementing the Principles.

Figure 1. The growth of ESG investing. (Principles of responsible investing 2016.)

Furthermore, in the US alone more than 8.72 trillion dollars under professional management are invested using SRI strategies. This means that in the US, more than every fifth dollar is invested in companies with decent ESG practices. The growth from 2014 to 2016 was 33 percent. It is clear that the SRI industry is booming and the growth is most likely to continue in the future. (USSIF 2016.)

1.1 Purpose of the study and hypotheses

As socially responsible investing has become more popular, there has been an increase in supportive academic research. There are many US based studies, as well as European and even some Nordic studies in this field. Most studies try to find differences in profitability of the ESG and conventional stocks. For example, the study of Kempf and Osthoff (2007) focuses on performance of the responsible stocks compared to their counterparts. They create a strategy of buying stocks with high responsibility ratings based on the KLD Research Analytics and sell stocks with low ratings. This simple strategy yields significant returns of 8.7 percent annually.

On the other hand Statman (2000) explores the difference of conventional and ESG stocks via index and mutual funds. The study finds that the Domini social index matches the performance of the S&P 500 between the years 1990–1998. During the same time, socially responsible mutual funds where worse off than the S&P 500 but no different than

the conventional mutual funds. Overall, the study finds little difference between the conventional and ESG stocks.

The study of Bello (2005) investigates the differences in characteristics of securities held, portfolio diversification and variable effects of diversification on investment performance between conventional and socially responsible mutual funds. The study does not find any significant differences between the two regarding any of these features. Moreover, both seem to underperform the S&P 500 and Domini 400 Social index for the sample time period from 1994 to 2001.

Nevertheless, most studies regarding Nordic countries do not examine profitability. For example, the study of Bengtsson (2008 a) examines the history of SRI in the Nordic countries while Scholtens and Sievänen (2013) examine why Scandinavian countries may differ in their socially responsible investments. They find that SRI is not a general feature of an economy, however, some factors, such as size of the pension fund industry and openness of the economy, do matter as they create more demand for SRI. Also, societies with more "feminine" values, such as Norway and Sweden, are more at ease with SRI compared to the more "masculine" countries such as Finland.

Moreover, Scholtens and Sievänen (2013) state that Denmark, Finland, Norway and Sweden share a similar government policy and a business community, both highly respected by many other countries. Furthermore, Nordic countries are ranked at the top of the Human development Index and the Environmental Performance Index year after year, making it interesting to know whether these countries also perform well regarding ESG aspects in the stock market. Also, La Porta, Lopez–de-Silanes and Shleifer (2008) note that these countries are very similar because of their Scandinavian civil law, leading to the institutional homogeneity, however, this also makes them different from countries based on French or German civil law, let alone a common law.

Additionally, Bengtsson (2008 b) emphasizes the role of institutional factors making the Nordic countries homogenous, even though the SRI practices may vary within and between the countries. Thus, despite their differences, the Nordic countries are very similar in many ways, however, there does not seem to be research regarding profitability that covers these countries altogether. Moreover, the few studies that examine the SRI profitability have been done with funds. Such as the study of Rennebook (2008), which finds that conventional Swedish funds are a better investment than their responsible peers during the sample period of 1991 to 2003. Therefore, this study tries to fill this gap in the literature, examining the profitability of ESG stocks in the Nordic countries by constructing a Nordic ESG portfolio and its matched conventional counterpart.

Despite this rather large body of academic research, no consensus has yet been achieved, and the profitability of ESG stocks in comparison to conventional ones remains unanswered. The purpose here is to examine if the ESG portfolio is more profitable than the conventional one. Factor regression analysis is used to examine the monthly returns of ESG stocks, and it is compared to that of a matched sample of conventional stocks. Then these two portfolios are examined throughout different time periods. The financial crisis is a natural breaking point for the time period examined. Thus, the final sample is divided in three sub–periods: the crisis; and times preceding, and following it.

The results of previous research regarding profitability of ESG stocks is mixed, but most studies find no significant difference the performance[2]. For example, Kreander, Gray, Power and Sinclair (2005) explore ethical funds from 40 different European countries and find no significant difference in the returns compared to the conventional funds. However, some studies indicate that ESG stocks may perform better during a crisis period in comparison to conventional stocks[3]. For example, Ducassy (2013) finds that there is a positive relationship with the corporate social performance and the financial performance in the beginning of financial crisis for French listed companies. Furthermore, there are also many studies concluding that one is better than the other, ESG stocks especially have been seen to underperform the conventional stocks in the long run[4].

This can be at least partly explained by the non–financial gains of SRI and restricted investment possibilities. For example, if most companies fail to meet the strict rules of environmental, social and governmental aspects, the investment universe can be very limited, and the investor is left with few options which automatically limit the possible combinations of stocks, and thus the potential upsides. Hence, following hypothesis are formed and tested in the study:

Hypotheses 1: *ESG stocks act as a buffer during financial crisis, mitigating possible losses.*

[2]See for example. Bello (2005); Hamilton & Statman (1993); Huimin & Roca (2010); Schröder (2005); Statman (2000); Statman & Meir (2006) and Kreander et al. (2005). More information from these studies is in the literature review.

[3]See for example. Ducassy (2013); Godfrey, Merrill & Hansen (2009); Kim, Li & Li (2014); Mitton (2002). More information from these studies is in the literature review.

[4]The conventional stocks are better: See for example. Areal, Cortez & Silva (2009); Brammer, Brooks and Pavelin (2006); Horst & Thang (2008); Leite & Cortez (2014).
The ESG stocks are better: See for example. El Ghoul, Guedhami, Kwok & Mishra (2011); Kempf &Osthoff (2007). More information from these studies is in the literature review.

Furthermore, overall profitability is examined in the second hypothesis for both portfolios. As there seems to be slightly more studies concluding that the non–ESG stocks might be more profitable than vice versa, the second hypothesis is made accordingly.

Hypotheses 2: *The Non–ESG portfolio is more profitable than the ESG portfolio.*

Thus, the two hypothesis are examined with the portfolios constructed for this purpose from the Nordic stocks.

1.2 Structure of the study

The rest of the paper is organized as follows. In section two, a brief history of SRI is introduced along with the key strategies of SRI. Section three consists of a literature review of several studies relating to the topic. The fourth section consists of the theoretical background. Also, the used assets pricing models are introduced. Section five introduces the data and methodology used in the empirical part of the paper. The sixth section presents the empirical results of the study, as well as the robustness checks. The final section consists of the conclusions, where findings of the study are summed up and discussed. Also, the possible caveats of the study and ideas for further research are introduced.

2. SOCIALLY RESPONSIBLE INVESTING

Socially responsible investing can be seen from many different perspectives[5] and usually each has its own way to define it. Green investing is a perspective taken by many environmentalists, whilst corporate social performance (CSP) is more societally oriented. SRI can be also seen as process that seeks not only financial profits but also environmental and social returns, also known as the "triple bottom line" (Hawken 2004). In this study, the environmental, social and governmental (ESG) approach is used, covering all three major parts, each of which can be further divided in subcategories. (Beal & Phillips 2005; USSIF 2014.)

Regardless of the definition, SRI aims to invest in a responsible manner that is profitable but still takes a stand in different societal aspects, usually including at least one of the ESG components. SRI is also closely related to corporate social responsibility (CSR) as investments tend to flow in companies with superior CSR practices, and companies lacking these might be excluded from funding. However, where CSR is more of a concern for the companies, SRI is that of private and institutional investors. Ultimately, SRI can be seen as a part of three components: financial gains of the investment, non–financial gains, and the change in the society brought by the investment. (Barnett & Salomon 2012; Beal & Phillips 2005.)

Furthermore, firms that have good quality CSR tend to outperform their peers, at least according to a meta–analysis of Orlitzky, Schmidt and Rynes (2004), which concludes that companies with enhanced CSP have also higher financial performance. However, it may be also that unless significant efforts are made regarding CSP, no financial gains are attained or even vice versa, as Barnett and Salomon (2012) discover the relationship between the CSP and corporate financial performance to be U–shaped. This is also why in this study the top of the class firms are used. Moreover, good CSR is also linked to lower cost of capital, which may be seen as a lower risk for these firms.

To understand all aspects of SRI, it is useful to examine utility of the investments from a perspective of an individual. The utility function in figure 2. illustrates the benefits of investing in an ethical or unethical investment. It is important to note that the investor is better off investing in an ethical way than not participating as the utility is higher. Also, the investor is worse off with an unethical investment than not participating, regardless of the outcome of the investment. (Beal & Phillips 2005.)

[5]Also known as social investing, green investing, responsible investing and sustainable investing.

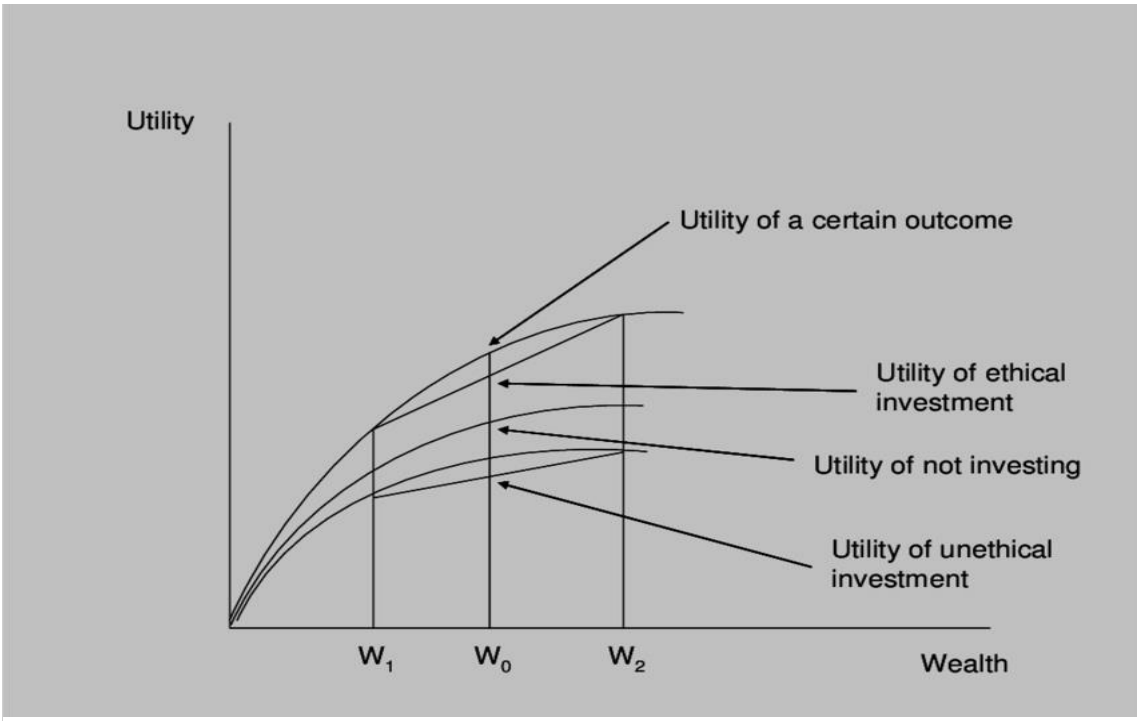

Figure 2. The utility of ethical vs. unethical investment. (Beal & Phillips 2005.)

The utility of ethical investments is therefore a sum of financial and mental gains. To understand the mental gains, the following procedure can be used. First, the ethical investment creates a kind of enjoyment, which is similar to that of gamblers' joy when they are participating in a game. Secondly, the level of perceived ethicality is added to the utility of an investment as it affects the investment decision. Lastly, the emotional gains of investing in an ethical investment are compared to that of other actions, such as watching television or playing sports. The idea behind this theory is closely related to behavioral finance and it relies on the fact that gamblers receive a certain amount of satisfaction just by participating in a game. Thus, in a similar manner just by participating in an ethical investment, the investor is rewarded. (Beal & Phillips 2005.)

2.1 History of SRI

The origins of SRI can be seen in Jewish laws as the religion prohibited investing in industries or companies, which were harmful or considered sinister in any way. In this

way, it dates back for hundreds of years as many directives how to invests ethically were discussed in the bible and the Talmud. For example, investments in alcohol distilleries, gambling or weapon manufacturers were prohibited according to the Jewish customs. Many of these negative "social screens" are still in place today. (Hawken 2004; Schueth 2003.)

Furthermore, as the Christian churches started to invest, they also emphasized the ethical investing as peace and non–violence is essential for the modern church. Furthermore, both religions have strong ethical grounds on helping the poor and distributing wealth in some way. These ideas can be seen as early forms of community investing. Thus, it can be stated that the bases of SRI is in the religious views and their practices. However, it was not until the end of 1960s when SRI became more known to the general public and a more general form of investing in a modern sense. (Hawken 2004; Schueth 2003.)

At this time, there were new important factors that increased the demand for more ethical investment practices. The awakening of the concerns about the environmental problems came simultaneously with the concerns of military actions in Vietnam and civil rights issues in the US. Later on, socially responsible investing has played a crucial role in many other crises, for example, it was also essential in the South Africa as the general public withdrew their capital from the region in the fight against apartheid. Together these forces with the unfortunate catastrophes of Exxon Valdez oil spill and Bhobal chemical disaster, among others, made the public to demand stricter CSR actions, and along came SRI. (Hawken 2004; Schueth 2003.)

In the 2000s SRI has gained more interest in every level. Furthermore, academics have been publishing a fast growing body of research regarding it. Also, the UN made its own principles of responsible investing, which was just one of the new ways for more structured and standardized methods of responsible investing. Nowadays there are several organizations advocating ESG values and socially responsible investing and the number of funds, indices and companies following ESG principles is ever growing. (Principles for Responsible Investment 2016.)

2.2 Introduction to SRI strategies

SRI can be divided in three subcategories: shareholder advocacy, community investing and screening, respectively. In shareholder advocacy, as the name implies, the purpose is to get a sufficient amount of investors behind an institute that is further influencing the corporate executives and speaking up in annual meeting to advocate shareholders' agenda.

Also, some actively performing individuals or group of individuals without institutional connections can use their power over their agenda in case their shares create a sufficient portion to gain control over the company as an owner. (Hawken 2004; Schueth 2003.)

Community investing refers to a practice where in certain low–income communities money is used to fight inequality and poverty. Investors, for example, engage in different kinds of projects economically to develop the community or give small–business loans for entrepreneurs with no access to traditional funding in order to create new businesses. (Schueth 2003.)

Screening is the most common strategy used by investors. It is further divided in negative and positive screening. The former refers to practices where certain industries are not included in the portfolio due to unethical practices. Most commonly used negative screenings are alcohol, weapons and military industries, pornography, tobacco and gaming. These are often times referred as the sin industries. Also, different kinds of negative screenings can be applied in many other ways and situations, such as divesting in oil stocks. Negative screening may lead to situations where the restrained stocks are cheaper due to their lack of demand in the markets, in case many large institutional investors are restrained to invest in them. Consequently, the capital flow in these stocks is lower as well. (Hawken 2004; Hong & Kacperczyk 2009; Schueth 2003.)

Positive screening, on the other hand, is a search for the best ESG firms. Positive screenings can vary greatly, but most common screens are the corporate governance practices, human rights and labor questions, environmental practices and sustainability. Nowadays there are several companies offering ratings according to these positive screenings, however, many also offer best–in–class qualifications for each industry regardless of its perceived sinfulness. (Hawken 2004; Schueth 2003.)

3. LITERATURE REVIEW

The academic interest towards SRI can be traced back to Moskowitz (1972); after his paper a wave of studies regarding the topic emerged. In the 2000s, new concerns about the climate change brought SRI studies in the spotlight again. After the financial crisis, there have been more emphasis in social and governmental aspects as well. Nowadays, most studies cover all the aspects of ESG. However, despite a fairly large body of academic research, there are far less studies using single stocks or a portfolio of stocks, as most research focusses on the SRI funds. Furthermore, there are many studies worldwide, but few in Nordic countries, and most of these also focus on the SRI funds. In the literature review, the studies considered most influential or most relevant about the topic are introduced.

3.1 Socially responsible investing

Index investing has been very popular in the 2000s, so naturally there are studies taking advantage of the index data. For example, Huimin and Roca (2010) matches seven SRI indices with respected benchmarks, however, no significant difference in the risk–adjusted performance can be found. Also, a study of Statman and Meir (2006) ends up in the same conclusions, as they compare four global SRI indices with the respected benchmarks. Moreover, a study of Schröder (2005) explores the differences of 29 SRI indices to their benchmarks and finds no significant difference in the risk–adjusted returns.

Furthermore, there is little difference between the performance of SRI and conventional funds for most studies conducted with funds. For example, regarding the US markets studies of Bello (2005), Statman (2000) and Hamilton and Statman (1993), among others, seem to end up with this conclusion. Also, for the UK market, no significant difference is found between conventional and SRI funds in most studies[6]. Moreover, in research covering multiple countries there is usually no difference between the two. For example, Kreander et al. (2005) explore ethical funds from 40 different European countries and find no significant difference in the returns compared to the conventional funds. However, ethical funds tend to have lower standard deviations and systematic risk.

Nevertheless, there are studies finding an underperformance for ethical funds in comparison to their conventional counterparts. Areal, Cortez and Silva (2009) find under–performance for the US and Austrian SRI funds, while other European funds show no

[6]See for example. Gregory & Whittaker (2007); Gregory, Matatko & Luther (1997); Luther, Matatko & Corner. (1992) and Mallin, Saadouni & Briston. (1995).

signs of differences between the two as they study 39 European and seven US funds between 1996 and 2008. They also state that the SRI funds are heavily exposed to growth and small–cap stocks[7]. Similarly, a study of Swedish ethical funds by Rennebook (2008) shows conventional funds defeating the ethical ones between the years 1991 to 2003. However, as the time period is divided in smaller sections, in the later period the ethical funds seem to match the performance of the conventional ones. Furthermore, a study of Renneboog, Horst and Thang (2008) uses a world–wide data of 440 SRI funds from 17 countries. The study finds an annual underperformance of 2.2. – 6.5 percent for the SRI funds with respect to conventional ones using the Capital asset pricing model.

Also, Brammer, Brooks and Pavelin (2006) find evidence of underperformance of the responsible corporations in the UK using disaggregated measures for environmental, community and employment activities. The study states that especially good performance in employment, and to some extent the environmental aspects relates to a weaker financial performance. Furthermore, the portfolio of least responsible stocks yields sizable abnormal returns. In a similar manner for the French market, Leite and Cortez (2014) find the conventional funds a better investment during normal times in comparison to SRI funds selected with negative screening. However, during a market downturn, there is no significant difference in the performance. Also, funds using positive screening do not perform any differently to their conventional counterparts despite the market conditions.

Moreover, Kim, Li and Li (2014) state that quality CSR activities reduce the stock price crash–risk during a crisis. The study of Mitton (2002) also finds evidence of good corporate governance activities shielding stock from a downside price drop during the East–Asian financial crisis of 1997–1998. Godfrey, Merrill and Hansen (2009) also confirm the shielding impact of good CSR practices against market uncertainty. Their study covering 160 different companies from 1991 to 2002 finds a negative market shocks to be less of a burden for the responsible companies than their less considerable counterparts.

In additions, El Ghoul, Guedhami, Kwok and Mishra (2011) find a positive CSR effect in the account based study between the years 1992 to 2007 covering 12 915 US companies. The results indicate that companies with good socially responsible practices have higher valuation and lower risk since these firms have lower equity costs, while “sin” firms tend to have higher ones. Furthermore, Kempf and Osthoff (2007) produce abnormal returns of 8.7 percent per annum using a simple best–in–class –strategy, buying most socially

[7]Also studies of Bauer, Koedijik & Otten (2005); Geczy, Stambaugh & Levin (2003); Gregory et al. (1997); Schröder (2004), among others, notice the small-cap emphasis.

responsible stocks and selling stocks with low rating on responsibility. Also, Barnett and Salomon (2012) see the best CSP companies yielding the best financial results. However, they note that the relationship is nonlinear, but U–shaped, as the poorest CSP companies perform better than mediocre ones.

4. THEORETHICAL BACKROUND

This chapter provides the general theory of market efficiency and introduces some of the most commonly used factor pricing models.

4.1 Efficient Market Hypothesis

The main role of capital markets is the allocation of resources and the ownership of economies capital in an effective manner. In an ideal situation the market provides accurate signals for this purpose. The efficient market hypothesis (EMH) states that all the relevant information is always reflected in the stock prices and therefore, it is not a possibility to beat the market unless excess risk is taken. This also means that there are no undervalued or overvalued stocks. (Fama 1970; Jensen 1968.)

The EMH was the cornerstone and the prevailing theory of finance for decades and it was seen to explain how the information correlated with stock prices. According to the EMH the market is always right, as on average, the investors are rational. Even if some individuals are not, their decisions tend to cancel one another. The random walk hypothesis (RWH) is closely related to the investors' inability to beat the market. The RWH states that the price changes are completely unpredictable and new information is fully and immediately reflected in the stock prices. Therefore, today's news reflects the prices today, immediately upon the news release, and tomorrow's news tomorrow despite the stock price today or further in the past. (Malkiel 2003.)

Nonetheless, the reality is often more complex than the theory. One of the most common ways to shed light to the market efficiency in real life capital markets is to further divide market efficiency according to the information and different levels of efficiency. Fama (1970) uses three distinct categories, which each adding more rules to the previous one, while still including the weaker form of efficiency. The weak–form is at the bottom, followed by semi–strong and lastly strong–form of efficiency. The relationship can be seen from the figure 3.

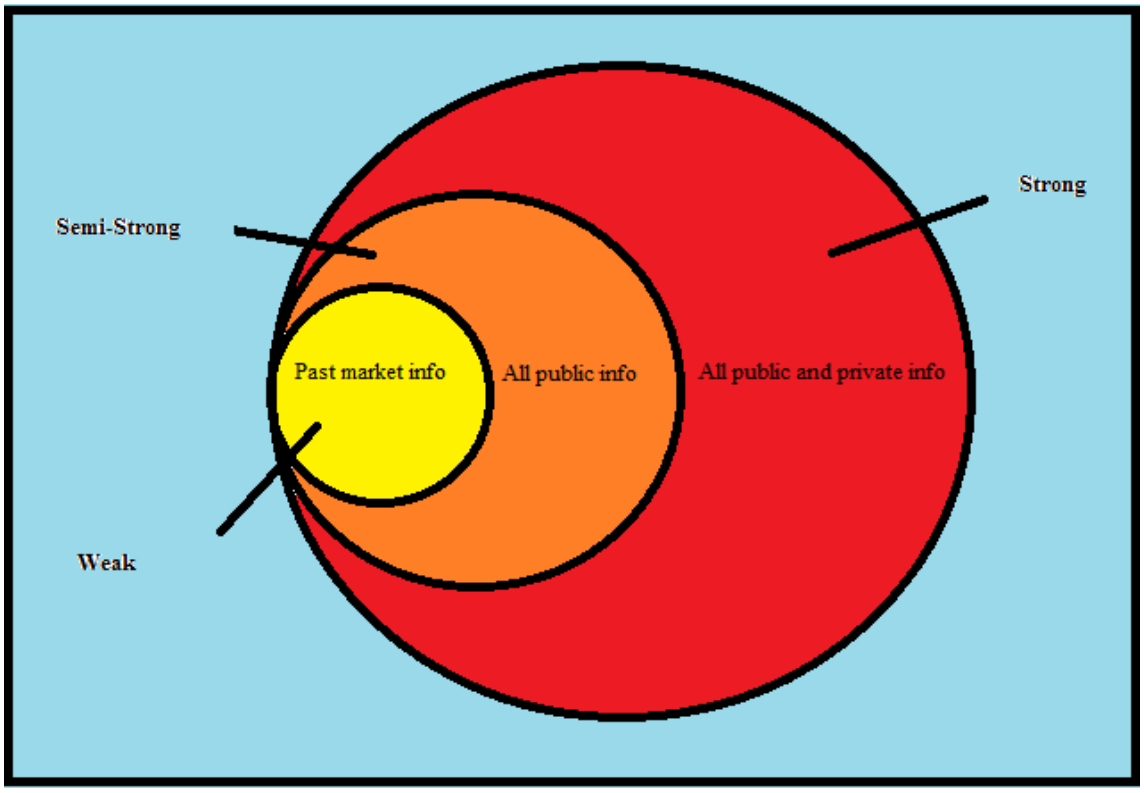

Figure 3. The forms of market efficiency. (Compare to Fama 1970.)

The three forms of market efficiency according to Fama (1970) are introduced below.

4.1.1 Weak–form of efficiency

According to the weak–form market efficiency investors cannot consistently beat the market using historical prices of securities as these are reflect in today's price. Furthermore, the future prices do not follow any predictable patterns. Therefore, the securities are following the random walk and the prices are unpredictable. However, the weak–form efficiency does not expect the securities to be correctly priced, but expects the mispricing to be short–lived. Many anomalies are often seen opposing the market efficiency even in its weakest form. However, usually when an anomaly becomes a knowledge of the general public, it diminishes, thus leading to the market to "repair" itself. For example, the January effect, which leads to abnormal return in January in comparison to other months has mostly disappeared since it became well documented in the 1970s. (De Bondt & Thaler 1987; Fama 1970; Malkiel 2003.)

4.1.2 Semi–strong form of efficiency

The semi–strong efficiency includes the weak–form and builds on it as not only historical prices, but also all the publicly available information must be available. Also, this information is immediately incorporated into the prices of the securities. However, usually it is seen that a minor delay is acceptable as long as investors cannot benefit from it. Event studies are used to examine the transmission of the publicly available information into the security prices. For example, initial public offerings and many regular reports, such as annual reports are used for this purpose. (Fama 1970; Malkamäki 1990: 37.)

4.1.3 Strong–form of efficiency

The third and the strictest form of market efficiency is the strong–form, which in addition to the public information adds the private information in the equation. Security prices are seen to reflect all the available information there is, including inside information. This does not mean that few investor could not beat the market by pure luck, as there are always few investors doing better and few worse than the market on average. However, the strong–form efficiency is more theoretical as it has not been documented in any real markets. (Fama 1970; Malkamäki 1990: 39.)

Nevertheless, Fama (1970) argues that despite real life constrains, capital markets can still be effective despite their fair share of frictions. Firstly, there would be no transaction costs in the efficient markets. This is likely to affect the number of transactions taken by market participants as high costs cut out some smaller trades, yet the security prices are still reflected correctly by all the available information. Secondly, if it is very costly for investors to obtain all the available information, it might lead to a situation where the prices do not fully reflect it. However, it can be argued that if a sufficient amount of well–informed market participants have access to the relevant information, securities are priced correctly. Thirdly, it is unlikely that all the investor would interpret information in a similar manner, consequently there is no agreement on the correct stock price. However, whether the market participants agree or disagree on the stock price, there is no inefficiency as long as some investor cannot consistently make more accurate evaluations and thus abnormal returns. (Fama 1970; Fama, Fisher, Jensen & Roll 1969; Jensen 1968.)

4.2 Common asset pricing models

In the modern finance theory the EMH still has its place, but the security prices are usually calculated with different asset pricing models. In this section, the CAPM is introduced as well as the Arbitrage pricing theory and the Fama–French three and five factor models.

4.2.1 Capital asset pricing model

The capital asset pricing model (CAPM) is probably the most known model there is. The model was first invented by Treynor in the 1960's. It is overly simplistic and being proven to provide imperfect result. Yet, due to its simplicity, CAPM and its many variations are still used by professionals all over the world. In the model, systematic risk is seen to be the major component affecting the expected returns of a security as the unsystematic risk can be diversified away. Other factors are seen as irrelevant and are not taken into account. However, the CAPM requires some assumptions to be made. (Sharpe, Alexander & Bailey 1999: 227.)

These assumptions are an identical holding horizon for all investors, commonly shared view of the economy and the way to analyze securities, that all investors are rational in a way that they choose the lowest volatility for the required rate of return, lack of taxes and transactions costs, existence of only publicly traded securities and lastly, actions of individual investors are not seen to effect the price of a security (Bodie, Kane & Marcus 2002: 264). It is evident, that these assumptions do not exist in any real markets. However, usually it is seen that the model works well enough despite the failure to meet the assumptions. (Sharpe et al. 1999: 228.)

The CAPM forms the equation for the risk–return relationship as follows:

$$(1)\ E(r_{i,t}) = r_{f_t} + \beta_i(r_{M_t} - r_{f_t}),$$

where $E(r_{i,t})$ is the expected return of a security i at time t, r_{f_t} is the risk–free rate, β_i is the beta of the security and lastly, r_{M_t} is the expected market return. (Sharpe et al. 1999: 225.)

4.2.2 Arbitrage pricing theory and factor models

The Arbitrage pricing theory (APT), which is developed by Stephen Ross in 1976, is not as restrictive in its assumptions, even though it is based on the CAPM. Instead of focusing on portfolio efficiency, the theory takes a different approach. APT is based on three main

assumptions: firstly, the returns of the security can be described with a factor model, secondly, the amount of securities is sufficient in order to diversify the idiosyncratic risk and lastly, the arbitrage opportunities are only short–lived as the well–functioning capital market will take care of them. Therefore, investors can use APT to spot arbitrage opportunities in order to increase the return of their portfolio without increasing the risk. (Bodie, Kane & Marcus 2011: 323, 324.)

In terms of risk, APT shares similar risk assumptions as the CAPM, as it faces the market risk and the firm–specific risk. Adequate diversification will remove the idiosyncratic risk but the market risk remains. A linear function is used to model the expected return of the security with the help of different factors. The factor specific beta coefficient measures the factor's sensitivity to change, as represented by Nikkinen, Rothovius and Sahlström. (2002: 78):

$$(2)\ r_{i,t} - r_{f_t} = \beta_{1,i} r_{t,\text{factor } 1} - r_f + \beta_{2,i} r_{t,\text{factor } 2} - r_f + \beta_{3,i} r_{t,\text{factor } 3} + \ldots,$$

where $\beta_{1,i}$ marks the sensitivity of the first security to the first factor, $\beta_{2,i}$ the sensitivity of the second security to the second factor and etcetera. The strength of ATP is that unlike in the CAPM, the market portfolio does not have to be identified as each investor is seen to have a unique portfolio and its respective betas. However, as a disadvantage, underlying factors nor their quantity are known. (Brealey, Myers & Allen 2011: 229.)

The most commonly used APT model is the Fama–French three factor model, developed in the year 1993 in response to the failure of the CAPM to fully explain the stock market returns. In their study, Fama and French (1993) note that macro–economic factors play an indirect role in explaining the multidimensional risks, and the stock returns are affected by multiple variables such as sales, debt and profits of the company.

The Fama–French (1993) three factor model can be interpreted as follows:

$$(3)\ r_{i,t} - r_{f_t} = \alpha_i + \beta_{iM}(r_{M_t} - r_{f_t}) + \beta_{iS} * SMB_t + \beta_{iV} * HML_t + \varepsilon_{i,t},$$

where $r_{i,t}$ is the expected return of the security/portfolio at time t, the beginning of the equations is the CAPM, as r_{f_t} serves as the risk–free rate, β_{iM} as the beta of the security/portfolio and r_{M_t} return of the market portfolio. Furthermore, SMB_t is the excess return of the Small Minus Big portfolio based on the market capitalization, HML_t is the excess returns of the High Minus Low portfolio based on the book–to–market value and the beta factors capture the size and value effect, marked as β_{iS} and β_{iV}, respectively. If the factor exposures capture all the variation in the expected returns, the intercept α_i is

zero, otherwise it marks the excess returns or returns not explained by the model. The $\varepsilon_{i,t}$ represents the error term.

The added factors over the CAPM are there to capture its shortcomings. Small cap firms with considerably high book–to–market ratio exhibit higher returns than predicted by the CAPM. Therefore, with the additional factors, small firms can be more sensitive to the changes in the market environment and the book–to–market ratios can also be taken into account.

Moreover, there are many other models which have been developed in recent years. The Fama–French (2015) five factor model is the latest asset pricing model building on the Fama–French three factor model to face the critique by Novo–Marx (2013) and others. The Fama–French five factor model adds two more factors to the equations:

$$(4)\ r_{i,t} - r_{f_t} = \alpha_i + \beta_{iM}(r_{M_t} - r_{f_t}) + \beta_{iS} * SMB_t + \beta_{iV} * HML_t + \beta_{iR} * RMW_t + \beta_{iC} * CMA_t + \varepsilon_{i,t},$$

where the equation (3) serves as the beginning, and the added factors are RMW_t as the difference between the returns on diversified portfolios of securities with Robust Minus Weak profitability and CMA_t as the difference between the returns on diversified portfolios of stocks of companies investing a little and a lot (Conservative Minus Aggressive). Again, the β factors are there to capture the variation of the expected returns with respect to a certain factor. In a similar manner, in case the factor exposures capture all the variation in the expected returns, the intercept α_i is zero and the $\varepsilon_{i,t}$ marks the error term. (Fama & French 2015.)

5. DATA AND EMPIRICAL METHODOLOGY

5.1 Data and descriptive statistics

The data consist of the NASDAQ Nordic stock market large cap stock returns series. There are no ESG stocks that passed the criteria in Iceland and Norway. Therefore, these countries are excluded from the study. This leaves us with the Finnish, Danish and Swedish stock markets. Only large cap stock are used because the Nordic markets are somewhat small and the mid–cap stocks may turn out to be quite modest in size in comparison to many other stock markets. Also, large cap stocks are more robust to analyze overtime, as they are less likely to exhibit radical changes in their ESG or other polices from one year to another. (NASDAQ a 2016.)

The descriptive statistics for the respected stock exchanges can be seen in the first table. The Swedish stock market is the most influential of the three as it dominates the number of stock listed in the exchange. Consequently, it is also more pronounced in the Nordic large Cap and the portfolios examined in this study. Furthermore, the total market Cap for Sweden is larger than the combined Danish and Finnish market Caps, being roughly 55 percent of the total market of the three countries. The Danish stock market is slightly large in size compared to the Finnish one with respect to number of stocks listed and the total market Cap.

Nordic stock exchange data				
	Danish	**Finnish**	**Swedish**	**SUM**
Total market cap (billions)	2373 DKK	209 €	6141 SEK	
In USD (billions)	342 USD	224 USD	692 USD	1258 USD
# of stocks in the exchange	141	125	310	576
# of stocks in the large cap	41	34	119	194
# of stocks in:				
ESG portfolio	7	6	15	28
% of the large cap firms	0,17	0,18	0,13	0,14
Non-ESG portfolio	8	5	15	28
% of the large cap firms	0,20	0,15	0,13	0,14

Table 1. Descriptive statistics of the Danish, Finnish and Swedish stock markets. The total market Cap and other figures as of December 2016. (Based on: Statistic from NASDAQ 2017.)

The monthly returns of the respected stock markets are obtained from the Thomson Reuters database. All values are in the USD in order to make the comparison between the different currencies easier. The time span is nearly 12 years, dating from 31.12.2004 to 31.10.2016. Thus, for each stock included in the study there are a total of 143 monthly observations. However, some of the stocks are included later on. If a stock does not have at least one year of history, it is excluded from the study. The rather short time span is due to the rapidly changing conditions of SRI. The amount invested was quite modest before the 2000's, however, the sector started to evolve drastically when the United Nations Environment Programme report stated in 2005 that it is fiduciary to include ESG issues into investment analysis (UNEP 2017). Also, the starting point at 2004 December allows the examination of the financial crisis with sufficient amount of data before and after the crisis.

For the robustness, a Nordic index of Danish, Finnish and Swedish large cap stocks is created. Data for this index is obtained from the individual large cap country indices from the MSCI database. The simple average of the monthly index returns of each respected country is added together and divided by three to get the compounded monthly returns for the large cap stocks. In this ways, a more general Nordic index is created to better capture the movement of the large cap stocks in the examined countries. Also the Nordic index uses monthly data in the USD for the respect time period. (MSCI 2017.)

The descriptive statistics for the two portfolios examined and the used benchmark indices can be seen from the table 2. and their monthly returns series are in the figure 4.. The return series follow a similar path for both ESG and non–ESG portfolios, from the benchmarks the Nordic index seems to be slightly more similar to the portfolios examined. Similar observations can be seen from the descriptive statistics. It seems that the mean and median values are more positive for the non–ESG than the ESG portfolio, but both seem to beat the indices. However, also the skewness and standard deviations are much higher. The indices exhibit negative skewness while the examined portfolios positive. The Jarque–Bera values are high for all series, leading to rejection of the normal distributions.

Descriptive statistics for the portfolios and indices used				
	ESG_RF	**NESG_RF**	**MKT_RF**	**NORDIC_RF**
Mean	0,858	1,213	0,420	0,274
Median	0,659	1,280	0,680	0,475
Maximum	31,181	33,468	13,860	20,408
Minimum	–24,760	–22,626	–22,170	–23,123
Std, Dev,	7,081	7,214	5,576	6,268
Skewness	0,140	0,274	–0,608	–0,408
Kurtosis	6,045	5,980	4,577	5,157
Jarque–Bera	55,317	54,336	23,462	31,473
Probability	0,000	0,000	0,000	0,000
Sum	121,879	172,301	59,710	38,934
Sum Sq, Dev,	7070,229	7338,011	4383,979	5539,092
Observations	142	142	142	142

Table 2. Descriptive statistics of the portfolios. The ESG and the Non–ESG (NESG) portfolios and the two benchmark indices: the combined Danish, Finnish and Swedish large cap stocks (NORDIC) and the overall European market (Mkt), respectively. All indices are net of the risk–free rate (rf).

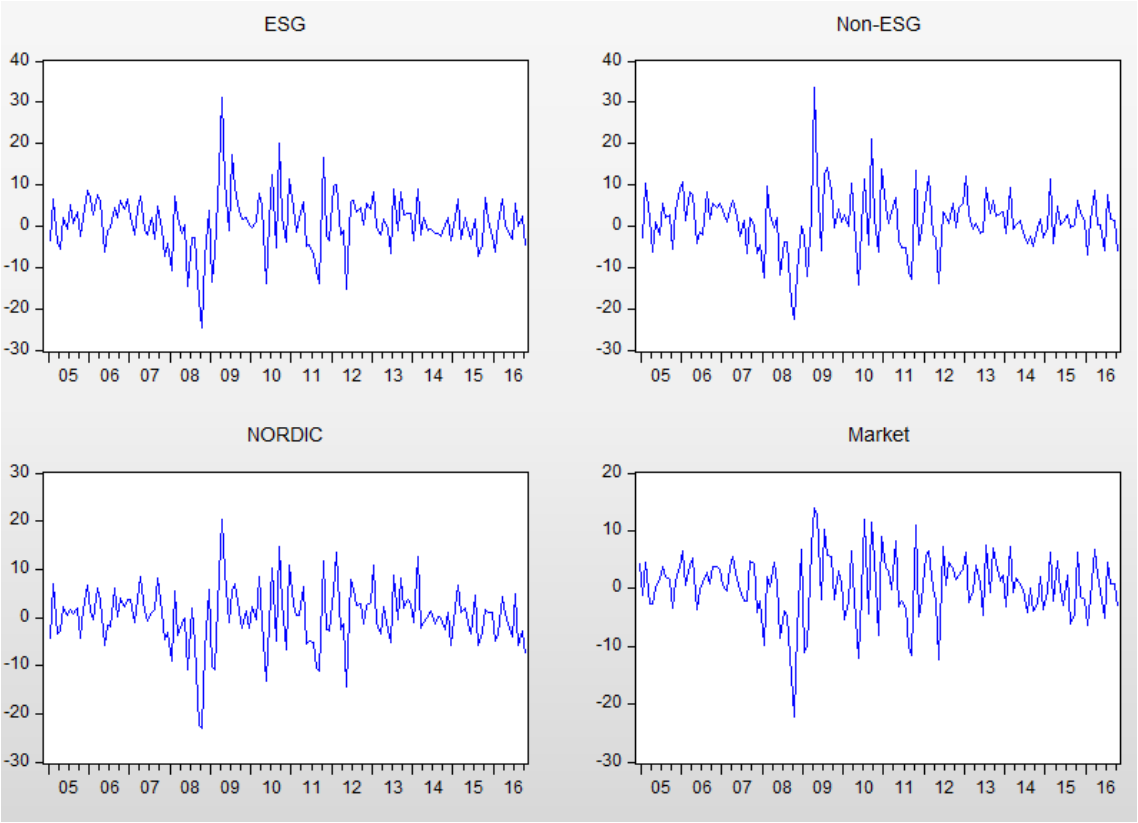

Figure 4. Return series. The monthly returns of the ESG and the non-ESG portfolios and the two benchmark indices: the combined Danish, Finnish and Swedish large cap stocks (NORDIC) and the overall European market (Market), respectively. All indices are net of the risk-free rate (rf).

5.2 Portfolio construction

There are many ways to evaluate the environmental, social and governmental practices of a company. In this study, two well established ratings providers are used. The RobecoSAM has been providing the Dow Jones Sustainability Index (DJSI) series since 1999. Every year they assess roughly 3,400 companies around the world to pick best–in–class companies, as well as construct several indices based on their evaluation. Another well know information provider is the STOXX®. Their Global ESG leaders index provided by Sustainalytics is picking the leading companies in Europe in the field of ESG. (RobecoSAM 2016; STOXX 2016; Sustainalytics 2016; S&P Dow Jones Indices 2016.)

In this study, the ESG Nordic portfolio is made manually, as is the matched sample portfolio with non–ESG stocks, applying the general matching principles [8]. The

[8]See for example. Altman 1968; Capelle–Blancard & Monjon 2014; Ritter 1991.

construction of the ESG portfolio is twofold. First, stocks are sorted into portfolios according to their status in the DJSI Invited Universe 2016. If the stock is included in the DJSI World or Europe index or both, it is seen as an ESG stock. Secondly, a double screening is used to get a more robust sample of the ESG stocks. For this purpose, the STOXX® Global ESG Leaders index is used. All the companies listed in the index from the Nordic countries are compared to those of the DJSI sample, and only the ones included in both are accepted in the Nordic ESG portfolio used in this study. In this way, a robust sample of firms with excellent ESG practices is created. Some of the stocks have different share classes based on voting rights. If a stock has multiple series, the one with the highest trading volatility is used. (RobecosSAM 2016; STOXX 2016; Sustainalytics 2016; S&P Dow Jones Indices 2016.)

The non–ESG portfolio is constructed from the large cap Finnish, Swedish and Danish stock as well. All the stocks included in either the DJSI or STOXX® ESG sample are excluded. In order to get a robust match for each ESG stock, it is matched manually with a non–ESG stock with the same ICB code, preferably within the same subsector. If this is not possible, then within the same sector or ultimately within the same supersector[9], which are the first subcategories under the main sectors.

Also, if possible, the stock style analysis is used to better match the stocks; e.g. pairing growth stock with growth stocks and value stock with value stocks. However, as the Nordic market is quite small, some industries provide few or no ESG stocks or lack the potential counterpart for one. Therefore, all the ESG stocks cannot be matched, for example the Oil and Gas industry, as well as the Consumer Services are not included in the study due to these problems. The list of the matched stocks can be found from the appendix. (NASDAQ a 2016; NASDAQ b 2016.)

Ones the stocks are divided into the two portfolios, the monthly change of the average returns of each portfolio is calculated. As the time span of the study is rather long, there are some stock that are included in the study later on. In the beginning there are 22 pairs of stocks and in the end 28, respectively. The ESG stock and its counterpart are naturally added in the same month, so that each portfolio have the same amount of stocks at all times.

[9]List of the used supersectors can be found from the appendix. The NASDAQ main categories are Oil and Gas, Materials, Industrials, Consumer Goods, Consumer Services, Health Care, Telecom, Utilities, Financial and Technology.

5.3 Methodology

In this study, Eviews is used for the regression analysis and Excel for editing the data. Least Squares corrected with HAC Newey–West covariance method are used in the regressions. The CAPM and the Fama–French (FF) five factor model is used to examine the two portfolios and their differences. The data for the ESG and the non–ESG portfolios is constructed manually as stated above and the data for the monthly European factors is taken from Kenneth French' website[10]. The monthly returns over the risk–free rate for each portfolio is run individually against the CAPM and the five factor model to see how well the factors capture profits generated by the portfolio, as well as any excess returns not explained by the factors, noted as an alpha. Moreover, the difference between the profits of the ESG and the non–ESG portfolio is examined in a similar manner.

The sample runs from December 2004 to October 2016 and it is further divided in three sub–periods. Financial downturn has been seen to affect differently the ESG and conventional stocks[11]. Therefore, the financial crisis is a natural way to divide the sample according to the turbulence in the market into the pre–crisis, crisis and post–crisis periods. This also allows the isolation of the impact of the crisis, as well as the examination of the differences between the respected portfolios during the different sub–periods.

Correlations coefficients between the independent variables					
	MKT_RF	**SMB**	**HML**	**CMA**	**RMW**
MKT_RF	1				
SMB	–0.023	1			
HML	0.536	–0.013	1		
CMA	–0.291	–0.253	–0.225	1	
RMW	–0.390	–0.114	–0.776	–0.165	1

Table 3. The Correlation coefficients between the independent variables.

The table 3. presents the correlations coefficients between the FF five factor model independent variables. For the most part, there are no significant correlations between the

[10]http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

[11]See for example: Grigoris (2011), Kim et al. (2014), Leite & Cortez (2009), Mitton (2002), Souto (2009).

variables, but the RMW and the HML factors seem to be somewhat negatively correlated. However, this is not all that worrisome as dropping one or few of the factors seems to have only small impact on the main results. The regressions with only some of the factors are not included in the study as they provided little useful information.

6. EMPIRICAL RESULTS

The empirical results are presented in this chapter. Firstly, the CAPM is used to get the general idea of the results. Secondly, the main results of the study are introduced as the Fama–French (FF) five factor model regressions are run against the European factors, followed by the split sample results taking into account the financial crisis. Lastly, several robustness checks are performed, for example regressing the portfolios against the composed Nordic (Danish, Finnish and Swedish) large cap stock market index.

6.1 CAPM regression results

Table 4. introduces the general CAPM result for the whole sample. The whole time period yields no significant alpha for the ESG portfolio, and a monthly alpha of 0.0073 percent (0.731 BPS) for the non–ESG portfolio at 1 percent significance level using the CAPM. The market factor is significant and similar for each portfolio, being slightly larger than one. The goodness–of–fit is rather good based on the r–squared, ranging from 0.786 to 0.845.

To get a more robust idea of the result, the CAPM regression is split for three time periods. The financial crisis affected the stocks markets all over the world, and the Nordic stock market was no exception. Thus, the financial crisis is used to split the sample in three. Throughout this study, the starting point for the financial crisis is marked as July 2007 and the end of the crisis as April 2009 with the strong uplift in the stock market. Table 5. introduces the split sample results.

CAPM Regression results		
	ESG	**Non-ESG**
a	0.367 (1.59)	**0.731***** (2.89)
Mkt	1.168*** (23.60)	1.147*** (20.10)
R2	0.845	0.786

Table 4. The CAPM results with the FF European market benchmark. The sample runs from December 2004 to November 2016. ESG is the environmentally, governmentally and socially responsible Nordic stock portfolio and non–ESG its conventional counterpart. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. The results are in basis points (BPS). The t-Statistics are in the parentheses.

CAPM split sample regression result						
	Pre–crisis		**Crisis**		**Post–crisis**	
	ESG	**Non–ESG**	**ESG**	**Non–ESG**	**ESG**	**Non–ESG**
a	0.071 (0.17)	0.556 (1.49)	-0.517 (-0.51)	-1.723* (-1.82)	0.510* (1.88)	**0.968***** (3.07)
MKT	1.342*** (11.28)	1.434*** (10.72)	1.084*** (14.09)	0.898*** (7.22)	1.170*** (16.03)	1.176*** (13.45)
R2	0.783	0.738	0.864	0.760	0.829	0.792

Table 5. The CAPM split sample results with the FF European market benchmark. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. The results are in basis points. The t-Statistics are in the parentheses.

It can be seen that the European market beta is highly significant at all times for both portfolios. It shows how sensitive the portfolios' excess returns are with respect to the excess returns of the market. The market beta is rather high in the pre–crisis period, closer to one in the crisis period and slightly higher again after the crisis. The non–ESG portfolio seems to have a bit more volatile relationship with the market beta, but the pattern is fairly similar for both portfolios.

Both portfolios have a positive pre–crisis alpha, yet it is not statistically significant for either. However, during the crisis the alpha turns negative for both, the non–ESG portfolio yielding –0.01723 percent (–1.723 BPS) per month at 10 percent significance level. After the crisis both portfolios show a positive alpha, while result for the ESG portfolio are weaker in both economic and statistical sense, the non–ESG portfolio yields a highly significant alpha of 0.00968 percent (0.968 BPS) per month. The R2 values, measuring the goodness–of–fit of the model, are decent ranging from 0.738 to 0.864.

6.2 The Fama–French five factor model main results

The FF five factor model is used to regress the ESG and the non–ESG portfolio returns against the European factors. Table 6. presents the main results for the whole time period examined. The ESG portfolio does seem to yield a positive alpha, but it lacks the significance. However, the non–ESG portfolio yields a significant alpha of 0.0062 percent (0.620 BPS) on monthly basis (7.7[12] percent annually). There does not seems to be

[12]Calculated as (1+0.0062)^12-1=0.0769. The same method is used for the other annualized returns.

significance on the difference of the two, even though the magnitude is correct. The model explains rather well the portfolios examined at least according to the R–squared, indicating approximately 85 percent goodness–of–fit for both.

FF regression result from 2004M12 to 2016M10							
	a	**MKT**	**SMB**	**HML**	**RMW**	**CMA**	**R2**
ESG	0.386 (1.64)	1.10*** (15.98)	0.142 (1.03)	0.162 (0.45)	0.097 (0.33)	-0.530 (-1.51)	0.857
Non–ESG	**0.620***** (3.23)	1.105*** (12.37)	0.797*** (6.54)	0.107 (0.09)	0.023 (0.32)	-0.374 (-1.14)	0.841
Difference	-0.235 (-1.27)	-0.002 (-0.03)	-0.655** (-6.49)	0.055 (0.38)	0.074 (0.35)	-0.160 (-0.95)	0.213

Table 6. The general FF five factor result for the whole time period. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. The results are in basis points. The t-Statistics are in the parentheses.

Overall, it seems that with the exception of the overall market returns, few of the FF five factor model components are significance even at 10 percent level. According to the market factor, both portfolios are slightly more aggressive than the market as a whole. Furthermore, the SMB factor loadings are positive for both, and especially the non–ESG factor exhibits statistical significance and the portfolio seems to behave much like a small cap portfolio. This is interesting, since only large cap stocks are used. However, the FF factors are European, and thus the Nordic large cap companies may just be smaller in size in comparison to the European market as a whole.

6.3 The Fama–French five factor model split sample results

Table 7. presents the split sample regression results. Now, the FF five factor model is used to examine the two portfolios for different time–periods. There is a positive alpha for the ESG portfolio before and after the crisis, nevertheless, the excess returns turn negative during the crisis. However, these results lack any statistical significance. Furthermore, only the market factor seems to be consistently significant at all time periods for the ESG portfolio. The portfolio is more aggressive before and after the crisis, whilst during the crisis the portfolio gets marginally defensive. With few exceptions, the other

FF factors do not prohibit any significance.

FF five factor regression result with split sample								
		a	**MKT**	**SMB**	**HML**	**RMW**	**CMA**	**R2**
ESG	Before Crisis	0.622	1.304***	-0.024	-0.619	-0.959*	-0.658	0.825
		(1.03)	(7.54)	(-0.07)	(-1.27)	(-1.15)	(1.03)	
	During Crisis	-0.141	0.961***	0.322	0.845	0.795	-0.428	0.878
		(-0.17)	(9.05)	(1.12)	(1.67)	(0.87)	(-1.41)	
	After Crisis	0.402	1.136***	0.183	0.245	0.249	-0.702**	0.846
		(1.38)	(13.48)	(1.04)	(0.57)	(0.72)	(-1.40)	
Non–ESG	Before Crisis	**1.20*****	1.436***	0.240	-0.112**	-0.778**	-0.620	0.778
		(2.49)	(8.72)	(0.65)	(-2.14)	(-2.39)	(-1.42)	
	During Crisis	-0.897	0.700***	0.549*	0.205	-0.163	-0.989**	0.860
		(-1.10)	(5.10)	(1.77)	(0.48)	(-0.16)	(-3.09)	
	After Crisis	**0.621*****	1.180***	0.907***	0.226	0.247	-0.515	0.851
		(2.27)	(15.40)	(6.46)	(0.52)	(0.77)	(-1.00)	
Difference	Before Crisis	-0.582	-0.119	-0.256	-0.497	-0.180	-0.0288	0.087
		(-1.23)	(-0.91)	(-1.90)	(1.25)	(-0.52)	(-0.06)	
	During Crisis	0.748	0.259	-0.232	0.631	0.946	0.560	0.297
		(0.74)	(1.64)	(-0.84)	(0.71)	(0.54)	(1.06)	
	After Crisis	-0.219	-0.044	-0.724***	0.018	0.002	-0.187	0.299
		(-1.02)	(-1.19)	(-5.82)	(0.15)	(0.01)	(-1.10)	

Table 7. The FF five factor split sample results. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. The results are in basis points. The t-Statistics are in the parentheses.

The non–ESG portfolio, on the other hand, exhibits significant abnormal returns before and after the crisis. However, the crisis periods is time of negative excess returns, yet without any significance. Before the crisis, the abnormal returns are as high as 0.012 percent (1.20 BPS) monthly (15.4 percent annually[13]), while there is a large drop in the alpha after the crisis to a more moderate 0.00621 percent (0.621 BPS, 7.7 percent annually). The market factor loadings are also highly significant at all time periods, exhibiting similar pattern as the ESG portfolio: defensive during the crisis, otherwise aggressive. Other factors do not show all that consistent nor significant patterns across different periods examined. However, the SMB factor indicates that the non–ESG portfolio might be more exposed to small cap stocks, at least after the crisis.

The goodness–of–fit measured by R–squared remains high for the ESG and non–ESG portfolios for the split sample, ranging from 78 to 88 percent. However, the difference

[13]Calculated as (1+0.012)^12-1=0.1538.

portfolio exhibits low R–squared values. Furthermore, despite the highly significant difference in the SMB factor after the crisis, there are no signs of significance for other factor loadings for the difference portfolio.

6.4 Robustness checks

6.4.1 Regressions against the Nordic large cap

The European market might be too broad an area when choosing the benchmark index for the Nordic portfolios examined in the study. Therefore, as a robustness check, a Nordic large cap index is made from the Danish, Finnish and Swedish large cap stocks, and the ESG and non–ESG portfolios are examined against it with the CAPM. The Nordic index is constructed as stated in the data section.

CAPM Regression result against the Nordic large Cap						
	Pre–crisis		**Crisis**		**Post–crisis**	
	ESG	**Non–ESG**	**ESG**	**Non–ESG**	**ESG**	**Non–ESG**
a	0.653 (1.47)	**1.21**** (2.64)	-0.600 (-0.62)	-1.843 (-1.52)	**0.700**** (2.44)	**1.155***** (3.45)
Nordic	1.035*** (14.16)	1.080*** (10.97)	0.951*** (12.39)	0.775*** (8.05)	1.074*** (14.44)	1.086*** (12.59)
R2	0.794	0.712	0.870	0.740	0.857	0.828

Table 8. The CAPM regression result against the Nordic large cap. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. The results are in basis points. The t-Statistics are in the parentheses.

The table 8. shows that changing the benchmark index does have an effect on the results. While the R2 level do not differ significantly between the Nordic and European benchmarks, there are differences in the market beta values, as the Nordic benchmark is less volatile for both portfolios, and close to one for all periods examined here, with the exception of crisis period for the Non–ESG portfolios.

Furthermore, the Non–ESG portfolio alphas are large and significant before and after the

crisis, while ESG portfolio shows significance only after the crisis with a positive alpha. Both portfolios have a negative alpha during the crises, again more so for the non–ESG portfolio. Yet, they lack the statistical significance. The main differences between the benchmarks is that with the Nordic benchmark, the pre–crisis alpha is significant for the non–ESG portfolio, while the alphas lose any significance for the crisis period and the ESG portfolio shows a more robust alpha after the crisis. To sum up, while there are differences between the benchmark indices, the main result of the FF five factor model can be mostly confirmed using either.

6.4.2 Diagnostic tests

Serial correlation violates the standard assumptions of the regression theory. At worst, this may cause the Ordinary Least Squares (OLS) estimations to be biased and inconsistent as the standard errors and T–statistic may be invalid. Therefore, the Breusch–Godfrey Serial Correlation LM –test is performed in order to spot serial correlation in the model. The results do not seem to be all that worrisome, but for a precautionary measures, serial correlation is corrected in the regressions. The full results of the test can be found from the appendix.

Another common problem with regression models is heteroscedasticity. The White test is performed to spot the heteroscedasticity in the regression model. In fact, heteroscedasticity is found for both portfolios as the null hypothesis of homoscedasticity is rejected. This means that the error terms should be adjusted. The White test result can be find from the appendix.

All the regression performed in the previous chapter are improved in Eviews using the HAC standard errors and covariance correction option (Bartlett kernel, Newey–West fixed), which should take care of any heteroscedasticity and autocorrelation problems. This is a standard procedure in regression analysis and should not affect the results all that much. The OLS regression without the corrections can be found from the appendix, but there are not that significant differences to the corrected ones. In short, with the corrections, some of the already vague Fama–French factors lose their significance while the non–ESG portfolio returns are still superior in comparison to the ESG portfolio.

7. CONCLUSIONS

7.1 Conclusions of the study

This study examines the SRI investing in the Nordic countries. Overall, the study contributes to the existing literature in a few important ways. Firstly, while SRI has been widely studied in the world, the Nordic countries have had less attention, especially in terms of profitability. Secondly, the previous studies are mostly concentrated on the difference between SRI and conventional funds or the effects of CSR practices for the firm profitability. This study, however, creates an ESG portfolio based on the most advanced companies in Denmark, Finland and Sweden, allowing the comparison of a Nordic ESG stock portfolio to its matched conventional counterpart. Thus, the relevant information about the profitability of ESG stocks in the Nordic markets is discovered. The following hypotheses were examined.

Hypotheses 1: *ESG stocks act as a buffer during financial crisis, mitigating possible losses.*

Overall, it seems that the research supports the first hypothesis; ESG stocks might act as a buffer in comparison to conventional stocks during a crisis periods. It can be seen from the regression performed in this study that the non–ESG portfolio has additional negative returns compared to the ESG portfolio during the crisis. However, only the CAPM with European market factor can find some statistical significance to back up the buffer effect. Also, this difference is insignificant when the Nordic market benchmark is used. Moreover, the FF five factor model does not seem to capture any significant differences between the two portfolios during the crisis. Therefore, the hypothesis one is rejected due to the lack of statistical significance.

Hypotheses 2: *The non–ESG portfolio is more profitable than the ESG portfolio.*

Hypothesis two, however, is supported by the regressions done in the study. The CAPM results indicate strong and statistically significant alpha for the non–ESG portfolio after the crisis and for the time period as a whole. However, during and before the crisis the results are more mixed. The ESG portfolio is also associated with statistically significant alpha after the crisis, especially with the Nordic benchmark. However, the FF five factor regressions do not show support for any statistical significance for the ESG portfolio alpha.

Moreover, the crisis period is mostly lacking statistical significance for either portfolio.

However, especially the FF five factor regressions show strong evidence of statistically and economically significant alpha for the non–ESG portfolio before and after the crisis. Furthermore, the non–ESG portfolio yields an annual alpha of 7.7 percent for the time period as a whole. Thus, taken together all the evidence provided by the regressions, it can be stated that the non–ESG portfolio outperforms the ESG portfolio and yields a positive alpha, at least for the non–crisis periods. Therefore, the hypothesis two is confirmed for the time period as whole and for the non–crisis periods.

7.2 Discussion regarding the conclusions

Regarding the second hypothesis, it seems that the substantial alpha for the conventional portfolio is in line with studies of Rennebookg et al. (2008) and Brammer et al. (2006), among others. Also, the small cap emphasis of the non–ESG portfolio is very interesting, as some previous studies[7] indicate that the ESG portfolio might be exposed to it, but not the conventional one. This indicates that the Nordic stock market might be different in comparison to other markets in some way. Also, it would be interesting to know why the large cap stocks behave in this manner. One possible explanation is that the European benchmark index is constructed form overall larger stocks than the Nordic large cap stocks. However, no such emphasis can be seen for the ESG portfolio. Thus, it can be that the two portfolios differ in some other way than ESG wise, although the stocks have been paired with the closest match.

Regardless of differences between the portfolios, the results can be interpreted in a way that one should not use positive screenings, not even best–in–class –approach in the Nordic stock market, at least for the sake of excess returns. This of course does not mean that investors could not benefit in other ways as they participate in the ESG investing. Even though the first hypothesis is rejected, the result indicate that the ESG portfolio might perform better during the crisis in comparison to the non–ESG portfolio. In accordance, a similar pattern about the buffer effect can be found as in many previous studies[3].

Regarding the first hypothesis, the possible buffer effect is easily understood. It is reasonably evident that in an economic down turn, companies with good reputation and solid ESG practices are less likely to face any funding constrains, since investors may be in it for the good cause and not only for the financial profits. Also, sound CSR practices are likely to erode any unethical or even criminal behavior, which might lead to substantial losses when this behavior is exposed. Although this study fails to confirm the

buffer effect it does not mean it could not exist.

To sum up, the non–ESG portfolio is more profitable compared to the ESG portfolio. However, whether the results are due to the restricted investment options for the SRI investors, or the fact that SRI investors might get investments gains not measured in the profits, but in the overall satisfaction as participating in a good cause or any other reasons, is out of the scope of this study.

7.3 Possible caveats of the study and ideas for further research

As it can be seen from the main result, the non–ESG portfolio provides a statistically and economically significant alpha. However, the alpha seems to get large and negative during the financial crisis. The lack of statistical significance is an issue, but this negative alpha partly offsets the positive alpha created in the non–crisis periods. The use of monthly data might not be suitable for such a short period examined as the financial crisis, and therefore, it might be beneficial to redo the study with weekly data to confirm the negative alpha and the possible buffer effect of the ESG portfolio over the non–ESG portfolio during the crisis. However, weekly data is out of the scope of this study. Moreover, both portfolios are constructed by hand and might contain some errors due to data handling or other issues. Therefore, the results should be interpreted with precautions.

Furthermore, the construction of the ESG portfolio is done using the RobecoSAM DJSI index and the STOXX® Global ESG leaders index data as of November 2016. Therefore, any additions or deletions from the indices before or after this month are not taken into consideration. However, this might not be such a big problem, because to be added in the indices in the first place, a sound history of good ESG practices is needed. Furthermore, as only large cap companies are included, any radical shifts in the ESG policies are less likely to occur during the period examined here. Yet, the data might be more reliable after the financial crisis, as the number of stocks included in the study is larger and the ESG policies are more likely to reflect their current state in the company.

Moreover, both indices used to construct the ESG portfolio use their own best–in–class –approach, yet not limiting the companies to just one, but few companies best in a certain sector. This means that with different screening techniques, for example negative screening, the result would have been different. Also, the selection of stocks used might not be a fully representable sample of the Nordic ESG stock market. For example, the Swedish stocks are dominant in the sample. Also, the industries are not evenly distributed as industrial goods and services make up a notable portion of the sample. However, these

notions are also somewhat in line with the general picture of the Nordic stock markets; the Swedish stock market is the dominate one in size and volume, and Sweden is one of the leading countries regarding SRI. In addition, the industrial goods and services is a dominate industry in the Nordic countries, thus, representing the true investment opportunities.

The construction of the matched sample non–ESG portfolio is also a possible concern. For some companies, the matched counterpart might not share the same risks and market reactions to events or news. Therefore, the matched stocks might act differently because of other differences between the stocks than the mere ESG practices. Also, the Nordic market is rather small, so not all qualified ESG stocks can be used in the study due to the lack of solid counterparts. However, the use of general matching principles is likely to limit the problems created by the portfolio construction.

All in all, the popularity of SRI is rising as the ESG aspects are becoming more and more important for investors. There are already a rather large body of research done from the topic, but the result are still mixed. Naturally, this study is not concluding the matter permanently in one way or another. Also, the field is still evolving because of the rapidly changing market conditions and growing number of new players. Moreover, there is still no unity about the basic concepts; what is viewed as responsible investing might differ from one study to another. Therefore, more robust and universal way to define ESG stocks might be beneficial for any future research. Also, it might be interesting to study why investors choose ESG stocks and whether they view their profits in a similar manner compared to their conventional counterparts.

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APPENDIX

1. The ESG and the non–ESG portfolios by pairs.

The ESG and the non–ESG portfolio pairs					
Industry	**ESG portfolio**		**Non–ESG portfolio**		
ICB	**Name and series**	**Country**	**Name and series**	**Country**	**Date added**
1700	STORA ENSO 'R'	FI	METSA BOARD 'B'	FI	12/2004
1700	UPM–KYMMENE	FI	HOLMEN 'B'	SWE	12/2004
1700	BOLIDEN	SWE	SSAB 'A'	SWE	12/2004
2300	ASSA ABLOY 'B'	SWE	SWECO 'B'	SWE	12/2004
2700	KONE 'B'	FI	CARGOTEC 'B'	FI	6/2005
2700	Metso	FI	INDUTRADE	SWE	12/2004
2700	WARTSILA	FI	ABB 'A'	SWE	12/2004
2700	ALFA LAVAL	SWE	FINGERPRINT CARDS 'B'	SWE	12/2004
2700	ATLAS COPCO 'A'	SWE	DSV 'B'	DEN	12/2004
2700	SANDVIK	SWE	LIFCO B	SWE	11/2014
2700	SKF 'B'	SWE	A P MOLLER 'B'	DEN	12/2004
2700	VOLVO 'B'	SWE	NKT	DEN	12/2004
3500	CARLSBERG 'B'	DEN	ROYAL UNIBREW	DEN	12/2004
3700	ELECTROLUX 'B'	SWE	FISKARS 'A'	FI	12/2004
3700	SWEDISH MATCH	SWE	DOMETIC GROUP	SWE	11/2015
3700	SCA 'B'	SWE	NOBIA	SWE	12/2004
4500	COLOPLAST 'B'	DEN	H LUNDBECK	DEN	12/2004
4500	NOVO NORDISK 'B'	DEN	NOVOZYMES	DEN	12/2004
4500	CHR HANSEN HOLDING	DEN	WILLIAM DEMANT HLDG	DEN	5/2010
6500	TDC	DEN	COM HEM HOLDINGS	SWE	6/2014
8300	DANSKE BANK	DEN	SAMPO 'A'	FI	12/2004
8300	NORDEA BANK	SWE	LATOUR INVESTMENT 'B'	SWE	12/2004
8300	SEB 'A'	SWE	LUNDBERGFORETAGEN 'B'	SWE	12/2004
8300	SVENSKA HANDBKN.'A'	SWE	RATOS 'B'	SWE	12/2004
8300	SWEDBANK 'A'	SWE	WALLENSTAM 'B'	SWE	12/2004
8500	TRYG	DEN	TOPDANMARK	DEN	9/2005
9500	NOKIA	FI	TIETO OYJ	FI	12/2004
9500	ERICSSON 'B'	SWE	AXIS	SWE	12/2004

2. Number of companies from each industry in the portfolios. (ICB Rules 2016.)

Number of pairs from each industry		
ICB	**Name of the supersector**	**Number of companies**
1700	Basic resources	3
2300	Construction & Materials	1
2700	Industrial goods & services	8
3500	Food & Beverages	1
3700	Personal & Household goods	3
4500	Health care	3
6500	Telecommunications	1
8300	Banks	5
8500	Insurance	1
9500	Technology	2
SUM		28

The following supersector are not included in the study due to data limitations and/or lack of stocks passing the criteria to be added in to the ESG portfolio: 1300 Chemicals, 3300 Automobiles & Parts, 5300 Retail, 5500 Media, 5700 Travel & Leisure, 7500 Utilities, 8600 Real Estate.

3. Number of stocks in the portfolios according to the country of origin.

Stocks by country	
ESG	**Stocks**
SWE	15
FIN	6
DEN	7
Non–ESG	**Stocks**
SWE	15
FIN	5
DEN	8

4. Heteroscedasticity test: White. First the ESG portfolio followed by the non–ESG portfolio.

Heteroskedasticity Test: White			
F-statistic	7.886997	Prob. F(20,121)	0.0000
Obs*R-squared	80.35831	Prob. Chi-Square(20)	0.0000
Scaled explained SS	174.6911	Prob. Chi-Square(20)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/12/17 Time: 17:14
Sample: 2005M01 2016M10
Included observations: 142
White heteroskedasticity-consistent standard errors & covariance

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.848027	1.477578	0.573930	0.5671
MKT_RF^2	0.116618	0.072005	1.619588	0.1079
MKT_RF*HML	-0.285543	0.367861	-0.776227	0.4391
MKT_RF*SMB	-0.018788	0.175172	-0.107255	0.9148
MKT_RF*RMW	0.222732	0.301223	0.739428	0.4611
MKT_RF*CMA	0.543655	0.368149	1.476727	0.1423
MKT_RF	0.218664	0.278227	0.785919	0.4335
HML^2	1.079928	0.630013	1.714136	0.0891
HML*SMB	0.093350	0.617659	0.151135	0.8801
HML*RMW	0.297544	1.309206	0.227270	0.8206
HML*CMA	-3.910293	1.360528	-2.874100	0.0048
HML	1.358729	1.086388	1.250685	0.2135
SMB^2	-0.036238	0.275843	-0.131372	0.8957
SMB*RMW	0.227883	0.656406	0.347168	0.7291
SMB*CMA	-0.252911	0.775777	-0.326010	0.7450
SMB	0.585128	0.530709	1.102540	0.2724
RMW^2	0.447346	0.789399	0.566692	0.5720
RMW*CMA	-1.490890	1.241297	-1.201074	0.2321
RMW	1.196635	1.035479	1.155635	0.2501
CMA^2	1.332232	0.755226	1.764019	0.0803
CMA	-2.595432	1.688414	-1.537202	0.1269

R-squared	0.565904	Mean dependent var	7.129058
Adjusted R-squared	0.494152	S.D. dependent var	15.57583
S.E. of regression	11.07799	Akaike info criterion	7.783537
Sum squared resid	14849.36	Schwarz criterion	8.220666
Log likelihood	-531.6311	Hannan-Quinn criter.	7.961168
F-statistic	7.886997	Durbin-Watson stat	2.253088
Prob(F-statistic)	0.000000		

Heteroskedasticity Test: White			
F-statistic	11.99105	Prob. F(20,121)	0.0000
Obs*R-squared	94.38083	Prob. Chi-Square(20)	0.0000
Scaled explained SS	220.1420	Prob. Chi-Square(20)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/12/17 Time: 17:22
Sample: 2005M01 2016M10
Included observations: 142
White heteroskedasticity-consistent standard errors & covariance

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.552704	1.536769	0.359653	0.7197
MKT_RF^2	0.121285	0.061285	1.979027	0.0501
MKT_RF*HML	-0.342667	0.313309	-1.093705	0.2763
MKT_RF*SMB	0.000941	0.184286	0.005106	0.9959
MKT_RF*RMW	0.010974	0.323106	0.033965	0.9730
MKT_RF*CMA	0.741438	0.313110	2.367978	0.0195
MKT_RF	0.070389	0.311316	0.226101	0.8215
HML^2	1.090597	0.604677	1.803602	0.0738
HML*SMB	0.191747	0.563660	0.340182	0.7343
HML*RMW	-0.950128	1.460697	-0.650462	0.5166
HML*CMA	-4.201651	1.372812	-3.060617	0.0027
HML	2.583669	1.334104	1.936632	0.0551
SMB^2	0.026635	0.271279	0.098185	0.9219
SMB*RMW	0.122113	0.644481	0.189475	0.8500
SMB*CMA	-0.171687	0.690639	-0.248591	0.8041
SMB	1.015672	0.597529	1.699787	0.0917
RMW^2	-1.021154	0.898932	-1.135963	0.2582
RMW*CMA	-0.672729	1.366964	-0.492133	0.6235
RMW	1.352507	1.209433	1.118299	0.2657
CMA^2	2.254997	0.748859	3.011245	0.0032
CMA	-3.489254	2.028441	-1.720165	0.0880

R-squared	0.664654	Mean dependent var	8.236794
Adjusted R-squared	0.609225	S.D. dependent var	18.64090
S.E. of regression	11.65280	Akaike info criterion	7.884709
Sum squared resid	16430.33	Schwarz criterion	8.321838
Log likelihood	-538.8143	Hannan-Quinn criter.	8.062341
F-statistic	11.99105	Durbin-Watson stat	2.091828
Prob(F-statistic)	0.000000		

5. Breusch–Godfrey Serial Correlation LM Test. First the results for the ESG portfolio followed by the results for the non–ESG portfolio.

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.302157	Prob. F(2,134)	0.7397
Obs*R-squared	0.637518	Prob. Chi-Square(2)	0.7271

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/12/17 Time: 17:29
Sample: 2005M01 2016M10
Included observations: 142
Presample missing value lagged residuals set to zero.

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
MKT_RF	0.004266	0.058606	0.072791	0.9421
HML	0.011399	0.189374	0.060192	0.9521
SMB	-0.000133	0.132548	-0.001002	0.9992
RMW	0.015572	0.257580	0.060455	0.9519
CMA	0.012287	0.206124	0.059608	0.9526
C	-0.008560	0.258080	-0.033166	0.9736
RESID(-1)	-0.045131	0.090018	-0.501362	0.6169
RESID(-2)	0.049329	0.086898	0.567659	0.5712

R-squared	0.004490	Mean dependent var	-1.78E-16
Adjusted R-squared	-0.047515	S.D. dependent var	2.679481
S.E. of regression	2.742400	Akaike info criterion	4.910233
Sum squared resid	1007.781	Schwarz criterion	5.076758
Log likelihood	-340.6265	Hannan-Quinn criter.	4.977902
F-statistic	0.086331	Durbin-Watson stat	1.983897
Prob(F-statistic)	0.998912		

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.718332	Prob. F(2,134)	0.0268
Obs*R-squared	7.466283	Prob. Chi-Square(2)	0.0239

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/12/17 Time: 17:44
Sample: 2005M01 2016M10
Included observations: 142
Presample missing value lagged residuals set to zero.

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
MKT_RF	0.020678	0.061585	0.335758	0.7376
HML	-0.040875	0.198543	-0.205876	0.8372
SMB	0.025568	0.140057	0.182553	0.8554
RMW	0.044452	0.270084	0.164584	0.8695
CMA	0.066665	0.218684	0.304846	0.7610
C	-0.031578	0.271072	-0.116493	0.9074
RESID(-1)	-0.185381	0.087614	-2.115869	0.0362
RESID(-2)	-0.173212	0.085758	-2.019773	0.0454

R-squared	0.052579	Mean dependent var	-1.00E-16
Adjusted R-squared	0.003087	S.D. dependent var	2.880141
S.E. of regression	2.875691	Akaike info criterion	5.005152
Sum squared resid	1108.127	Schwarz criterion	5.171678
Log likelihood	-347.3658	Hannan-Quinn criter.	5.072821
F-statistic	1.062380	Durbin-Watson stat	1.930219
Prob(F-statistic)	0.391268		

6. The FF five factor regression results. These result are NOT corrected with HAC standard errors and covariance (Bartlett kernel, Newey–West fixed) for serial correlation and heteroscedasticity.

Regression result from 2002M12 to 2016M10							
	a	**MKT**	**SMB**	**HML**	**RMW**	**CMA**	**R2**
ESG	0.386 (1.54)	1.100*** (19.64)	0.142 (1.10)	0.162 (0.88)	0.097 (0.39)	-0.540** (-2.67)	0.857
Non–ESG	**0.620***** (2.30)	1.105*** (18.30)	0.800*** (5.75)	0.107 (0.54)	0.023 (0.08)	-0.374* (1.74)	0.841
Difference	-0.235 (-1.08)	-0.002 (-0.03)	-0.656 (-5.90)	0.055 (0.35)	0.074 (0.34)	-0.163 (0.93)	0.213

The general FF five factor result for the whole time period. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. . The results are in basis points. The t-Statistics are in the parentheses.

FF five factor regression result with split sample								
		a	**MKT**	**SMB**	**HML**	**RMW**	**CMA**	**R2**
ESG	Before Crisis	0.621 (1.36)	1.304*** (9.94)	-0.024 (-0.10)	-0.618 (-1.20)	-0.958* (-2.29)	-0.658 (-1.43)	0.824
	During Crisis	-0.313 (-0.39)	0.956*** (5.97)	0.228 (0.66)	0.669 (1.09)	0.528 (0.62)	-0.448 (-0.86)	0.863
	After Crisis	0.407 (1.23)	1.136*** (16.27)	0.183 (1.05)	0.245 (1.12)	0.249 (0.82)	-0.702** (-2.70)	0.846
Non–ESG	Before Crisis	**1.204***** (2.11)	1.428*** (8.71)	0.220 (0.77)	-0.112 (-1.73)	-0.778 (-1.50)	-0.630 (-1.09)	0.776
	During Crisis	-1.06 (-1.38)	0.696*** (4.58)	0.459 (1.41)	0.038 (0.07)	-0.418 (-0.52)	-1.010* (-2.06)	0.865
	After Crisis	**0.625*** (1.86)	1.180*** (16.70)	0.907*** (5.13)	0.226 (1.02)	0.247 (0.80)	-0.516* (-1.95)	0.851
Difference	Before Crisis	-0.582 (-1.20)	-0.119 (-0.85)	-0.256 (-0.99)	-0.497 (0.90)	-0.019 (-0.41)	-0.028 (-0.06)	0.080
	During Crisis	0.748 (0.80)	0.259 (1.40)	-0.232 (-0.57)	0.631 (0.89)	0.946 (0.96)	0.560 (0.93)	0.297
	After Crisis	-0.219 (-0.94)	-0.044 (-0.90)	-0.724*** (-5.88)	0.018 (0.12)	0.002 (0.02)	-0.187 (-1.02)	0.299

The FF five factor split sample results. The stars indicate statistical significance: *** at 1%, ** at 5%, *** at 10% level. The results are in basis points. The t-Statistics are in the parentheses.