Can corporate social responsibility improve the financial performance of firms in the retail and manufacturing industry?

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Abstract

By using panel data analysis this study examine the relationship between firms' CSR ratings, measured by KLD ESG scores, and their financial performance. The analysis is conducted on large publicly traded US retail and manufacturing firms, sampled between 2003 and 2013. This study adds to the existing literature and current debate on the benefits of engaging in CSR, by offering both industry-specific insights and by using panel estimations, which many past studies have neglected. Three regression models are run with two accounting measures and one market measure as proxies for the financial performance. Based on the relevant panel data models I find that for retail firms the estimated CSR coefficient is significant when the accounting measures are used as the dependent variables. Thus in the retail industry there are financial benefits, measured by accounting performance, of engaging in CSR. On the contrary, for manufacturing firms the CSR coefficient is only significant when ROE is used as the financial measure. All other models provide insignificant result. Therefore, the results offer mixed support for a business case of CSR between the two industries, thus presenting contrasting implications for the respective industry's stakeholders.

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1. Introduction

If businesses continue their operations as usual and the population increase as projected, then by 2050 greenhouses gases in our atmosphere will be substantial, raw materials will be scarce, water access will be limited and there will not be enough land to grow food for the entire population. It is estimated that the global warming, which is a consequence of greenhouse-gas-emissions, can increase the world's temperature with 2-6 degrees causing effects such as increased occurrence of extreme weather events and create further constraints on the food production to mention a few (Tenant, 2013). The production of services and goods has not only created environmental problems but also other ethical and social concerns, such as as increasing inequalities of the world's population (Mazurkiewicz, 2004). To prevent some of these future potential outcomes, businesses are required to alter the current way of doing business. (Gauthier 2005, Waddock, 2004).

Activities that meet the expectations of the society are often gathered in a broad term called corporate social responsibility (CSR). Currently, a worldwide definition of CSR is non-existent. However, Carroll (1979) proposed a definition that appears in numerous written papers; "*The social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time*". In 1970, Friedman argued from a neo classical view that the sole concern of managers i*s "to conduct the business in accordance with their [the owners] desires to make as much money as possible conforming to the basic rules of society"* (Friedman, 1970). The point of tension of investing in CSR manifests itself in the issue of a firm's resource scarcity. CSR investments require part of the firms' limited recourses, and therefore, other value enhancing investments can be crowded out. He, therefore, claims that the correlation between CSR and financial performance is negative. However, in 1984, Freeman argued the opposite, to achieve long- run prosperity, a firm cannot only satisfy it's owners, rather it must satisfy all stakeholders such as financiers, law holders, customers, employees, etcetera. Consequently, to obtain future legitimacy, CSR investments are required. Based upon this insight a positive relationship between CSR investments and financial performance of a firm should exist, according to Freeman (1984). Since then, other theories have emerged that supports positive, negative or a neutral relationship. Researchers have therefore tried to find the empirical relation between CSR investments and financial performance (CFP), but little consensus has been reached as negative, positive and insignificant results have been provided (Margolis and Walsh, 2003; Carroll and Shabana, 2010). Some potential reasons of the ambiguous results of the CSR and financial performance link include model misspecifications, heterogeneity concerns, disperse measurements of both the CSR and CFP variables, lack of sufficient data or a too broad sample containing several industries. To be able to compare the results and reach consensus,

improvements in future research are required (Griffin and Mahon, 1997, Callan & Thomas, 2009).

However, even though the financial benefits of investing in CSR is under debate, there are other forces that encourage and put pressure on firms to engage in these matters. An increased number of funds are currently using CSR activities as screening criteria in search for a potential new portfolio company. Thus, the quality of CSR can affect the company's ability to attract capital (Barnett and Salmon, 2006). An example includes the Norwegian pension fund, which owns 1 % of the world's stocks. Recently they decided not to invest in companies that do not meet a minimum CSR requirement (Norges Bank Investment management, 2016). Further pressure of undertaking CSR activities comes directly from the government. In 2014 EU introduced requirement in all member countries of CSR reporting for companies with over 500 employees (EU, 2014). In the US, Barack Obama issued the Executive Order 13693, named "Planning for Federal Sustainability in the Next Decade" which embrace practices of how the US should lead the sustainability development along with the severe problem of reducing greenhouse gas emissions (White House, 2015). In addition, customers are also putting pressure on corporates to engage in CSR. One describing example is the increasing demand for sustainable products, such as organic food (Wall Street Journal, 2015).

The purpose of this paper is to add evidence to the existing inconclusive literature of the relationship between CSR and the financial performance of a firm (CFP). However, if there are outside forces naturally driving CSR investments, why is it important to find a link between CSR and CFP? First of all, even with outside pressures, all companies are still not embracing these issues or taking full responsibility for the environmental, social and governance issues they face. If the firms' financial performance can increase by incorporate CSR, it may induce more firms to do so. The outcome is then in line with the goal of profit maximization, which is a key driver in the majority of firms. Furthermore, the relationship between CSR and CFP is important in answering a range of normative question for almost all stakeholders; how should stockholders react when a firm announce it will shift recourses towards CSR, how much should managers invest in CSR, what policies should the government impose if the link is positive, how should capital providers think of a firm with major CSR investments, can private equity firms benefit from CSR investments in their portfolio companies? These are only a handful of important questions that may be answered if the CSR - CFP link is found.

In order to find the relationship between the level of CSR and the financial performance of firms, new researchers are obliged that consider the weaknesses of exiting literature. Therefore, by adjusting for some of the previous shortcomings, this paper will continue the search for an answer to whether an increase in CSR improves the financial performance of a firm. Specifically, this study, wish to answer the question of whether an increase in CSR ratings measured by the KLD database improves; Tobin's Q, ROE, and ROS for firms in the

retail industry and Tobin's Q, ROE and ROA for manufacturing firms. A positive relationship would imply that the point of tension of doing well (financially) and doing good (society), would be erased in the retail and manufacturing industry. In this study, a firm's CSR at a given point of time is measured by using the environmental, social and governance (ESG) scores provided by the KLD score-rating database. By using panel data estimations of data from 2003 to 2013, I find that for the retail firms the relationship between CSR and the financial performance is positive and significant when ROE and ROS are used as the financial performance variables. For the manufacturing firms, the level of CSR is only positively and significantly correlated with ROE. All other models produce insignificant CSR coefficients. Overall, the result supports the idea that in the retail industry there seem to be financial benefits of investing in CSR, while less so in the manufacturing industry. This disperses result is different from the majority of previous studies since there have been a weight towards finding a positive relationship, independent of the industry. However in comparison to the few studies where panel data estimations are used, the result is more similar.

This research contributes to the existing literature by offering industry- specific insights of this issue and by providing a methodology that takes into account some of the perceived weaknesses in the majority of historical studies. Three main differences are made. First, the research design is adjusted to take into account the concerns regarding the variable measurements of the CSR variable, issues related to the measurement of the financial performance variables and also a full inclusion of previous significant control variables is used. Second by using panel data estimations the concern in previous studies of heterogeneity as the driver of the relationship can be reduced. Panel estimation is an empirical approach that has not been used in the CSR literature up until recently. By doing so, a higher degree of a ceteris paribus effect is reached. As indicated above, the result of studies with and without panel estimations do seem to differ. Third, due to the diverse nature of all industries the literature suggests that there could be benefits of conducting industry- specific researches. Therefore, this paper will only examine the relationship between CSR and CFP of firms in the retail and manufacturing industry, a research that has not yet been done.

The paper will be organized as follows; in section 2, theoretical frameworks and relevant previous literature will be described. Section 3 presents the methodology that is used to obtain the empirical result, which is then presented in section 4. This is followed by section 5 and 6 where the obtained result will be discussed and a conclusion of the study is provided.

2. Theoretical framework

This section will introduce the available and relevant theories regarding corporate social responsibility and its relation to a firm's financial performance. This will be followed by a sub

section of how these theories performed empirically. Finally, an overview of the manufacturing and retail industry and their current CSR challenges will be presented.

2.1 Theoretical frameworks of CSR and corporate financial performance (CFP)

2.1.1 Theories supporting a negative relationship

The answer of whether corporates should engage in activities for a better society beyond the business responsibilities has been under debate for decades. According to the neo-classical view, firms exist to create value for the shareholders. By taking on positive NPV investments, firm value is created. Levitt (1958) and Freidman (1970) discuss in early articles that investing in sustainability counter argues the maximization of shareholder value. This is due to the fact that CSR investments are often costly for the firm, and thus cancels out other value enhancing investments. This agency-theory perspective, therefore, proposes a negative relationship between CSR investments and the financial performance of a firm. Other scholars have developed this argument further (Aupperle, Carroll, and Hatfield, 1985). Engaging in CSR activities requires investments in for instance clean technologies or pollution control equipment, which increases the costs for the firm. The environmental and social impacts of corporate activities are costs that can be absorbed by other agents, such as the government or individuals. Therefore, firms that engage in CSR activities suffer from a competitive disadvantage compared to firms that do not.

2.1.2 Theories supporting a neutral relationship

McWilliams and Siegel (2000) propose a framework where CSR investments are evaluated in a shareholder-wealth-maximization perspective, as in the neo classical theory. Contrary to Friedman (1970), they claim that the relationship between CSR and the financial performance of a firm is neutral. In their framework, CSR is evaluated as any other investments, were you continue to invest until the marginal benefits equals the marginal cost. Since CSR investments can offer product-differentiating possibilities to the firm, the firm is able to demand higher prices, which increases the marginal benefits of the investment. On the other hand, recourses used to invest in the CSR activities increases the firm's costs. In equilibrium, the marginal cost of investing in CSR equal the marginal benefits. As a consequence, the relationship between CSR and financial benefits is neutral. Put in another way, two identical firms, where one invests in CSR, and the other does not, can still be equally profitable. The firm that invests in CSR have higher costs but can also charge higher prices. In contrast, the firm that does not invest in CSR cannot charge higher prices, but benefits from lower costs.

2.1.3 Theories supporting a positive relationship

However according to another strand of literature, investing in CSR does not need to be viewed in tension between doing well and creating value. Several different theories that

propose a positive link between CSR and financial performance exist. The stakeholder theory by Freeman (1984) is among the first. He argues that a firm needs to oblige to all stakeholders[1], not only stockholders, as in the neoclassical view. If firms are unsuccessful in doing so the financial performance will suffer due to increasing regulations, loss of sales, limited access to capital, lawsuits, loss of competent employees et cetera. The stakeholder view can be accompanied by the "transaction cost economic view". In the transaction cost theory by Williamson (1975) firms have direct and indirect contracts with the stakeholders. Firms that do not engage in opportunistic behaviour will avoid high transaction costs. For example, they will avoid stringent regulations, closely monitoring from the government, costly labour union contracts and so forth. Furthermore, they will not be put in a situation where they loose follow on businesses as a consequence of acting opportunistic. This will result in decreasing transaction costs and a higher firm value (Jones, 1995). One recent example that favours the latter argument is the Volkswagen scandal. Volkswagen has suffered both from costly lawsuits and lost follow on business by engaging in opportunistic behaviours. In another related argument, proposed by Cairncross (1994) and Porter (1991), a potential win-win situation of investing in CSR can be obtained if stringent regulations are introduced in this area. They suggest that firms that already comply with ESG/CSR regulations will exhibit a competitive advantage over the firms that do not comply with ESG/CSR regulations since the latters innovation and knowledge in the area is less developed. Imposing stringent environmental regulation on a national level could, for instance fierce off both domestic and international competition, leading to improved financial performance for the firms with well-developed CSR practices.

From the strategic management literature, other theories and normative arguments can be found, which speaks for a positive relationship. In the recourse-based theory, firms are made of firm- specific recourses and capabilities. Companies that have valuable, rare and immobile recourses will gain competitive advantage, earning higher returns and therefore have a higher firm value, all other things alike (Wernerfelt, 1984). Hart (1995) argues that addressing social, economic and environmental issues can lead to a firm- specific recourse thus improving the company's competitive position. An example of companies where this argument can be adopted is The Body Shop, Whole Food and Ben & Jerry, whom all have created valuable and immobile recourses and capabilities by adopting a business model consistent with CSR practices. Porter and Kramer (2006) have also developed arguments in a recourse-based setting, were CSR investments are connected with the firm's strategy. They argue that that the prosperity of the society and shareholder value should be looked upon as interdependent, where one cannot exist without the other. Therefore, by engaging in CSR and addressing the

[1] Stakeholders includes customers, employers, the local and global society, the government, suppliers and financiers.
[2] In this paper CSP will still be abbreviated as CSR, in order to prevent confusion.
[3] Other definitions exist as well but this definition gave the least amount of missing values and is in accordance with the definition

firm's social impact its shareholder value will increase. Porter and Kramer (2006) suggest that firms should examine the social impact of the firm's value chain and then apply the current best practices for dealing with each of the social issues. CSR investments that either lower the firms' costs or increase customers' satisfaction can lead to a competitive advantage for the firm. Moskowit (1972) reasoned that the cost of investing in CSR can be minimal but the befits can be large. He introduced arguments were CSR is important in developing meaningful firm strategies which stakeholders can relate to. A firm that has social and normative defined purposes could find it easier to attract and keep highly qualified employees. This can lead to improved productivity, compared to a firm that is less "responsible" (Waddock and Gaves, 1997).

2.2 Previous empirical researchers of the CSR and CFP link

Many researchers have empirically tried to establish the link between CSR and the financial performance of the firm. Margolis and Walsh (2003) conclude that 127 types of researches have been made between 1972 and 2002. Researchers have showed an insignificant relationship (Appurle et al., 1985, McWilliams and Siegel 2000), positive relationship (Moskowitz, 1972, Hart and Ahuja 1994, Waddock and Graves, 1997, Russo and Fouts, 1997, Luo and Bhattacharaya, 2006) a negative relationship (Boyle et al., 1997; Brammer et al., 2006) and both positive and negative relationship (Cochran and Wood, 1984; Mcguire et al., 1988). However in the literature reviews regarding the CSR-CFP link by for instance Griffin and Mahon (1997), Walsh and Margolis (2001), Walsh and Margolis (2003), Orlitzky et al. (2003) and Margolis et al. (2007), they conclude that a positive relationship between CSR and firm value/profitability can be seen in the majority of the conducted researches.

Even though a majority of previous researchers shows a positive relationship, the result of the conducted researches are still contradictory. Common weaknesses in the applied methodologies of previous studies have been highlighted in several research reviews as one explanation to the inconclusive results. They also explain that to reach a consensus in the result these most common weaknesses must be recognized and addressed in later studies (Griffin and Mahon. 1997, Ruf et al. 2001, Margolis and Walsh, 2001 Margolis and Walsh, 2003). A further explanation of each issue will follow.

2.2.1. Model misspecifications in previous researchers

2.2.1.1. Corporate financial performance (CFP) variables

The first subject that could contribute to the diversity of the obtained results is the measure the firms' financial performance (see for instance Margolis and Walsh, 2001). Three main categories of the financial performance of a firm can be found in existing studies; accounting based, market- based and perceptual measures (Orlitzky et al., 2003). The two most common

measures are accounting-based measures such as ROE and ROA and market-based measures such as P/E and Tobin's Q (Margolis & Walsh 2001). Accounting measures will reflect the past performance of a firm thus in this setting, how CSR materially affects the firms financials in the past years. Accounting measures are beneficial as they give a concrete output of the actual performance of a firm. However, they will not capture the possible future benefits of today's investment. Further disadvantages of accounting measures includes that they are easily distorted by accounting rules and managerial manipulations.

Market measures are on the contrary not as easily distorted by accounting rules and managerial manipulations. Furthermore, they are forward- looking, thus they will not only capture the current benefits of CSR investments, but also benefits that will be realized in the future. However, market measures also have disadvantages. First, they are based upon forecasts and expectations of the future, and the actual future performance of the company can evolve differently. Furthermore, they are more easily distorted by market noise. Even though many theoretical and practical studies have been conducted, there is no solution of whether to use accounting or market- based measures since they both have their ad- and disadvantages. Margolis and Walsh (2001) thus propose the solution of incorporating both.

2.2.1.2 Corporate social responsibility (CSR) variable

The second factor leading to the disperse results is how CSR is measured. CSR itself is not measurable whereas Corporate Social Performance (CSP) is a way of putting CSR in practice. Wood (1991) defines CSP as ''*a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs and observable outcomes as they relate to the firm's societal relationships''* (Gössling &Van beurden, 2007)[2]. In past studies a wide variety of CSR (CFP) measurements have been used; companies social responsibility investment disclosures, number of CSR actions, qualitative surveys, reputational indices and raw scores are some examples (Wu, 2006, Bragdon and Marlin 1972, Aupperle, Carroll and Hatfield, 1985, Waddock and Graves, 1997). The two most used methods include the fortunes rating data or reputational index and the KLD database. The fortune data has some drawbacks since it also measures other than CSR related managerial aspects (Waddock and Graves 1997). The KLD score-rating database rates companies based on environmental, social and governance (ESG) concerns. The rating methodology falls within two broad categories, the first includes score based on qualitative positive and negative indicators and the second is the controversial business issues (Waddock and Graves, 1997). The problem with the KLD database is its binary rating methodology. This means each issue within both qualitative indicators and controversial business areas will be weighted equally in the construction of one score. Some scholars have tried to solve this problem with a weighting scheme by asking

[2] In this paper CSP will still be abbreviated as CSR, in order to prevent confusion.

investors to rank the ratings in order of importance. Others have put equal weight on each issue since they believe the survey method suffer several shortcomings (Callan and Thomas, 2010). The benefits of using KLD compared to the fortune data seem to outweigh its drawbacks. This conclusion is confirmed by later studies, as the majority of these use the KLD scores (Callan & Thomas, 2010).

2.2.1.3 Control variables and model specification

Another reason of the inconsistency between the relationship of CSR and CFP has been attributed to the choice of control variables. Appurle (1985) first introduced size and risk as control variables. Later, further variables such as R&D and advertisement proved to be correlated with both CSR and the CFP thus raising the concern of variables omission in earlier studies (McWilliams and Siegel, 2000, Van Beurden and Gössling, T, 2008.). Hart and Ahuja (1996) added to the list by introducing capital expenditures as a control variable, which has not been commonly used, up until recently (King and Lennox, 2002, Callan and Thomas 2009, Elsayed and Paton, 2005). Other researchers have further emphasized the importance of focusing on specific industries. Industries face unalike environmental and social concerns and have to cope with these problems in different ways. This can affect the relationship between CSR and CFP. Furthermore by conducting industry- specific researches the financial performance and control variables can be tailored to that industry (Griffin and Mahon, 1997, Chand, 2006, Mahoney and Roberts 2007).

2.2.1.4 Heterogeneity issues and panel data studies

Many of the previous studies have relied on cross- sectional or pooled regression models (Elsayed and Patron, 2005). Even though new control variables have been identified and included in the CSR - CFP literature, there could still be other individual firm characteristics that are correlated with the CSR variable, which also determines the financial performance of a firm. If firm heterogeneity is present, the estimated coefficient can be biased and inferences invalid (Mahoney and Roberts 2007). Identifying the firm characteristics that affects the financial performance can be difficult, but even if they are identified some factors can be problematic to measure, like the level of ability of the firms employees and directors. If omitted firm attributes that are constant over time, affect their respective financial performance, they can be controlled for without being directly included in the model, by using panel data methods. Panel data estimations can, therefore, therefore be a more convincing tool when one strives to receive ceteris paribus effects (Wooldridge, 2015).

Only a few studies have adopted panel data methods in the search for the CSR-CFP link. King and Lennox (2002) and Dowell et al. (2000) are among the first. Dowell et al. (2000) uses panel data models to study the relationship between environmental standards and Tobin's

Q of multinational firms. They find a positive and significant relationship between stringent environmental standards and the market value of a firm. However, 72 of the 89 firms in their sample do not have a CSR variable that varies over time. As a consequence, they can only use a random effect model. A random effect model produces consistent estimators if the unobserved time- invariant error term is not correlated with the regressors. This assumption is regarded as somewhat strict and is often violated (Wooldridge, 2015). However, it still offers advantages over using pooled OLS. Elsayed and Paton (2005) analyse the relationship between environmental performance and Tobin's Q, ROA, and ROE of UK firms, by using both fixed and random effect models. In order to choose between the models a Hausman test is performed. The Hausman test is significant in all cases, and therefore, they use fixed effect models. However, the estimated CSR coefficient is not statistically significant at any level when Tobin's Q or ROE is the depended variable. Contrary, environmental performance and ROA is negatively correlated in their fixed effect regression. They compare their result with the result of pooled OLS models using the same data and variables. The pooled OLS models produces positive and significant CSR coefficient for all dependent financial variables. This casts doubt on previous researchers where only cross- sectional or pooled OLS have been used. Finally, Mahoney and Roberts (2007) examines the relationship of CSR and financial performance measured by ROA an ROE of Canadian firms. As indicated by a Hausman test random effect models are applied. Two models are run, one were a composite measure of CSR is used, and another where each dimension of the CSR score are included. When the composite measure is used, no significant relationship between CSR and CFP can be concluded. Contrary, when each dimension is included, both the environment and international dimension are positively correlated on a 0,05 level, with ROA, but not ROE.

To summarize, in the few previous researchers that have been using panel data to study the CSR-CFP relationship, both fixed and random effects have been present in the sample. In the studies positive, negative and insignificant results have been obtained for three different variables of financial performance, Tobin's Q, ROE, and ROA. Therefore, no clear trend can be seen in the studies using panel estimations.

2.3 CSR in practice

In a research of US executives by McKinsey (2011/2014), managers are starting to embrace sustainability in an attempt to create value. The practices of CSR have moved away from reputation management to implementing CSR in their strategy and their business goals. However, the answer of what CSR investments, how much to invest and the managerial effectiveness of their CSR investments looks like, varies between industries. By drawing conclusions both from practice and previous literature, the research needs to be industry specific, as sustainability is likely to affect the value differently in different industries. In this

report companies within the retail and manufacturing industry will be sampled. An explanation of key drivers, environmental social and governance issues and the potential business case for CSR will follow for the respective industry.

2.3.1 corporate social responsibility in the retail industry and hypothesis development

There are several key success factors in the retail industry. One example is scale, as the sector competitiveness is to a large extent driven by market concentration. But as domestic expansion offers limited growth opportunities retail firms are expanding to foreign markets and building multinational brands to stay competitive. Another important success factors include customer retention. Retaining customers is much less expensive than attracting new ones. Customer loyalty and retention can be achieved by building brand awareness via excessive marketing campaigns, developing and maintaining a good brand reputation, loyalty programs and so on. Retail companies can further achieve competitive advantage by adopting either of Michal's porter's niches; cost leadership or differentiation. With cost leadership, cost reduction through the supply chain is vital which can for instance be attained via economies of scale and an increased bargaining power. Differentiating possibilities also exist where niche segments are being served with focus on quality and customer service (Martinuzzi et al., 2011).

Both environmental and governmental issues are present in the retail industry. Environmental issues include direct and indirect issues. Direct issues relates to the water and energy consumption, waste, packaging, transportation, land use and other environmental cost in the supply chain. The indirect issues relates to the environmental costs from the products being sold, for example, the suppliers usage of chemicals in GMO produced food, poor labour conditions, extensive usage of natural recourses and so forth. The foremost governance issues lies within the quality of jobs. Some problems include low wages, poor health and working conditions and low job security (Martinuzzi et al., 2011)

Numerous initiatives exist to improve a retails firm's environmental impact, some areas include, recycling, water management, using alternative energy, better means of transportation, using alternative materials in packaging, thermal insulation and putting pressure on the suppliers of higher production standards. Some of these environmental investments can lead to efficiency improvements and other financial benefits to the firm. In a study by Meijer and Schuyt (2005), they find that customers are reluctant to buy from retail firms that do not have a minimum standard of CSR. Therefore, CSR initiatives can be important when customer make purchasing choices. Anselmsson and Johansson (2007) also state that CSR can generate a positive effect on the company's brand and thus affecting consumers buying behaviours. The Retail Industry Leaders Association (RILA), a retail association for large and innovative retail companies, has started numerous sustainability initiatives for the retail industry. In a research by RILA (2015) 42 retail companies that represents over $620 billion in global revenue, were

asked several questions regarding sustainability. Key highlights from the reports include the justification and perceived benefits from their CSR investments. Following is the answers in order of importance: a source of innovation, new markets, risk management, brand enhancement, satisfy consumers, employee retention, increase profits, reduce cost, addressing regulation and last to satisfy stakeholders. Although profit and cost reduction alone is not the foremost reasons of why firms engage in sustainability projects, they can both be linked to a wide variety of other reasons such as entering new markets, increased innovation, lower risk and employee retention.

Without a unified theory and inconsistent results no obvious direction of the hypothesis exist. However, the majority of empirical studies have confirmed a positive relationship. On the other hand, they have not been either industry specific nor have they used panel estimations. Therefore a positive hypothesis is still not convincing. But because CSR investments can be linked to some of the key success factors in the retail industry as customer retention, brand awareness, and market entry, it strengthens positive hypothesis. Therefore, the following hypotheses are made;

H_1 The relationship between KLD ESG scores and the CFP of retail firms is positive

H_1a The relationship between KLD ESG scores and TOBINS Q of retail firms is positive.

H_1b The relationship between KLD ESG scores and ROE of retail firms is positive.

H_1c The relationship between KLD ESG scores and ROS of retail firms is positive.

2.3.2 corporate social responsibility in the manufacturing industry and hypothesis development

The competitive advantage in the manufacturing industry has been shaped by high efficiency and cost reduction efforts (Martinuzzi et al., 2010). The nominal value added of the US manufacturing industry in 2013 was $ 1,943 billions (The world bank, 2015). As a consequence, the environmental, societal and governance concerns of this industry will leave a large impact on the society. Especially of concern is the environmental impact.

The manufacturing industry contemplates the whole chain of production activities. Therefore there are multiple ways in which environmental concerns can manifests itself, some examples are pollution of air and water, extensive uses of water, extensive usage of scares raw materials in production and packaging, undisposed waste from production activities, distribution and transportation, energy consumption and so on (Williamson et al. 2006). According to a report by KPMG (KPMG International, 2012) a number of environmental "mega forces" will shape the way of doing business until 2035 and beyond. The "mega forces" include population growth, urbanisation, recourse scarcity, climate change, water scarcity, energy and fuel problems, supply chain risk, deforestation and decline in the eco system. All forces will affect how the manufacturing firms are able to operate.

These forces can, however, however create opportunities for firms that can adapt over the ones that cannot. The value of the global sustainability business is estimated to increase from US$ 1.5-4.5 trillion in 2020 to US$ 3-10 trillion in 2050. By being able to produce the efficiently the environmental impact, recourse, energy and water usage can be lessened. Manufacturers that can develop production processes that are less dependent on one single supply chain and scarce recourses can also gain competitive advantage, as they are not constrained by one type of recourse if it becomes more scarce or the supply becomes more volatile. In cities where pollution problems are severe, firms offering clean automotive and airport technology will also be prioritized. Furthermore, in order to feed the rising population, several green initiatives are required (Tennant, 2013). According to the US department of commerce, several business opportunities of investing in sustainability exist. For instance by applying methods that increase recourse efficiency benefits such as lowered cost, decreased material usage, and less waste removal can be achieved. New revenue streams can be attained by recycling or selling scrap material from the production process. Furthermore, if retailers and customers demand sustainable products then addressing sustainability can directly improve the firm's sales as it may differentiate the firm from others. Other mentioned benefits include reduction in compliance cost, brand reputation, access to capital, reduced risk and employee retention (US department of commerce, 2011)

The actual responses to the sustainability issues have up to now been focused on either efficiency, by trying to find ways to reduce production costs, or in the risk management field, by finding ways to hedge raw material exposure and decrease the dependence of scarce resources. Up until 2020 the efficiency responses to the current environmental forces are projected to continue in the manufacturing industry. However, these actions are not considered to be enough from 2020/2030 and beyond. Increasing efficiency does not contemplate with all future mega- forces. Development of radical technologies and innovative society changing products will most likely be needed to meet all future challenges (Tennant, 2013). Still, in a study by MIT Sloan, 93 % of the respondent leaders said sustainability was a prioritized subject, but 70 % of the respondents admitted they were unable to make a business case out of it. However, the ones that were truly committed to sustainability could see opportunities that lead to an improved bottom line (Hopkins et al. 2009).

As mentioned, the majority of studies have concluded a positive relationship. Therefore the hypothesis that a positive relationship exists in the manufacturing industry as well is made. This hypothesis is also supported by the several studies and report mentioned above. They all argue that there are opportunities for manufacturing firms to find a business case for CSR, especially by improving environmental practices.

H_2 The relationship between KLD ESG scores and the CFP of manufacturing firms is positive

H_2a The relationship between KLD ESG scores and TOBINS Q of manufacturing firms is positive.

H_2b The relationship between KLD ESG scores and ROE of manufacturing firms is positive.

H_2c The relationship between KLD ESG scores and ROA of manufacturing firms is positive.

3. Methodology approach

In this research an empirical approach is taken to test the hypothesis of whether the relationship between the KLD score and the financial performance is positive in the retail and manufacturing industry. A predictive validity framework can be seen in Appendix 1. In this section the applied methodology is presented. The sample and data collection limitations are described first. Next, a description of the dependent, independent and control variables used in the regressions are presented, which is followed by the econometrical models and an explanation of the panel estimation procedures.

3.1 Data and sample selection

The hypothesizes are empirically tested by using panel data of 76 retail firms and 349 manufacturing firms between 2003 and 2013. The final sample consists of 707 retail observations and 3715 manufacturing observations. However depending on the employed dependent variable, the exact number of observations in each regression can deviate from the previously stated numbers. The corporate social performance variable is based on the environmental, social and governance (ESG) scores provided by the MSCI KLD STATS ESG score-rating database. The firms' financial data are extracted from the COMPUSTAT North American Database. Two main selections are made to obtain the final samples. First, since KLD do not provide industry identification codes, the US retail and manufacturing companies are selected in the COMPUSTAT database. Afterward, the retail and manufacturing firms from COMPUSTAT are merged with the MSCI KLD STATS ESG score-rating database. Only the companies that have data for each year in the entire sample period between 2003 and 2013 in the merged dataset are then selected. This is to ensure that the empirical analysis can use the structure of a panel set to deal with possible violations of the OLS assumptions, which will be discussed further below. Even though an unbalanced panel data set can be processed by most econometric software packages, large and numerous gaps in the panel data can distort the estimation procedure (Park, 2011). After this stage the final sample of 76 retail firms and 349 manufacturing firms are obtained.

KLD started to rate companies in 1991 based on how well they manage environmental, governance and social issues. The KLD data is divided into five universes where two are discontinued and will not be mentioned further. A further illustration of the data sets is presented in Table 1. Universe A provides ESG ratings of firms that are included in MSCI KLD 400 Social Index & MSCI USA index, and they have been rated annually from 1991 to 2014. Universe D include the 3000 largest US firms, measured by market capitalization that is

not covered by universe A. Annual ESG rating-data between 2003 and 2014 is available for the 2600 companies included in this data universe. In 2013 KLD MSCI expanded its coverage and created universe E including non-US companies. All data universes generates in total 48 368 observations from 1991 to 2014. The 2014 ratings were not finalized when this research was conducted, thus the sample data could only cover data up to and including 2013. Furthermore, since one sample selection was to have a balanced dataset, only US firms with annual data during 2003 to 2013 is included. This implies that universe D and part of universe A is included in this study.

Table 1
MSCI ESG KLD data sets – Coverage universe
This table shows the data universes covered by the MSCI KLD data set of ESG scores. Coverage A to D includes US publicly traded firms. Universe E includes non-US publicly traded firms.

Data-set universe	*Time series*	*Companies covered*	*Included in the study*
Universe A	1991-2014	650	From 2003
Universe B	discontinued		
Universe C	discontinued		
Universe D	2003-2014	2400	YES
Universe E	2013-2014	2600	NO

Some limitations of the data selection exist. To merge the databases a unique combination of the year and the firms TICKER number is used. However, in some cases the TICKER code and year combination in the KLD database were not unique. The merge cannot be completed without a unique combination in both databases. Therefore, 500 dual ticker-year observations of the total KLD database were excluded. This is not a significant loss of observation for this study since the excluded observations includes firms from all industries. One potential way of overcoming the double TICKER codes would be to use the companies CUSIP numbers to merge the databases. However the CUSIP number in the KLD database were not written in the same format as in Compustat and as a consequence the merge with the CUSIP codes leads to significantly smaller samples.

Another limitation of the data collection is that even though the data is balanced there exist some gaps in the data due to missing data of some of the financial variables. Advertisement and R&D, which are two control variables, could not be retrieved for all observations. A trade off must be made between using data with gaps or make a list-wise deletion, so all observations of a firm with one or more missing data in any year will be deleted, thus throwing away potentially useful data. Since the data was strongly balanced at first, some missing observations will not affect the research and the result as much as deleting more data, especially in the case of the retail sample, which is relatively small. In this research STATA is used to conduct the empirical analysis. STATA excludes observation for firm *i* year *t*, if one of the variables are missing. Therefore including variables with gaps leads to a somewhat unbalanced sample. However, as long as the missing firm observation is random and not

correlated with the error term, marginally unbalanced data is not a problem, (Wooldridge, 2015).

Last, the fixed data sample only includes firms with KLD and COMPUSTAT data from the period between 2003 and 2013. This can generate a survivorships bias, since the firms that have gone out of business in any of these years will be excluded. Once again a trade-off must be made, here it includes the choice between a fixed and rotating sample. In a rotating sample data of firms one year before bankruptcy will also be included. But this is to an expense of having unequal amount of observations for each firm. Furthermore, during the sample period in a rotating sample, new firms are added and existing firms are dropped. This weakens the power of using a fixed effect model. Therefore I choose to use the fixed data sample even though it could suffer from survivorship bias. However robustness tests are made with the rotating sample. Then firms with data of two or more consecutive years between 2003 and 2013 are included. The robustness test will be discussed in section 4.5.

3.2 Variables

3.2.1 Dependent variable: financial performance

Both accounting and market measures of the financial performance of the firms are included in this research, consistent with prior researches (Margolis and Walsh, 2002). Return on equity (ROE) and Tobin's Q will be used for both the manufacturing and the retail sample. They are the most used accounting and market measures (Griffin and Mahon, 1997). Furthermore previous literatures that employ panel estimation have also employed these financial variables. A comparison of my result to theirs will then be more demonstrative. To erase the possible point of tension of investing in CSR, financial variables may be chosen based on what is commonly evaluated by investors (Simpson & Kohers, 2002). The key performance indicators may however differ between the industries. Therefore, one more industry specific financial variable is added to the analysis. Return on sales (ROS) will be used as the industry specific financial variable for the retail firms. ROS measures the firm's operational profitability. Return on assets (ROA) is used for the manufacturing firm. ROA can be more representable of the firm profitability sine many manufacturing firms have the possibility of using high leverage due to their tangible nature, thus inflating ROE.

ROE captures the financial performance of a firm from the perspective of a shareholder (Waddock and Graves, 1997). ROE is calculated by taking the net income before tax over the book value of equity of the firm. Tobin's Q captures the future gains of a firm. In this research Tobin's Q[3] is calculated by taking the firm's market value of equity plus the book value of interest bearing debt over its assets. ROS and ROA are calculated by taking the net income

[3] Other definitions exist as well but this definition gave the least amount of missing values and is in accordance with the definition used by for instance King and Lennox (2002).

before tax over sales and assets respectively. The net income before tax is used to exclude the effect of differences in performance due diverse tax rates or potential tax planning.

3.2.2 Independent variable: corporate social performance

The CSR/CSP variable will be measured by using annual data from the MSCI ESG KLD STATS score rate database (KLD). The KLD data set consist of positive and negative qualitative ratings given to publicly traded companies concerning their annual environmental, social and governance performances. Seven key areas of concerns are rated; corporate governance, community relations, diversity, employee relations, environment, human rights and product characteristics. Each category consists of positive ESG performance indicators and negative ESG performance indicators that are evaluated based on several criteria. In Appendix 2, an overview of all categories and their respective positive and negative performance indicators can be seen. The positive (negative) indicators are given a score of 0 and 1 were a 1 indicates all criteria for that positive (negative) performance indicator are met by company *i*, year *t* (MSCI, 2015). Waddock and Graves (1994, 2000) introduces a way of translating the qualitative scores into one CSR/CSP variable that can be used in the research. A CSR score for each firm is created by, summing up and subtracting all negative indicators from the sum of all positive indicators. For example, if a firm has 10 numbers of positive indicators in the 7 categories and 4 numbers of negative indicators it will receive a CSR score of 6. There are drawbacks of this method since the importance of the rated issues can be unequal. Additionally each strengths and concerns are weighted equally in the total score. This may not reflect reality. But as stated in the literature review, constructing a weighted score based on questioners will lead to high subjectivity and other shortcomings.

KLD also provides scores of whether a company operates in a controversial business. However, it will not be integrated in the qualitative CSR score because the impact of being in a controversial business may not be equalized to a negative ESG indicator. A subjective weight would then be required. Another possibility would be to run it as a separate independent variable but if fixed effects are present and a fixed effect model is run, the variation in that score will be too small to receive an estimator that is BLUE.

3.2.3 Control variables

If other firm characteristics that determine the financial performance of a firm are correlated with the CSR score they must be controlled for to avoid biased estimators. To test the first hypothesis concerning the retail firms, size, risk, advertisement and capital spending (CAPEX) will be controlled for. To test the second hypothesis for manufacturing firms, size, risk, R&D and capital spending (CAPEX) will be used. These are chosen in accordance with more recent panel- and cross sectional studies (see for instance McWilliams & Siegel, 2000, King &

Lennox, 2000, Mahoney & Roberts, 2007). The control variables have been tailored to the specific industry since the financial performance in different industries is a function of different firm characteristics. The economic rational of including R&D for retail companies are weak and also many retail firms lack data of R&D spending in COMPUSTAT. Therefore it will be excluded. Including it would weaken the power of the model since the variable will introduce more missing observations. Further, it would introduce larger standard errors for other variables if the relationship between advertisement and financial performance were weak. The same arguments hold for advertisement in the manufacturing sample.

To control for size the natural logarithm of assets will be used. The ratio of total long-term debt to total assets will be used to control for different level of risks of the companies. Finally, to control for advertisement, R&D and capital spending the ratio of the respective yearly amount speeded will be divided by the net sale the same year.

3.3 Empirical methodology

3.3.1 Empirical model

To test the first hypothesis if retail firms with higher CSR scores have improved financial performance, ceteris paribus, models 1 - 3 will be regressed using a fixed panel data set of 727 annual observations extracted between 2003 and 2013. STATA is used to execute the regressions.

$$Tobin's\ Q_{i,t} = \beta_0 + \beta_1 \boldsymbol{CSP_{it}} + \gamma Controls_{it}, + \varepsilon_{it} \quad (1)$$

$$ROE_{i,t} = \beta_0 + \beta_1 \boldsymbol{CSP_{it}} + \gamma Controls_{it}, + \varepsilon_{it} \quad (2)$$

$$ROS_{i,t} = \beta_0 + \beta_1 \boldsymbol{CSP_{it}} + \gamma Controls_{it}, + \varepsilon_{it} \quad (3)$$

Where, $Tobin'sQ_{i,t}, ROE_{i,t}\ and\ ROA_{i,t}$ is the measure of firm *i* corporate financial performance at time *t*, $CSP_{i,t}$ is the measure of firm *i* corporate social performance at time *t* $Controls_{i,t}$ is the control variables for the retail firm *i* time *t*, which includes, risk, size, capital spending and advertisement and ε_{it} is the error term for observation *i* time *t*.

To test the second hypothesis if the manufacturing firms with higher CSR scores have better financial performance, cetris paribus, models 4 - 6 will be regressed with a fixed panel data set of 4532 observations of 412 firms from 2003 to 2013.

$$Tobin'sQ_{i,t} = \beta_0 + \beta_1 \boldsymbol{CSP_{it}} + \gamma Controls_{it}, + \varepsilon_{it} \quad (4)$$

$$ROE_{i,t} = \beta_0 + \beta_1 \boldsymbol{CSP_{it}} + \gamma Controls_{it}, + \varepsilon_{it} \quad (5)$$

$$ROA_{i,t} = \beta_0 + \beta_1 \boldsymbol{CSP_{it}} + \gamma Controls_{it}, + \varepsilon_{it} \quad (6)$$

Where, $Tobin'sQ_{i,t}, ROE_{i,t}$ *and* $ROA_{i,t}$ is the measure of firm i corporate financial performance at time t, $CSP_{i,t}$ is the measure of firm i corporate social performance at time t, $Controls_{i,t}$ represents the control variables for the manufacturing firm i, which includes capital spending at time t and R&D at time t and ε_{it} is the error term for observation i time t.

If β_1 is statistically significantly different from 0 in the above specifications then, β_1 represents the effect of an improvement of the KLD score on the financial performance variable. It could be due to an increase in a positive indicator or one less negative indicator. The exact interpretation of the estimated coefficient will depend on the nature of the panel estimation, which will be discussed below.

3.3.2 Panel data estimations

To estimate β_1, regressions with fixed panel data is performed. Fixed implies that same firms are observed for the whole sampled time period. If the five core assumptions of Ordinary Least Square (OLS) are upheld a pooled OLS model generates the best linear unbiased estimators (BLUE)[4]. Pooled OLS assumes that each firm share the same intercept and slope of the estimated coefficient. However since same firms are sample over a time period in a panel data set, there could exist an individual unobserved firm effect. If, firm heterogeneity is present, such as skilled personnel or brand recognition, that is not included in the model and affect a company's financial performance in both in time period t and t+1 the econometrical model can be rewritten to;

$$CFP_{i,t} = \beta_0 + \beta_1 CSR_{it} + \gamma_{it} Controls_{it} + a_i + u_{it}$$

where a_i is the unobserved time constant effect on $y_{i,t}$ and u_{it} is the idiosyncratic error term which captures the error that varies over time. $a_i + u_{it} = v_{it}$ is the composite error term. If firm heterogeneity is present some OLS assumptions are violated. First, the composite error variance is likely to be correlated across time because the sample is not drawn independently (autocorrelation) and the error variances across different entities could vary (heteroskedasticity). These violations will affect the standard errors of the regression, leading incorrect inferences and the OLS estimator is no longer the most efficient. The second violation of OLS relates to the exogeneity assumption, that the expected value of the error term should be zero and not correlated with any independent variable. If this is not the case the estimator will be biased. Panel data methods offer a solution to the problem concerning time constant unobserved heterogeneity. Two specific panel data models will be tested in this report; fixed effect and random effect (Wooldridge, 2015).

[4] Linearity, exogeneity, constant errors variance, fixed and repeated observations of the independent variable without measurement errors, no multicolinearity

If the time- invariant unobserved effect is correlated with the independent variables a fixed effect model can be used. The fixed effect model explores the relationship within each cross-sectional unit. By allowing each firm to have its own intercept the time- invariant unobserved effect is no longer present in the estimators since it is captured by the intercept. What is left in the composite error term is the idiosyncratic error. The fixed effect model with individual firm intercepts can be written as following;

$$y_{i,t} = \beta_0 + \beta_1 CSR_{it} + \gamma_{it} Controls_{it} + \delta_i F_i + u_{it}$$

where δ_i represents the coefficient for the time invariant effect of firm *i* on the financial viable, $y_{i,t}$. The β_1 will then represent, how a change in the CSR score changes the financial performance for one specific firm. In order for the fixed effect model to be BLUE, a set of assumptions needs to be fulfilled and there are especially two that deserve attention. First, the explanatory variable needs to vary over time. Second, for each time period, the expected value of the idiosyncratic error, given the idiosyncratic error and the explanatory variables all time periods, need to be zero. Implying that if time variant heterogeneity is present the fixed effect model will still produce biased estimators (Wooldridge, 2015).

A random effect model assumes that the time- invariant unobserved effect a_i is random and it is not correlated with the independent variables. The expected value of the time invariant variable for each firm given all explanatory variables is therefore zero. Contrary, in the fixed effect model, a_i, is removed from the model. If a_i is not correlated with the independent varibles the fixed effect model will produce inefficient variables, while the random model will not. However, in a random model all variables that affect the dependent variables that are correlated with the independent variables must be included in the model, to prevent omitted variable bias. In a random effect model a fraction of the time average for each corresponding variable is subtracted to exclude the serial correlation of the time invariant effect over time. The fixed effect subtracts the whole time average of the corresponding variable while the pooled effect does not subtract any time averages. Yet, since the unobserved effect is in many cases correlated with the independent variables a random model will produce inefficient estimators. The random effect models are often most used when the key variable of interest is time-invariant (Wooldridge, 2015).

Statistical tests can be performed to choose between the panel models. First, an F-test can be used to test for fixed effects in a fixed effect model, where the null hypothesis is that all u_{it} equals zero. To test for random effects the Breusch Pagan Lagrange Multiplier (LM-test) can be performed, where the null hypothesis is that no random effects exist. If either/both of the null hypothesises are rejected fixed or/and random effects exist. A Hausman test can be run to see if the time- invariant unobserved effects are correlated with the independent variables or not. The null hypothesis in the Hausman test states that the difference in the coefficients is not

systematic between the random and a fixed model. A rejection of the null hypothesis implies that a fixed effect model should be used over a random model (Park, 2011)

Only the correct model will be presented if random or fixed effects are present. However, in all cases, the result of a Pooled OLS model will also be shown, even if random or fixed effects are present. The objective of this thesis is not to compare the result of different panel models. Still, it can be interesting to have the result of the pooled OLS to see the sign and magnitude of the bias. In accordance to the literature, the standard errors will be clustered on a firm level (Dowell et al. 2000, Mahoney & Roberts, 2007). Furthermore, in each of the correct panel models, a joint F-test of time fixed effect is performed. Year dummies are included when time fixed effects are present.

3.4 Robustness test

As a robustness test, all regressions will be run with another data sample as well. The described sample in section 3.1 only includes firms with observations for the whole sample period. This selection can be too strict and disregard other potentially useful information. Therefore, all models will be regressed with another sample, consisting of firms that have two or more consecutive observations during the sample period 2003 to 2013. This is done in order to increase the reliability of the obtained results.

4. Empirics

This section presents the results of the econometrical analysis. First, descriptive statistics of the retail and manufacturing sample is presented. Next, the regression result from model 1-3 using the retail sample, is showed, followed by the result from running model 4-6 by using the manufacturing sample.

4.1 Descriptive statistics and correlation analysis

4.1.1 Descriptive statistics and correlation analysis for retail firms

Table 2 shows the summary statistics of the variables used in the models for retail companies, during the whole sample period, 2003-2013. Panel A of Table 2 exhibits statistics for the CSR variable. Appendix 3 presents a time trend line of the CSR scores. The average has increased from negative -0,447 in 2003 to positive 1,132 in 2013. As mentioned in section 2.3.1 retail firms have been increasing their CSR engagement and allocated more resources to environmental, social and governance concerns in later years. An increase in the mean CSR score could therefore be considered as an evidence of what currently may be observed in the industry. One possible explanation of the rising trend, in line with the hypothesis of this paper, is that more firms are experience positive financial and social outcomes, of investing in CSR, or at least, negative consequences of not doing so.

Table 2
Summary statistics of retail companies

The table shows summary statistics of the KLD rating, financial performance variables and the control variables of the sampled US retail firms between 2003 and 2013. The total sample consist of 836 observations of 76 firms that have corporate financial performance information in the KLD database as well as financial information in the compustat database, for the whole sample period. CSR is defined as total qualitative positive indicators strengths minus total number of qualitative negative indicators.

Panel A CSR

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	-6	-8	-8	-10	-9	-9	-9	-6	-5	-4	-6	-10
Max	4	4	8	9	9	12	12	13	13	8	9	13
Average	-0,447	-0,829	-0,777	-1,066	-1,066	-1,276	-1.263	0,434	0,815	1,211	1,132	-0,301
St. dev	1,47	2,042	2,458	2,665	2,814	3,092	3,138	3,601	4,223	2,391	2,768	3,037
Obs	76	76	76	76	76	76	76	76	76	76	76	836

Panel C TOBIN'S Q

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	0,544	0,507	0,498	0,5886	0,208	0,066	0,406	0,294	0,294	0,332	0,314	0,066
Max	10,707	6,586	7,921	5,818	6,140	3,960	4,625	6,016	7,642	7,619	6,792	10,707
Average	2,233	2,092	2,082	1,947	1,608	1,133	1,390	1,577	1,662	1,738	1,941	1,764
St. dev	1,596	1,358	1,433	1,062	1,074	0,732	0,844	1,007	1,217	1,263	1,263	1,228
Obs	76	76	76	76	76	76	76	76	76	76	76	836

Panel D ROE

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	-0,216	-1,566	-1,295	-1,531	-2,422	-4,031	-2,389	-1,571	-1,479	-0,939	-0,941	-4,031
Max	2,228	5,28	2,233	1,921	2,32	4,386	1,362	1,558	0,910	0,996	1,542	4,386
Average	0,271	0,279	0,286	0,278	0,235	0,219	0,168	0,216	0,229	0,261	0,240	0,222
St. dev	0,311	0,661	0,370	0,341	0,537	0,953	0,417	0,392	0,341	0,302	0,342	0,452
Obs	76	76	76	76	76	75	75	76	75	76	76	833

Panel E ROS

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	-0,050	-0,217	-0,259	-0,120	-0,151	-0,319	-0,145	0,077	-0,063	-0,118	-0,159	-0,317
Max	0,219	0,223	0,225	0,215	0,202	0,262	0,285	0,291	0,297	0,293	0,292	0,297
Average	0,071	0,072	0,071	0,071	0,059	0,039	0,052	0,064	0,067	0,066	0,061	0,063
St. dev	0,054	0,064	0,069	0,057	0,061	0,083	0,067	0,064	0,061	0,066	0,067	0,066
Obs	76	76	76	76	76	76	76	76	76	76	76	836

Panel F Financial variables

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Risk	0,169	0,150	0,137	0,159	0,193	0,192	0,170	0,1881	0,182	0,179	0,193	0,176
	(0,174)	(0,151)	(0,137)	(0,147)	(0,179)	(0,186)	(0,168)	(0,186)	(0,188)	(0,187)	(0,197)	(0,175)
Ad	0,027	0,029	0,028	0,028	0,028	0,027	0,025	0,026	0,026	0,026	0,025	0,027
	(0,024)	(0,025)	(0,026)	(0,027)	(0,025)	(0,024)	(0,021)	(0,021)	(0,021)	(0,021)	(0,021)	(0,023)
Capex	0,047	0,049	0,047	0,049	0,048	0,041	0,027	0,029	0,034	0,037	0,040	0,041
	(0,036)	(0,035)	(0,033)	(0,036)	(0,033)	(0,026)	(0,018)	(0,017)	(0,019)	(0,022)	(0,025)	(0,029)
Size	7,426	7,580	7,673	7,760	7,783	7,905	7,903	7,703	7,956	8,035	8,081	7,822
	(1,482)	(1,402)	(1,397)	(1,412)	(1,461)	(1,499)	(1,501)	(1,501)	(1,501)	(1,522)	(1,918)	(1,472)

Table 3

Pearson correlation matrix of variables used in the regressions with retail firms

The table shows a correlations matrix of the dependent variables; Tobin's Q, ROE and ROS, the independent variable, CSR and the control variables risk, size, capex and advertisement, used in the regressions with US retail firms. The matrix shows the persons correlation coefficients which ranges from -1 to +1, where a +1 indicates a perfect linear relationship between two variables and vice versa.

	CSR1	TOBINSQ	ROE	ROS	RISK	CAPEX	ADVERT	SIZE
CSR1	1							
TOBINSQ	0,096*	1						
ROE	0,039	0,082*	1					
ROS	0,132*	0,585*	0,119*	1				
RISK	-0,067	-0,166*	-0,114*	-0,189*	1			
CAPEX	-0,052	0,334*	0,023	0,437*	-0,062	1		
ADVERT	0,125*	-0,034	-0,008	-0,086*	-0,077*	0,07	1	
SIZE	0,118*	-0,079*	-0,01	0,072*	0,292*	-0,039	-0,287*	1

* indicates that the correlation is significant at a 5 % significance level.

An alternative explanation of a rising sample score average could be that new firms with good CSR performance are added to the KLD score-rating database. However since this panel data sample is fixed, implying that the same firms are observed during the whole sample period, it is not a valid explanation. Panel B to D shows the summary statistics of the dependent variables, Tobin's Q, ROE and ROS. Please note that the sample for Tobin's Q and ROA is larger than for ROE, which is due to the removal of three outliers. A common observation in the financial variables is that the average values are smaller during 2007 to 2009, which is most likely attributable to the financial crisis. The acknowledgment of the financial crisis is important since it could cause more noise in the econometrical analysis. Finally, panel E shows the mean and standard deviation of the control variables. Table 3 presents a person correlation matrix of the variables used to test the first hypothesis with the retail firms. The financial variables, Tobin's Q, ROE, and ROS are all significantly correlated. CSR is significantly correlated with both ROS and Tobin's Q, but not ROE. None of the independent variables are perfectly correlated, thus multicollinearity do not seem to be an issue in this sample[5].

[5] Also verfied by the VIF statistics.

Table 4
Summary statistics of manufacturing companies

The table shows summary statistics of the KLD rating, financial performance variables and the control variables of the sampled US manufacturing firms between 2003 and 2013. The total sample consist of 4532 observations of 412 firms that have corporate financial performance information in the KLD database as well as financial information in the compustat database, for the whole sample period. Some observations are missing for some of the firms. Because of that the number of observations for each variable in the tables below, might be different from 4352. CSR is defined as total qualitative positive indicators strengths minus total number of qualitative negative indicators retrieved from the KLD database.

Panel A CSR

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	-7	-7	-9	-10	-9	-10	-10	-8	-5	-4	-5	-10
Max	7	10	11	14	15	14	14	17	19	16	17	19
Average	-0,172	-0,514	-0,151	-0,320	-0,320	-0,368	-0,388	0,524	0,309	1.626	1,633	0,149
St. dev	1,911	2.179	2,179	2,862	2,940	2,985	3,009	3,836	4,405	3,074	3,492	3,181
Obs	412	412	412	412	412	412	412	412	412	412	412	4532

Panel B Tobin's Q

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	0,057	0,256	0,179	0,375	0,485	0,090	0,405	0,473	0,351	0,449	0,550	0,059
Max	9,529	9,044	9,546	9,226	11,948	11,948	6,815	7,329	9,511	17,846	14,158	17,851
Average	2,024	1,950	1,99	1,929	1,873	1,333	1,557	1,687	1,578	1,631	1,938	1,772
St. dev	1,394	1,179	1,281	1,127	1,261	0,943	0,946	1,004	1,073	1,272	1,360	1,196
Obs	412	412	412	412	412	412	412	412	412	412	412	4532

Panel C ROE

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	All years
Min	-3,881	-4,691	-2,827	-4,186	-6,775	-3,776	-6,095	-6,427	-10,449	-5,859	3,697	-10,449
Max	49,99	5,227	8	2,663	28,207	54,192	54,195	12,327	19,851	104,413	144	144
Average	0,278	0,158	0,231	0,174	0,270	0,211	0,199	0,182	0,206	0,376	0,544	0,257
St. dev	1,196	0,526	0,713	0,397	1,041	1,616	2,729	0,974	1,222	5,188	7,102	2,995
Obs	411	411	412	412	412	411	409	411	411	411	412	4523

Panel D ROA

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Min	-0,517	-0,805	-0,577	-0,411	-0,749	-0,942	-0,992	-0,477	-0,605	0,690	-0,738
Max	0,481	0,629	0,798	0,638	0,652	0,388	0,828	0,710	0,444	0,368	0,739
Average	0,056	0,079	0,089	0,091	0,086	0,045	0,041	0,091	0,089	0,077	0,074
St. dev	0,122	0,124	0,118	0,106	0,132	0,169	0,140	0,103	0,105	0,104	0,114
Obs	412	412	412	411	412	407	410	412	411	410	412

Panel E Financial variables												
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**All years**
Risk	0,173 (0,170)	0,173 (0,167)	0,167 (0,172)	0,167 (0,166)	0,170 (0,183)	0,193 (0,223)	0,170 (0,179)	0,163 (0,159)	0,171 (0,160)	0,184 (0,163)	0,184 (0,155)	0,175 (0,175)
R&D	0,590 (4,873)	0,509 (4,493)	0,535 (5,188)	0,461 (3,988)	0,365 (3,712)	0,337 (2,428)	0,301 (2,093)	0,178 (1,482)	0,186 (1,555)	0,916 (14,034)	0,206 (1,261)	0,415 (5,352)
Size	7,161 (1,529)	7,273 (1,508)	7,356 (1,482)	7,484 (1,457)	7,578 (1,455)	7,559 (1,499)	7,574 (1,499)	7,690 (1,477)	7,775 (1,471)	7,854 (1,476)	7,923 (1,472)	7,566 (1,498)
Capex	0,065 (0,195)	0,066 (0,216)	0,069 (0,299)	0,101 (1,007)	0,053 (0,077)	0,053 (0,077)	0,041 (0,056)	0,038 (0,036)	0,044 (0,043)	0,064 (0,390)	0,045 (0,039)	0,058 (0,352)

Table 5

Pearson correlation matrix of the variables used in the regressions with manufacturing firms

The table shows a correlation matrix of the dependent variables; Tobin's Q, ROE and ROA, the independent variable CSR and the control variables used in the regressions with US manufacturing firms. The matrix shows the persons correlation coefficients which ranges from -1 to +1, were a +1 indicates a perfect linear relationship between two variables and vice versa.

	CSR	TOBINSQ	ROE	ROA	RISK	CAPEX	R&D	SIZE
CSR	1							
TOBINSQ	0,087*	1						
ROE	0,052*	-0,007	1					
ROA	0,121*	0,236*	0,055*	1				
RISK	0,008	-0,076*	0,028	-0,267*	1			
CAPEX	0,002	0,137*	-0,016	-0,146*	0,04*	1		
R&D	-0,009	0,225*	-0,021	-0,333*	0,034	0,557*	1	
SIZE	0,327*	-0,184*	0,059*	0,146*	0,175	-0,051*	-0,099*	1

* indicates a significant correlation at a 5 % significance level.

4.2.1 Descriptive statistics and correlation analysis for manufacturing firms

In table 4 the descriptive statistics is presented for the variables used in the panel regressions to test the second hypothesis. The sample consists of 4532 observations of 412 manufacturing firms sampled from 2003 to 2013. Panel A of table 4 shows the descriptive statistics of the independent variable CSR. During the whole sample period the average yearly sampled value has increased from negative -0,172 to positive 1,633. In appendix 3, a trend line is presented of the average CSR score of the manufacturing sample. Manufacturing firms have had a negative average until 2010. From 2010 and forward sharp yearly increases in the average manufacturing CSR score are observed. Similar explanations that are applied to the CSR score trend of retail firms can be applied here. A possibility exist that manufacturing firms have experienced increased pressure from stakeholders of engaging more heavily in CSR in later years. A shift from the efficiency improvements as the foremost operating goal in the manufacturing industry may be occurring. In Panel B-D descriptive statistics of the 3 dependent variables, Tobin's Q, ROE and ROA is presented. The variation of each year's average ROE is large, where the minimum average ROE is 0,174 (17,4%) and maximum 0,544 (54,4%). Nine large outliers are removed from the ROE data.

Still, the minimum value of the sampled firms is -10,499 which implies that the firm in question reported a net income of 1049,9 % of its equity. This is far from the whole sample period average of 25,7%. The largest positive value is 144, or 14400%, which also largely deviates from the mean. However, these observations were not removed, as removing too many observations also take away potentially valuable information. Furthermore, the large outliers all have a debt to asset ratio of over 90%, implying a low equity to asset ratio. The same concern is experienced with the ROS variable, where 11 outliers are removed from the data. Table 5 exhibits a person correlation matrix of the variables used in the model containing the manufacturing firms. CSR is significantly correlated with all of the dependent financial variables, ROE, ROA and Tobin's Q. Some of the independent variables are statistically significantly correlated with each other but no variable pair are close to perfectly correlated.

4.3 Panel data analysis

4.3.1 CSR and CFP relationship for retail firms

Table 6 presents the result of regressing model (1) with Tobin's Q as the dependent variable, for the sample of 76 retail firms between the years 2003 to 2013. The model is run to test hypothesis 1.a. An F-test of the time invariant errors is rejected with 0,01 significance and the null hypothesis in the LM test for random effect is also rejected with 0,01 significance. This implies that both random and fixed effects are present. However, since the null hypothesis in the Hausman test is rejected, a fixed effect model is run. The coefficient of the CSR variable is not statistically significantly different from zero. Therefore, the null hypothesis, 1a, cannot be rejected. The result suggests that if a firm improves its CSR measured by an increase in its KLD score, there is no statistically observable effect on its market value. This result is inconsistent with my expectations but in line with for instance McWilliams and Siegel's (2000) result who similarly found an insignificant relationship. On the other hand, it is contrary to the result of Dowell et al. (2000) panel study with Tobin's Q as the dependent variable. Their estimated CSR coefficient is positive and significant. In contrast to this study, they use a random effect model and their measure of CSR only contains environmental aspects. Theoretically, the insignificant result supports McWilliams and Siegel's (2001) arguments about a neutral relationship. As expected, risk is negatively correlated with Tobin's Q. The coefficients of the other control variables; size, advertisement, and capex are all insignificant. One possible explanation could be that the fixed effect capture some of their respective effects on Tobin's Q. The sizes of the advertisement and capex coefficients are quite large. However they are both measured as a ratio to total asset and in both cases that ratio is quite small for this sample. The estimated coefficient measures a 1 % increase of the respective variable to total assets, which represents a substantial increase in the value of the advertisement and capital spending. The magnitudes of the coefficients are therefore justified.

Table 6

Results from panel data regressions of Tobin's Q on CSR scores for the retail sample.

Column 1 and 2 below shows the result of regressing model 1, by using 727 observations of US retail firms between 2003 and 3013. Fixed panel data of 69 firms is used. The dependent variable is Tobin's Q, which is calculated as the companies' market value over total assets. The independent variable CSR measures a firm's qualitative positive indicators minus its qualitative negative concerns regarding environmental, social and government topics retrieved from the KLD database. Risk is measured as firm i's debt to asset ratio. Advertisement and Capex are both measured as a ratio to net sales. Size is firm i's natural logarithm of its total assets. The F-test and Hausman test do not reject a fixed effect model, therefore a firm fixed effects model is applied and the result can be seen in column 1. The result from a pooled OLS model is also presented since it can be interesting to see the sign and magnitude of the bias caused by the unobserved time invariant factors. Column 3 shows the result from another sample with 1639 observations of 203 US retail firms between 1998 and 2013. However the sample is not fixed but rotating. Only firms with 2 or more consecutive observations are included. In all models time-fixed effects are controlled for. Standard errors are presented in the parentheses, which are clustered on a firm level.

Dependent variable:	Fixed effect	Pooled OLS	Fixed effect
Tobins Q	(1)	(1)	(1)
CSR	-0,011	0,0369	-0,020
	(0,017)	(0,027)	(0,014)
Size	-0,499**	-0,0398	-0,454***
	(0,201)	(0,057)	(0,109)
Risk	0,879	-0,584	0,285
	(0,772)	(0,487)	(0,181)
Advertisment	-8,303	-4,659	-7,944*
	(12,910)	(3,396)	(4,602)
Capex	6,643***	14.317***	3,333*
	(2,167)	(3.643)	(1,723)
F-test that u=0	16,67***		12,85***
F-test (model)	11,77***	13.65***	11,32***
LM test for random effects	1265,68***		1975.73***
Hausman test	35,39***		59,35***
Year effects	Yes	Yes	Yes
R^2	0,749	0,224	0,728
Standard errors	Clustered	Clustered	Clustered
N	727	727	1639

* ** and *** indicates 10% 5% and 1% level of significance respectively

Colum 2 also shows the result from regressing model 1 by using a pooled OLS regression. The pooled OLS regression is employed to observe the direction and magnitude of the omitted variable bias of the estimators. In the pooled OLS model, the CSR variable is positive but still insignificant. To test the robustness of this finding, another sample is used to run the model (1). The sample contains all retail companies covered by the KLD database from 2003 to 2013 that had two or more consecutive years of data. Column three reports the result, which confirms an insignificant relationship.

There are certain limitations present when using Tobin's Q as a dependent variable. First, it includes the market value of equity, which is easily affected by noise in the market. The recent financial crisis is one event that can lead to higher than normal standard errors. Second, Tobin's Q does not only vary with the actual performance of a firm over time, but it also relies to a large extent of current expectation on the firm's future performance. Therefore, model (2) and (3) are run to test hypothesis 1.b and 1.c where the accounting measures ROE and ROS are used as dependent variables, respectively. Table 7 presents the result of the panel analysis of model (2), where ROE is used as the dependent variable.

Table 7

Results from panel data regressions of ROE on CSR scores for the retail sample.

The table below shows the result of regressing model 3, by using 727 observations of US retail firms between 2003 and 3013. Fixed panel data of 69 firms is used. The dependent variable is return on equity ROE which is calculated as the net income before taxes over total equity for company i time t. The result of the LM test for random effects and Hausman test do not reject a random effect model. Therefore the result from the random effect models can be seen in column 1. The result from a pooled OLS model is also presented since it can be interesting to see the sign and magnitude of the bias caused by the unobserved time invariant factors. Column 3 shows the result from a fixed effect model using another sample with 1725 observations of 207 US retail firms between 1991 and 2013. The sample is not fixed but rotating. Only firms with 2 or more consecutive observations are included. In all models time-fixed effects are controlled for. Standard errors are presented in the parentheses, which are clustered on a firm level. Time-fixed effects are not applied for the models in the first two columns since the null hypothesis in the F-test of joint significance could not be rejected. But for the robustness time fixed effects are used.

Dependent variable:	Random effect	Pooled OLS	Random effect
ROE	(2)	(2)	**(2)**
CSR1	0,011*	0,010	0,007*
	(0,006)	(0,007)	(0,004)
Size	0,002	0,006	0,034***
	(0,014)	(0,014)	(0,013)
Risk	0,038	0,061	-0,188**
	(0,171)	(0,157)	(0,093)
Advertisment	-1,917*	-1,788*	0,210
	(0,998)	(0,958)	(0,672)
Capex	0,869	1,363	0,066
	(0,091)	(0,845)	(0,207)
Wald Chi2 for random	8,07[6]		49,24***
F-test (model)		2,30*	
LM test for random effects	19,78***		22,91***
Hausman test	8,24		3,08
Year fixed effects	No	No	Yes
R^2	0,016	0,016	0,04
Standard errors	Cluster	Cluster	Cluster
N	724	724	1725

*, ** and *** indicates 10%, 5% and 1% level of significance, respectively.

The sample includes 724 observations between 2003 and 2013. In the first column, a random effect model is shown and in the second column, the Pooled OLS result is presented. The pooled OLS model is rejected since both the null hypothesis in the F-test and the LM test for random effects are rejected on a 0,01 level. The null hypothesis in the Hausman test is not rejected and a random model is therefore used. Colum 1 shows that the coefficient for the CSR variable is positive and significant. It has a magnitude of 0,011, implying that on the average an increase in the CSR score compared to other firms or over time increase the ROE by 0,011%. The null hypothesis, 1b, is rejected.

The previous result supports the theories that argue for a positive relationship between the CSR and CFP. According to the results, by improving the company's CSR the ROE of a firm will increase. This is consistent with existing studies, such as Waddock and Graves (1997).

[6] When the insignificant variables were excluded (tested by a joint F-test) the model was significant on a 0,05 level and the CSR coefficient was also significant on a 0,1 level.

Table 8

Results from panel data regressions of ROS on CSR scores for the retail sample.

The table below shows the result of regressing model 2, by using 727 observations of US retail firms between 2003 and 3013. Fixed panel data of 69 firms is used. The dependent variable is return on sales ROS which is calculated as the net income before taxes over sales for company i time t. The F-test and Hausman test do not reject a fixed effect model, therefore a firm fixed effects model will be applied and the result can be seen in column 1. The result from a pooled OLS model is also presented since it can be interesting to see the sign and magnitude of the bias caused by the unobserved time invariant factors. Column 3 shows the result from a fixed effect model using another sample with 1737 observations of 203 US retail firms between 1991 and 2013. The sample is not fixed but rotating. Only firms with 2 or more consecutive observations are included. In all models time-fixed effects are controlled for. Standard errors are presented in the parentheses, which are clustered on a firm level.

Dependent variable:	Fixed effect	Pooled OLS	Fixed effect
ROS	(3)	**(3)**	**(3)**
CSR1	0,05**	0,002*	0,001*
	(0,033)	(0,001)	(0,001)
Size	0,046	0,003	0,020***
	(0,184)	(0,004)	(0,006)
Risk	-2,239*	-0,054*	-0,052***
	(1,321)	(0,029)	(0,019)
Advertisment	-13,803**	-0,348	-0,636
	(7,094)	(0,207)	(0,425)
Capex	-1,938	1,104***	0,008
	(3,360)	(0,218)	(0,053)
F-test that U=0, fixed	17,80***		10,31***
F-test (model)	4,84***	6,21***	3,31***
LM test for random	1059,13***		2103,44***
Hausman test	32,10***		20,04***
Year fixed effects	Yes	Yes	Yes
$\boldsymbol{R^2}$	0,76	0,317	0,635
Standard errors	Cluster	Cluster	Clustered
N	727	727	1737

*, ** and *** indicates 10%, 5% and 1% level of significance, respectively.

However, the findings are not in accordance with Mahoney and Roberts (2007) who employs a fixed effect model or Elsayed and Paton (2005) that utilize a random effect model, as they both conclude an insignificant relationship. However, Elsayed and Paton (2005) only examine the environmental concerns of the CSR variables. One limitation of the estimated model is that the Wald chi- square test is insignificant. The independent variables do not together significantly explain the variation in ROE. Therefore using all the control variables does not seem to be necessary for this random model. Furthermore, the result from the random effect model could still be driven by both time variant and invariant omitted variable bias. The result of the pooled OLS is presented in the column. 2. The magnitude of the CSR coefficient is 0,010, which is close to the random model. However the estimated coefficient is insignificant. Implying once again that the choice of the panel model is important in order to receive efficient and unbiased estimators. Table 7, column three exhibits the results of the robustness test, where regression model 2 is run with a different sample. The results similar to the results found in the random effects model.

To test whether the CFP-CSR relationship holds for yet another accounting measure the above analysis is repeated with ROS as the dependent variable. ROS is a common key performance indicator in the retail industry. The result is reported in table 8. Similar to the other models, the pooled OLS model is rejected since the null hypothesis in the F-test and the

LM test is rejected at a 0,01 significant level. The null hypothesis in the Hausman test is rejected and a fixed effect model is run. The estimated CSR coefficient in the fixed effect model is positive and statistically significant from zero on a 0,05 level. The null hypothesis 1.c is rejected. The magnitude of 0,05 of the CSR coefficient implies that if a firm increases its CRS score with one unit, either by receiving one more positive indicator or one less negative indicator, ROS will increase with 0,05%. This result further suggests that CSR improves the net income of retail firms. The statistical significance and economic relationship are stronger compared to CSR-ROE relationship. Furthermore, the R Square is higher for model (3) with ROS as the dependent variable compared to ROE. The F-test indicates that the whole model is significant at a 0,01 level. The same sample as in model 1 and 2 above is used for the robustness regressions. The result is presented in column 3 and confirms a positive and significant relationship between ROS and CSR. Colum 2 in Table 8 presents the result from running a pooled OLS model. The magnitude of the estimated coefficient of CSR is 0,002, which is a decrease compared to the fixed effect regression. This implies that the omitted time invariant variables positively affects the firms' ROS and is also negatively correlated with CSR, or it negatively affects ROS and is positively correlated with CSR. In summary, CSR and financial performance for retail firms are positively correlated when accounting return is used to measure the financial performance. The economic magnitude of the estimated coefficient is on the other hand small. Contrary, the result is insignificant when the market measure, Tobin's Q is used.

5.4.3 CSR and CFP relationship for manufacturing firms

The next step is to test the second hypothesis in this paper, whether a relationship exists between CSR and CFP in the manufacturing industry, by using the same analysis as for the retail sample. Even if the result of the majority of financial variables in the retail industry indicated that financial benefits could be obtained with CSR practice, it does not mean this inference can be extended to other industries as manufacturing. Industries are different in terms of success drivers, ESG concerns, and potential undertakings, and therefore, the result can diverge. To address the second hypothesis, models 4, 5 and 6 are run. The dependent variables are Tobin's Q, ROE, and ROA, respectively. In all models, size, risk, R&D and capital spending are controlled for.

Table 9 presents the results of regressing model 4 with Tobin's as the dependent variable. The relevant test reveals that a fixed effect model is superior to a random or pooled OLS model. Time fixed effects are included since the year dummies are jointly significant in the F-test. Column one shows that the estimated CSR coefficient is insignificant. Implying that an increase in the CSR score does not have any statistically significant effect on a Tobin's Q.

Table 9

Results from panel data regressions of Tobin's Q on CSR for the manufacturing sample.

The table below shows the result of regressing model 4, by using 3715 observations of US manufacturing firms between 2003 and 3013. Fixed panel data of 349 firms is used. The dependent variable is Tobin's Q, which is calculated as the net income before taxes over total asset for company i time t. The independent variable CSR1 measures a firm's qualitative strengths minus its qualitative concerns regarding environmental, social and government topics retrieved from KLD. Risk is measured as firm i's debt to asset ratio. R&D and capex are both measured as a ratio to net sales. Size is firm i's natural logarithm of its total assets. The result of the F-test and Hausman test do not reject a fixed effect model. Therefore the result from the fixed effect model can be seen in column 1. The result from a pooled OLS model is presented in column 2 to see the sign and magnitude of the bias caused by the unobserved time invariant factor. Column 3 shows the result from a fixed effect model using another sample with 9141 observations of 1181 US manufacturing firms between 1999 and 2013. The sample is not fixed but rotating. Only firms with 2 or more consecutive observations are included. In all models time-fixed effects are controlled for. Standard errors are presented in the parentheses, which are clustered on a firm level.

Dependent variable:	Fixed effect	Pooled OLS	Fixed effect
Tobins Q	(4)	(4)	(4)
CSR	-0,01	0,060***	-0,012
	(0,008)	(0,011)	(0,010)
Size	-0,385***	-0,180***	-0,775***
	(0,101)	(0,036)	(0,089)
Risk	-0,612*	-0,341	-0,448**
	(0,317)	(0,377)	(0,200)
R&D	0,033	0,046***	0,000
	(0,027)	(0,013)	(0,001)
Capex	-0,148***	0,046	-0,001
	(0,067)	(0,056)	(0,002)
F-test that U=0	16,32***		8,71***
F-test (model)	27,43***	31,95***	1084,22***
LM test for random effects	5876,50***		5998.42***
Hausman test	157,65***		239,71***
Year fixed effects	Yes	Yes	Yes
R^2	0,681	0,14	0,653
Standard errors	Clustered	Clustered	Clustered
N	3715	3715	9136

*, ** and *** indicates 10%, 5% and 1% level of significance, respectively.

Consequently, no inference can be made of the relationship between Tobin's Q and CSR for manufacturing firms and the null hypothesis 2.a cannot be rejected. This is not in line with the expectations, but similar to the result obtained in the retail sample. It is therefore also in line with McWilliams and Siegel's (2000) result but contrary to the result of Dowell et al. (2000), as discussed in the retail section. In column two the same model specification is run, (3), but as a pooled OLS model. The result is then positive and significant. Therefore, by not controlling for these omitted firm characteristics a pooled OLS model produces biased coefficients, and there is a possibility that an incorrect inference is made. To make sure the result is not driven by the specific sample, the same model is run with another set of the sample that contains all manufacturing companies covered by the KLD database from 2003 to 2013 that also had 2 or more consecutive years of data. Column three presents the robustness test, which confirms the above result of an insignificant relationship. Due to the drawbacks of using Tobin's Q as the financial performance measure, two other model specifications are run with the accounting measures, ROE and ROA as the dependent variables.

Table 10

Results from panel data regressions of ROE on CSR for the manufacturing sample.

The table below shows the result of regressing model 5, by using 3707 observations of US manufacturing firms between 2003 and 3013. Fixed panel data of 349 firms is used. The dependent variable is return on equity ROE which is calculated as the net income before taxes over total equity for company i time t. The independent variable CSR measures a firm's qualitative strengths minus its qualitative concerns regarding environmental, social and government topics rated by KLD. The result of the LM test for random effects and the F-test do not reject a pooled OLS model. Therefore the result from the Pooled OLS model can be seen in column 1. Column 2 shows the result from a pooled OLS model using another sample with 9141 observations of 1181 US manufacturing firms between 2003 and 2013. Time-fixed effects are not applied. Standard errors are presented in the parentheses, which are clustered on a firm level.

Dependent variable:	Pooled OLS[7]	Pooled OLS
ROE	(5)	(5)
CSR1	0,040**	0,002*
	(0,020)	(0,001)
Size	0,085**	0,046***
	(0,036)	(0,004)
Risk	0,622	-0,225***
	(0,423)	(0,036)
R&D	-0,008**	0,000
	(0,004)	(0,000)
Capex	-0,072**	0,001
	(0,033)	(0,000)
F-test that U=0	1,100	0,96
F-test (model)	7,53***	371,23***
LM test for random effects	1,000	1.000
Hausman test		
Year effects	No	Yes
R^2	0,0063	0,193
Standard errors	Clustered	Clustered
N	3707	10089

*, ** and *** indicates 10%, 5% and 1% level of significance, respectively.

Table 10 demonstrate the result of regressing model 5 with ROE as the dependent variable. Neither the F-test nor the LM test for random effects could be rejected at a 0,1 significance level. With no fixed or random effects present, a pooled OLS is run, and the result is can be seen column 1. Noteworthy is that this is the only case in which the result of the statistical tests favoured a pooled OLS model. Contrary to the result with Tobin's Q as the dependent variable, the estimated CSR coefficient is now positive with a magnitude of 0,040 and significant at a 0,05 level. The result rejects hypothesis 1.b and supports the theories that engaging in CSR does increase the financial performance of a firm. According to this result, firms with one higher CSR score have 0,04% higher ROE, ceteris paribus. One limitation is that the pooled OLS do not contain the same power in providing a ceteris paribus effect. Nevertheless, a positive and significant result is confirmed in the robustness test presented in column two. The sample contains the same companies as in the robustness test for Tobin's Q.

The result of the last model specification (6) with ROA as the dependent variable can be seen in table 11. In contrast to ROE, the coefficient is not statistically significantly different from zero.

[7] When the insignificant variable risk were excluded from the model, the null hypothesis in the F-test that all u=0, was rejected. Therefore a fixed effect model were run without risk but the CSR coefficient were still significant but at a 0,1 level, with a magnitude of 0,117 (0,067).

Table 11

Results from panel data regressions of ROA on CSR for the manufacturing sample.

The table below shows the result of regressing model 6, by using 3707 observations of US manufacturing firms between 2003 and 3013. Fixed panel data of 349 firms is used. The dependent variable is return on equity ROA that is calculated as the net income before taxes over total asset for company i time t. The result of the F-test and Hausman test do not reject a fixed effect model. Therefore the result from the fixed effect model can be seen in column 1. The result from a pooled OLS model is presented in column 2 to see the sign and magnitude of the bias caused by the unobserved time invariant factor. Column 3 shows the result from a fixed effect model using another sample with 9141 observations of 1181 US manufacturing firms between 2003 and 2013. The sample is not fixed but rotating. Only firms with 2 or more consecutive observations are included. In all models time-fixed effects are controlled for. Standard errors are presented in the parentheses, which are clustered on a firm level.

Dependent variable:	Fixed effect	Pooled OLS	Random effect
ROA	(6)	(6)	(6)
CSR1	0,008	0,003***	0,000
	(0,001)	(0,001)	(0,001)
Lnassets	0,031**	0,014***	0,057***
	(0,010)	(0,004)	(0,005)
Risk	-0,205***	-0,206***	-0,228
	(0,043)	(0,040)	(0,027)***
R&D	-0,007***	-0,012***	-0,000
	(0,002)	(0,003)	(0,000)
Capex	-0,004	0,008	0,001
	(0,003)	(0,005)	(0,001)
F-test that U=0	9,82***		11,36***
F-test (model)	12,09***	11,64***	1720,76***
LM test for random effects	3333,84***		5639***
Hausman test	188,88***		8,33
Year fixed effects	Yes	Yes	Yes
R^2	0,621	0,234	0,186
Standard errors	Clustered	Clustered	Clustered

*, ** and *** indicates 10%, 5% and 1% level of significance, respectively.

Therefore, the null hypothesis 1.c cannot be rejected. When comparing the fixed effect model in column one and the pooled OLS model in column two the pooled OLS result is significant at a 0,01 level. As mentioned above, if most of the previous researches use pooled OLS or cross- sectional data then it is not unexpected to observe differences in the inferences. An insignificant result is also obtained when the robustness sample is used, which is presented in column three.

Overall, the result of CSR and financial performance for manufacturing firms is weak. The CSR coefficient is positive and significant in only one of three models, where ROE is the dependent variable. On the other hand, in the regression when ROE is the dependent variable, a pooled OLS is run as indicated by the statistical tests. The effect of CSR on Tobin's Q and ROA cannot be concluded in this study. The result is different from the majority of previous studies that have been using cross- sectional data, but similar panel estimation studies.

5. Discussion

In this study, the question of whether CSR increases the finical performance cannot fully be resolved, partly because the result is dependent on the industry being studied and on the financial measure. On the other hand, the result provides evidence that CSR improves financial performance for retail firms, when accounting measures are used as a proxy for the firms' financial performance, but not when a market measure is used. For manufacturing firms, the relationship is weaker, and only ROE showed a significant positive significant relationship to

CSR. A discussion of possible interpretations of my findings for the retail and manufacturing industry, respectively, will follow.

The findings support that an increase in net income, either as a ratio to equity or sales, due to investing in CSR outweigh the costs in the retail industry. In the sampled retail firms, average pre-tax income gains of an increase in the CSR rating, measured by KLD ESG scores, are estimated to range between $ 2 314 and $ 53 430 per annum. This is calculated by using the sample mean value of equity of $21040000 and sales of $106860000 and estimated ROE and ROS coefficients of 0,01 and 0,05, respectively. This result is open to several explanations. The first possible explanations are linked to the theories that support a positive relationship. One possibility is that CSR investments are linked to some of the success factors in the retail industry like brand reputation, customer retention and entering new markets. In line with the recourse theory CSR could offer strategic advantages in the retail industry by creating rare immobile recourses. This explanation holds for both differentiating firms, where CSR potentially can increase brand image and quality, and in cost leadership firms, if CSR initiative can reduce the firms' costs or the firm can produce more efficiently. Furthermore, since attracting new customers is more expensive than keeping old one's customer retention and satisfaction is a high priority for retail firms, which may be improved with CSR. According to the contract theory, firms that do not engage in opportunistic behaviour will have reduced contracts. Furthermore, they will not be put in a situation where they will loose follow on businesses and therefore, positive financial performance can potentially be obtained. Further possible reasons follows the stakeholder theory, where CSR improves the relationship with stakeholders like capital providers. In the RILA survey (2015), source of innovation, reaching new markets and brand enhancement are the top reasons of why retail firms engage in CSR. This is in accordance with the recourse theory and the strategic management literature, where CSR initiatives may lead to a competitive advantage. However, customers and regulators are both stakeholders that are important in order to benefit from the above reasons, since customers buy the products and regulators regulate market-entry possibilities. As a consequence, arguments of the stakeholder theory also hold to some extent in explaining the perceived benefits. The above explanations supports the argument that retail firms can improve their financial performance by investing in CSR. However, similar result would also be obtained if the reversal causality holds, which means that when a firm's financials improves, it will devote resources to CSR. Another possibility that cannot be ruled out is that CSR are related to other firm characteristics. When CSR increases, other firm capabilities also improve, which in turn, drives the actual relationship.

In contrast, in the manufacturing industry the result shows that financial performance is not a function of the firms' level of CSR undertakings, in the majority of CFP variables. One important question is then why CSR increases the accounting financial performance for retail

firms but not for manufacturing firms. Several mechanisms can serve as explanations here. One reason could be that CSR is not linked to enough of the current success factors in the manufacturing industry. For instance, there may not exist enough environmental-focused technologies that also lead to an improved cost advantage. Alternatively, the benefits do not yet outweigh the financial cost of the investments. Other explanations include McWilliams and Siegel's (2001) cost and benefit analysis, which implies that all firms invest in CSR until the marginal benefits equal the marginal costs. Thus, in equilibrium, the relationship is neutral, so neither a positive nor a negative relationship exists. An alternative reason, discussed from a stakeholder theory lens, is that currently stakeholders in the manufacturing industry might not put enough pressure on the firms to operate according to CSR practices. If customer demand is equal for firms with and without CSR practices, capital providers are equally willing to lend money to firms with and without CSR practices and regulators do not make it costly for firms that do not comply with certain CSR standards and so on, then the financial benefits of investing in CSR might be vague. However, looking at the mentioned current sustainability practices in the industry, they tend to be focused on efficiency and risk management. Efficiency investments can lead to less resource usage, energy and water consumption and so forth. But, even though new technologies that focus on efficiency are in line with a sustainability perspective, the firm itself might not be better in terms of its CSR practices. By implementing these technologies or hedging their raw material risk, the financial performance can improve, but the KLD score might not improve, since it is not, per se, a CSR action. Rather it is another way of decreasing the costs per manufactured unit. This could serve as one possible explanation of why the current and historical relationship between CSR and CFP in the manufacturing industry is insignificant.

The implications of my results are open for several possible interpretations for the firms' stakeholders. For example, without a win-win situation in the manufacturing industry, regulators may consider allocating more recourse to the manufacturing industry in finding optimal regulations in the different environmental, social and governance issues the industry face. Furthermore, not only may the regulators put its focus on manufacturing firms, but all stakeholders may consider demanding improved environmental, social and governance actions in the manufacturing industry to receive a sustainable society. Since CSR improvements proved to have some explanatory power of the financial performance in the retail industry, there is a possibility that the retail industry can improve the issues without too much government intervention as they are put less in a trade- off situation of doing well and doing good. Moreover, retail stakeholders who also have financial concerns may react positively to an announcement of investing in CSR. This includes, shareholders, banks, insurance companies, suppliers and others.

It is important not to overstretch the findings since limitations of the study must be kept in mind when interpreting the result. First, the CSR score used in this paper is broad. Different concerns have been weighted with equal amount, which is not consistent with the reality. For instance waste and pollution management may be perceived as more important than supply chain relationships. With this measure of CSR no weight of importance has been given and the score is equally sensitive to all indicators, both positive and negative. As a consequence, firms with higher CSR score might not be the firms, which have undertaken the most important CSR investments. Additionally even though KLD offers a careful developed methodology, the scores are still subjective. Moreover, the importance of the rated issues and concerns are most likely to vary between industries. These issues are joint concerns in all CSR studies, since other alternative CSR variables are also subjective in their nature and the magnitude of importance is often left out. Second, even though this research is industry specific, the sub-industries in both the retail and manufacturing are many and they are disperse in both success factors that lead to improved financial performance and the sustainability challenges they face. The chemical industry, construction business and retail production are only some of the sub-industries that are also classified as manufacturing firms. These are likely to be driven by different success factors and CSR challenges. Third, even though all models have been tested for fixed effects and fixed effect model have been applied when needed, the result can still be driven by unobserved time- invariant firm heterogeneity, causing biased estimated CSR coefficients. Furthermore the direction of causality is also questionable and has not been approached in this paper. Additionally, while one robustness test is performed in this paper, researchers needs to be conducted covering other countries or alternative time periods, before any relationship can be established with certainty in these industries. Especially in the retail industry, since the sample size used in this research was very small. This research only covers two industries, and thus, other industries and sub- industries, need to be examined. It would also be insightful to decompose the CSR measure further into its different ESG issues, or even look at how specific investments affect the financial performance. This would be fruitful for managers and other stakeholder's interested in knowing which investments in the ESG area that drives the relationship between financial performance and CSR.

As for the panel data estimations applied in this paper, it seems to offer some advantages over previous studies. In five out of six models fixed and/or random effects were present according to the F-test for fixed effect and the LM test for random effects. The results, therefore, suggests panel data estimations as one possible alternative research design to cross-sectional data when conducting future researchers in this area. When both fixed and random models provided insignificant result the Pooled OLS gave in almost all cases a positive and significant result. This suggests that controlling for firm heterogeneity may be important in the search of the CSR - CFP relationship

6. Conclusion

By using panel data analysis of US retail and manufacturing firms sampled between 2003 and 2013, I examine the relationship between CSR ratings and financial performance. For retail firms, I find that there are financial benefits of engaging in CSR. The magnitude of an increase in ROE and ROS due to improved CSR, measured by the KLD ESG scores, were 0,01% and 0,05% respectively. Based on the sampled retail firms, it implies that average pre-tax income gains of an increase in the CSR score are estimated to range between $ 2 314 and $ 53 430 per annum per firm. One potential explanation relates to the existence of an intersection between CSR investments and key success factors in the retail industry like branding enhancement, customer retention and entering new markets. The relationship between market value and the level of CSR in the retail industry is insignificant. Taken together, this result is different from Mahoney & Roberts (2007) and Elsayed and Paton (2005). Their estimated CSR coefficients are not significant to any financial performance variable in their panel data analysis. Contrary to the retail sample, when using panel data analysis of US manufacturing firms sampled between 2003 and 2013 the result does not verify that CSR increases financial performance. Only when ROE is used as the financial performance variable, the estimated CSR coefficient is positive and significant. No significant relationship between CSR and ROA or Tobin's Q can be found in the fixed effect models.

In conclusion, the results of the CSR and CFP relationship in the retail and manufacturing industries are mixed. This is in contrast when compared to the majority of previous studies, where a positive relationship has been established (Margolis and Walsh, 2003). One potential explanation is the nature of the past studies, where many have relied on cross- sectional or pooled OLS regressions. As I show, when using pooled OLS, the CSR coefficient is positive and significant in all regressions, independent of the industry and financial variable, which raise concerns of omitted variable bias in the result of previous researches.

From a stakeholder perspective, several implications of the results exist. Most importantly in the manufacturing industry, the pressure of increasing CSR investments is required, not only from regulators, but also from other stakeholders such as customers. By doing so, environmental, social and governance issues can potentially be reduced. In the retail industry, stakeholders that also care for the financials of the firm, as the shareholders and banks, may consider reacting positively when a retail firm announces a shift of resources to CSR investments.

Besides other samples, industries and time periods, one can identify two directions of future research in the CSR area based on the results. First, it would be interesting to examine the sub-industries to see whether differences within each industry also exist. Second, it would be fruitful for all stakeholders but especially for managers, to decompose the CSR measure further, or even look at specific CSR investments in each industry, to see what areas or

investments that increase the financial performance the most. While I have proposed some possible explanations to the obtained result in each industry, future studies may consider finding the answer. Additionally, researchers that address the current limitations of this study are also important. For example, finding a standardized weighting methodology of the rated indicators or identifying potential time variant omitted variables would increase the validity of future similar studies.

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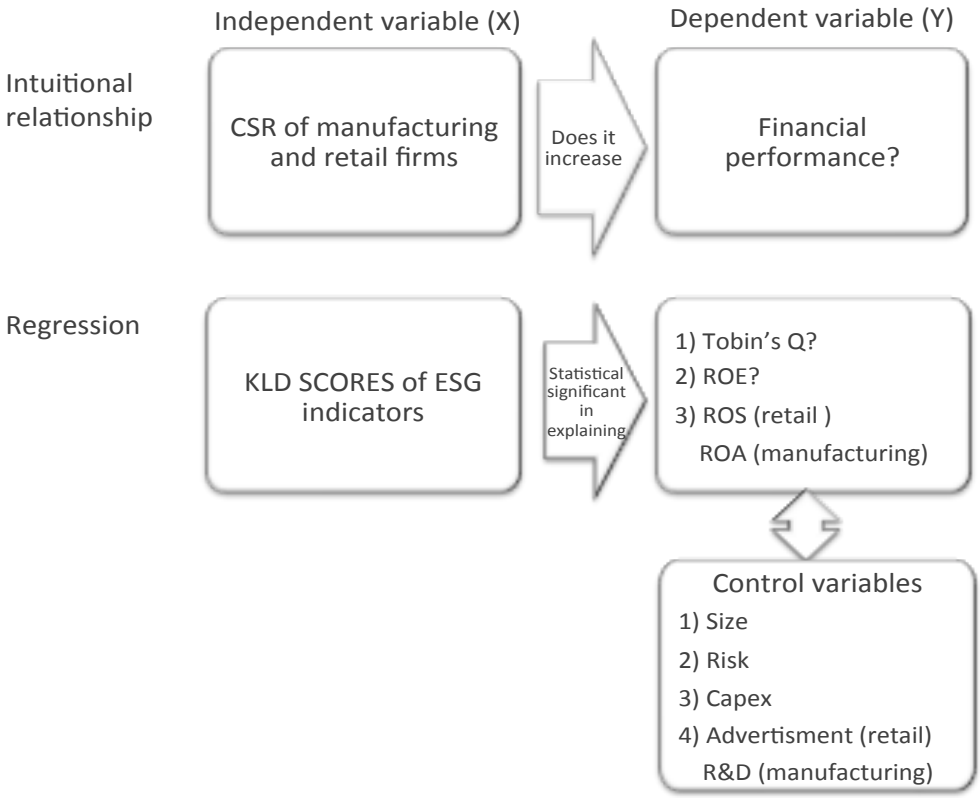
8. Appendix

Appendix 1

In this picture the predictive validity framework is presented. It shows the intuitional relationship I wish to examine with this research. Further it presents the dependent, independent and control variables that will be used in the regressions.



Composed by the author.

Appendix 2

Environmental, social and governance performance indicators in the KLD score rating database

Main Dimension	Sub Dimension	Strengths	Concerns
Environmental indicators	**Environmental performance indicators**	Environmental opportunities - Clean tech - Green buildings - Renewable energy	Regulatory compliance
		Waste management - Toxic emission and Waste - Packaging Materials & Waste - Electronic waste	Toxic emission and Waste
		Climate change - Carbon emission Environmental management systems Natural recourse use – Water stress - Biodiversity & Land use - Raw material Sourcing - Financing Environmental impact	Impact of product & services Biodiversity & land use Operational Waste
		Climate Change - Energy efficiency - Product carbon footprint - Insuring climate change risk	Supply change management
		Environment – Other strengths	Water stress Environment – other concerns
Social indicators	**Community** **Human rights**	Community engagement Indigenous people relations	Community impact Support for controversial regimes
		Human rights Policies & Initiatives	Freedom of expression & censorship Human rights Violations Other concerns
	Employee Relations	Union relations strengths	Union relations concerns
		Cash profit sharing Employee involvement Employee health & safety Supply chain labour standards Human capital development Labour management Controversial sourcing Other strengths	Health & safety Supply chain Child labour Labour-management relations Labour rights & supply chain
	Diversity	Board of directors	Workforce diversity Board of directors
	Product	Product safety & quality Social opportunities - Access to healthcare - Access to finance - Access to communications - Opportunities in nutrition and health	Product quality & safety
		Product safety - Chemical safety - Financial product safety - Privacy and data security - Responsible investment - Insuring health and demographic risk	Marketing & Advertising
			Anticompetitive practices Customer relations Other concerns
Governance indicators	**Governance performance indicators**	Corruption & Political instability	Governance structures
		Financial system instability	Controversial investments Bribery & fraud Other concerns

Composed by the author

Appendix 3

This figure presents a trend line between 2003 and 2013 of the yearly average CSR scores given by KLD score rating database of how well large traded US firm's handle environmental social and governance issues. The two lines present the yearly average CSR scores for the manufacturing and the retail firms covered in the sample.

Average KLD scores in the retail and manufacturing industry from 2003 to 2013