BACHELOR THESIS IN FINANCIAL ECONOMICS

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Does reporting on involvement in poverty alleviation affect the cost of equity?

- Empirical evidence based on listed companies in Sweden

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Abstract

The aim of this thesis is to conclude whether there is a difference in the effect on the cost of equity between companies involved in targeted poverty alleviation and companies that are not involved. Previous research indicates that increased transparency and sustainability reporting have a positive effect on the cost of equity and therefore this study aims to add research in this area. The companies included are of varying size and selected from the Stockholm Stock Exchange since very few, if any, research in this area has been made on the Swedish market. Data for the companies is collected from Yahoo Finance from the period 2015 - 2019 and were then analyzed. To calculate the cost of equity the Fama and French three factor model is used, and the sample is divided into two subsamples to evaluate the difference between the two groups. The empirical results made in this paper shows that there is a difference in the effect on the cost of equity between the two subsamples and it also indicates that companies being involved in poverty alleviation lowers their cost of equity by almost twice as much compared to the companies not involved in poverty alleviation.

Keywords: Fama-French ◆ Cost of Equity ◆ Poverty ◆ CSR ◆ Swedish Stock Market

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1. Introduction

Never in history has the world had such great challenges when it comes to climate and vitality on earth and companies are under a lot of pressure and trying to find their role in this, resulting in trade-offs between different business models and strategies that may affect their success on the market (Benn, Edwards, Williams, 2018). According to Soppe (2004) the traditional business model is to maximize profits. However, this has been questioned and advanced in recent years and a new, broader and complex multidisciplinary theory has emerged where companies should take future environmental and social problems into account and where corporations' moral responsibility should be the core activity and focus of the company (Kaptein & Wempe, 2002). This modern multidisciplinary theory is three-dimensional and aims to optimize long-term finances, but also social and environmental variables (Soppe, 2004).

Benn et al. (2018) claims that it is now more important than ever to create new ways of living, with new habits and patterns and to establish new business models. As corporations have been involved in contributing to many of the threats and problems the world is facing today, they must also be a part of this solution (De la Cuesta & Valor, 2004). Sustainability has according to Benn et al. (2018) been a part of companies for a long period but has not been a part of the core-strategy for most companies. It has more come to be applied for the purpose to improve their "green" credentials and to follow guidelines rather than taking advantage of sustainability as part of the core-strategy that might have a direct impact on business performance. However, Klettner, Clarke and Boersma (2014) and Benn et al. (2018) among others, means that these priorities have gradually changed as sustainability has been proven as an important strategic element linked to direct business results, to value-driven economic factors such as reduced risk and capital cost, increased market shares and the potential for increased returns and improved margins. Today, most companies understand that sustainability is important to have as part of the business agenda for competitive success and that engaging in sustainability issues and making impacts can be financially important (Benn et al., 2018). Benn et al. (2018) also claims that many companies are looking for these new value-creating opportunities by partly, or completely changing their business models and according to Klettner et al. (2014) the rethinking of operational strategies, restructuring of the main business and the intensification of sustainability reporting among companies, has led to a significant growth of corporations' contributions to environmental and social responsibility.

The increased interest in sustainability reporting and sustainability performance that has taken place for regulators, investors and companies over the past decade has had an impact on identifying new opportunities, but also challenges when it comes to the risk-return relationship with investors and stakeholders (Ng & Rezaee, 2015). There is previous research discussing the relationship between corporate social responsibility (CSR) and firm performance, but somewhat less when it comes to the effect CSR-reporting has on the cost of equity capital. Since sustainability reporting according to Ng and Rezaee (2015) among others, is associated with identifying risks, it is closely related to the cost of equity that reflects investors' risk-expectations for the company. Previous research shows that CSR reporting has a positive impact on companies through reduced costs on equity (Ng & Rezaee, 2015; Dhaliwal, Li, Tsang & Yang, 2011; Easley & O'Hara, 2004; Borghesi, Houston & Naranjo, 2014).

According to existing research, spending extra money on sustainability reports has advantages (Dhaliwal et al., 2011). Dhaliwal et al. (2011) believes that the logic and the benefits from generating extra reports like this have been a result of a series of corporate scandals taking place affecting investors' confidence and thus increased the desire for enhanced scrutiny of companies' impact on society. Ng and Rezaee (2015) discusses several reasons why increased sustainability reporting contributes to reduced cost of equity capital and affects shareholders' wealth. They believe that reporting on sustainability performance is associated with better communication and interaction with investors and stakeholders overall and that it can create opportunities to identify financial risks and strategies that may affect future firm performance. Not to mention, companies reporting on their projects and accomplishments signals a social responsibility and a long-term commitment which is important for investors to be able to assess risks and opportunities in their portfolio investment evaluations (Ng & Rezaee, 2015). According to Yi, Xie, Zhou, Wei and Gherghina (2020), reduced information asymmetry, hence reduced monitoring costs, can also be a contributing factor to reducing the cost of equity.

Filho, Wanderley, Gomez and Farache (2010) means that social responsibility has become crucial and that companies today face important strategic decisions that have both social and economic consequences, which are intimately linked to each other. Today, the world faces numerous environmental and social challenges and according to the UN (2018), eradicating poverty in all dimensions is one of the greatest. Never in history have there been such large gaps between the poor and rich around the world according to Benn et al. (2018) and more than 700 million people are living under extreme poverty, suffering from diseases, unemployment, social exclusion, no clean drinking water and food etc (UN, 2018). The poverty in rural areas

is 17.2 %, which is more than three times higher than in urban areas and in these regions having a job does not make a guarantee for a decent living (UN, 2018).

In 2015 all members of the United Nation adopted the 2030 Agenda for Sustainable Development, which consists of 17 Sustainable Development Goals (SDG's). The Agenda seeks according to Isaksson (2019) to reach peace and prosperity for the people and the planet, and eradicating poverty being one of the most important but also challenging goals. Goal 1 is to "End poverty in all its forms everywhere" and since poverty is also linked to a number of the other goals on the agenda, like number 2: no hunger, 3: health and well-being and 4: good education, eradicating poverty could be considered as the most important and crucial objective (Isaksson, 2019).

Our study aims to investigate if the effect on the cost of equity is different for Swedish companies' if they are involved in targeted poverty alleviation compared to if they are not, as there is a few, if any, previous research in this area based on the Swedish market. Since Ng and Rezaee (2015) believes that specific components of the Environmental, Social and Governance (ESG) factors contribute to significantly lower cost of equity, and since poverty is one of the UN's main and most important sustainability goals, we want to contribute previous research with this study.

1.1. Problem Statement

With increasing pressure and demands from the public, and especially investors, on companies to take environmental and social problems into account, some studies have investigated the relationship between CSR and firm performance (Alikaj, Nguyen & Medina, 2017; Miller, Eden & Li, 2020). However, the impact on a firm being involved in targeted poverty alleviation and the relation to the firm's cost of equity has not been studied well, especially on the Swedish market. Hence, our study is going to be focused on a number of listed Swedish companies and it is going to be the first study, that we know of, that examines the impact on the cost of equity of a company being involved in poverty alleviation on the Swedish market, which further complements earlier studies that focus on CSR and cost of equity.

As the cost of equity represents the return that an investor demands for investing in a company, and Easley and O'Hara (2004) among others, means that the disclosure level of a company lowers the cost of equity, we wanted to build our thesis on this. The Fama French model has

also admitted that there is something other than market risk that affects required returns and therefore this model is used to calculate the cost of equity (Fama & French, 1993). However these alternative factors do not include the role of information disclosure and based on the fact that it is known and examined that CSR does have a positive impact on the cost of equity (Alikaj, A., Nguyen, C. N., & Medina, E. , 2017 and Miller, S. R., Eden, L., & Li, D. , 2020), we believe that adding another variable to the Fama French three factor model, that includes the company's involvement in targeted poverty alleviation, is also going to have a positive effect on the cost of equity compared to a company that is not involved.

It is well stated that poverty is not just a problem in a specific geographic area, where there is lack of objectively identifiable resources, but it is rather a multidimensional and economical problem (Martin & Petersen, 2019). As the contribution from the private sector is a necessary condition in eradicating poverty (Merino and Valor, 2004), it is also interesting to see if it could be beneficial for a company to incorporate the participation in poverty alleviation in their business model. This would also be interesting in the perspective of "The theory of the Firm" which describes that companies aim to maximize profits (Soppe, 2004). Is it possible for a company to combine good contributions to society without adversely affecting their cost of equity? Or do companies indeed need to compromise between social and economic performance?

We therefore want to investigate whether there is any difference in the effect on the cost of equity between companies involved in targeted poverty alleviation and companies that are not.

The arguments above leads to the following hypothesis that we are going to test in this thesis:

H_0: There is no difference on the cost of equity of a company participating in targeted poverty alleviation and a company that is not

H_A: There is a difference on the cost of equity of a company participating in targeted poverty alleviation and a company that is not

1.2. Purpose

The purpose of this study is to examine the relationship between a company being involved in targeted poverty alleviation and the company's cost of equity. The aim is to conclude whether there is a difference in the effect on the cost of equity of a company that is involved in targeted poverty alleviation, and a company that is not involved. The study is going to be examined on the Swedish stock market during the time period 2015-2019.

1.3. Thesis Structure

The rest of the thesis is organized in the following order: In the next section relevant literature and theoretical implications that contribute to the foundation of the thesis are described. The third and fourth section describes data collection and method selection respectively. In chapter five our empirical results are presented and finally the thesis will conclude with a discussion and suggestions for future research.

2. Literature Review and Theoretical Framework

This section presents previous studies in the research field, as well as theoretical framework that is related to the study. As it is a new approach to link cost of equity to poverty alleviation, the study has its foundation in the previous well-researched area of Corporate Social Responsibility (CSR). The theories described in this section are used to describe our methodology, and for empirical evidence to be able to answer our hypothesis.

2.1. Corporate Social Responsibility

Corporate social responsibility (CSR) is described by the European Commission as "the responsibility of enterprises for their impacts on society". Companies should integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy to be able to meet their corporate social responsibility (European Commission, 2011).

At the same time that the company should aim to integrate the CSR goals in their daily business, it is also assumed to be a tool for a company to develop a competitive advantage (Blowfield, 2005 and De la Cuesta & Valor, 2004). As the shareholders demand more transparency on the actions taken by the company, and the impact on the society, and also the increased awareness from the society, it becomes an important part of the company to integrate CSR into their reporting and daily business. As there are many different dimensions of CSR each company is required to implement different activities and policies that meet their investors needs and expectations to achieve a financial performance (De La Cuesta & Valor, 2004).

International organizations, such as the UN, the World Bank and Department for International Development (DFID), support the concept of CSR as they believe and hope that the private sector has a crucial part in achieving development goals aimed at poverty alleviation. The DFID in the UK stated that "*By following socially responsible practices, the growth generated by the private sector will be more inclusive, equitable and poverty reducing"*. But at the same time, it has also become more and more common to see that companies address poverty directly, and the companies targeting their products at the "bottom of the pyramid" have recently become very influential (Newell & Frynas, 2007).

The role of a company in the fight is very complex, as there are several perspectives on how to take actions against poverty (De la Cuesta & Valor, 2004). However, Merino and Valor (2011)

states that the private sector is a necessary condition as it mitigates poverty by its contribution to economic growth, as it creates new jobs which increases income, and it supplies the poor with consumer services and products which improves their life. Although, it is also well known that corporations have negative effects which will not eradicate poverty. It is therefore important for companies to identify and report their contribution, and to have transparency against the shareholders (De la Cuesta & Valor, 2004; Blowfield, 2005; Merino & Valor, 2011).

2.2. Sustainability Reporting and GRI Standards

Sustainability reporting is considered important for a variety of reasons, but primarily for managing and monitoring sustainability performance (Isaksson, 2019). Sustainability reporting is also essential to be able to communicate and convey information to investors on how they contribute and work with sustainable development and can also be seen as a driver for change by giving people and the vulnerable and poor communities access to the information they need to hold companies accountable for their actions (GRI, 2017).

The majority of companies in the world follow the guidelines from Global Reporting Initiative (GRI) and consider these to be the best option when it comes to establishing their sustainability reports (Isaksson, 2019). GRI is described on its website as *"an international independent standards organization that helps businesses, governments and other organizations understand and communicate their impacts on issues such as climate change, human rights and corruption"* (GRI, 2020).

As poverty is one of the foremost pressing challenges today, the United Nations put poverty reduction as the first target on the list of the total 17 SDGs (Isaksson, 2019). According to GRI (2017), reporting and communication from companies with their contributions to the SDGs can have a major impact on the reduction of poverty. However, it is quite difficult to measure and evaluate as it is multidimensional and connected to many of the other SDGs (Isaksson, 2019).

In 2016, GRI initiated a project with the aim of identifying how improving data and sustainability reporting can help to combat poverty (GRI, 2017). They chose their selection of companies based on the likelihood of having poverty as a material topic from the regions of Africa, Asia and Latin America. The conclusions of the project resulted in that reporting has a positive impact on poverty reduction and has both internal and external benefits for the company. It can help companies explore potential risks and opportunities, set goals and track

progress, but also facilitate the communication with investors about the role they play in poverty reduction. It increases their transparency and accountability as contributing members of society and the benefits are simply mutual, stronger economies and secure societies provide enormous opportunities for growth and development in new markets (GRI, 2017).

2.3. The Cost of Equity

According to Botosan (2006), the cost of equity is the minimum rate of return that equity investors require for providing capital to the firm. The "estimation risk" characterises an additional risk that arises because of investors' uncertainty about the parameters of a security's return or payoff distribution. Investors base their parameters on all the available information about the company, which means that the lower the information is, the higher the cost of equity becomes (Botosan, 2006).

Easley and O'Hara (2004) describes the link between information asymmetry and cost of equity. They demonstrate that investors demand a higher return to hold stocks that have greater private information, and the higher return reflects that private information increases the risk to uninformed investors of holding the stock. Further on, firms can reduce their cost of equity by affecting the precision and quantity of information available to investors. This can be achieved by the company's choice of accounting standards and through its corporate disclosure policies. Their conclusion is that public disclosure reduces information asymmetry by displacing the private information (Easley & O'Hara, 2004). Dhaliwal et al. (2011) generally has the same findings as Easley and O'Hara, but also means that increased transparency in firms' disclosures and reduced information asymmetry can facilitate analysts' predictions and hence lower the cost of equity.

Increased environmental social responsibility can reduce the costs and risks of harmful events and thereby also decrease investors' risk expectations and consequently also the cost of equity (El Ghoul, Guedhami, Kim & Park, 2018). Since investors according to Easley and O'Hara (2004) demand additional compensation if they are uninformed, the cost of equity is higher for companies that have a large proportion of private information. If the private information is more accessible, more informed investors are going to demand the stock, and since greater demand increases the stock price this reduces the cost of equity (Easley & O'Hara, 2004).

Based on the relation between CSR and cost of equity, Richardson and Welker (2001) argue that there are at least three reasons to expect a similar relation to social disclosure and cost of equity. The reasons are related to either investor preference effects, reduced information asymmetry or estimation risk. The effect that arises from reduced information asymmetry and/or estimation risk comes from the theories in literature of financial disclosure. If information regarding social activities is useful and adds value for a company, then increased and better disclosure of social activities should have the same effect as increased and better disclosure of other financial activities. The effect from investor preference comes when investors accept a lower rate of return on an investment in a company that actively supports social causes that investors also care for. Richardson and Welker (2001) also points out that:

"*This suggestion is consistent with the emergence of Green Funds and Ethical Investing and also has a direct relationship to the literature in organisational behaviour, management and marketing that suggests that advertising with a social dimension can be employed to legitimate the firm in the eyes of consumers and contribute to the firms' product/service market success"* (p.599).

2.4. Theory of the Firm

There are several different theories of the firm according to Soppe (2004), but the traditional financial approach is that the goal of the company and its behaviour is driven by maximizing the shareholders' value without caring for social and environmental aspects. Simply put, companies want to maximize profit in the most optimal way in relation to the lowest risk and according to Coase (1973) a firm will expand as long as the cost of making an extra transaction within the firm will pay off. Soppe (2004) means that according to traditional financial theory, social goals are not an objective for economists (but rather for politicians) and that it's not a field for gifts or unselfish behaviour.

However, with behavioural finance a new, broader, complex and multidisciplinary theory of the firm came about (Soppe, 2004). Soppe (2004) means that a company should consider future environmental and social problems and that moral responsibility should be the core activity of the company. This developed view of financial theory, with a sustainable focus, can be defined as a policy that aims to optimize a three-dimensional variable. The sustainable capital cost is, according to Soppe (2004) a result of optimizing long-term financial, social and environmental variables.

2.5 Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) was developed by Sharpe (1964) and was based on the modern portfolio theory by Markowitz (1952). The model is a widely used method in finance in valuing risky securities and describes the rate of return on an asset. The model accounts for two factors that an investor requires to invest in an asset given the risk and time value of money. The risk premium is related to the systematic risk that cannot be reduced by diversification and the time value of money factor compensates the investor for placing money in an investment over a period of time (Berk & DeMarzo, 2014).

The formula of CAPM is based on the equation (Berk & DeMarzo, 2014):

$$ER_i = R_f + \beta_i(ER_m - R_f) \tag{2.5.1}$$

The risk-free rate is included in the model to compensate investors for the risk they take when investing in an asset. This is what they could earn if they would have invested in a risk-free savings alternative and could be seen as an alternative cost. The risk premium, (ER_m-R_f), is constant and means that only the value of it is going to have an impact on the return requirement. This means that the asset's expected return is a linear function of its systematic risk. The beta is a measure of the systematic risk of the potential investment in comparison to the market. If a stock is riskier than the market it will have a beta greater than one and if it has a value less than one the formula assumes it will reduce the risk of a portfolio (Berk & DeMarzo, 2014). Berk and DeMarzo (2014) also mentions several assumptions behind the CAPM formula which are presented in Table 1.

Table 1. CAPM assumptions

I.	All investors are risk averse
II.	An investors aims to maximizing the utility of his wealth
III.	All investors make investment decisions on the basis of risk and return
IV.	All investors have similar expectations of risk and return
V.	All investors have identical time horizon
VI.	All investors have free access to all the available information at no cost
VII.	Unlimited lending and borrowing at the risk free rate
IX.	There are no taxes and transaction costs
X.	All assets are tradeable, including human capital

2.6. Efficient Market Hypothesis

The Efficient market hypothesis is a theory by Eugene Fama constructed in the 1960s which states that the price of a share reflects all information available and that the stock prices follow a random walk. That means that changes in stock prices have the same distribution and are independent of each other. According to the theory a stock is always traded at its fair value on exchanges. It is impossible for an investor to outperform the stock market because all information is already accounted for in the stock price (Fama, 1995).

The strength of the above assumptions is according to Fama (1995) dependent on the form of efficient market hypothesis. The three forms are as follows; weak efficient market that means all past information is reflected into the price. Secondly, the semi strong efficient market which implies that the prices are adjusted regarding all publicly available information but also other news. Thirdly, the strong efficient market says that all information including insider information is fully reflected into the stock price (Fama, 1995).

The CAPM model has been widely criticized for a long time, and Fama and MacBeth (1973) have made several empirical tests of the model. And in the paper *The Capital Asset Pricing Model: Theory and Evidence* (2004) Ken French declared that CAPM should not be used in

practical applications due to the lack of empirical data supporting the model. When Fama and French did their empirical testing of the CAPM, they created the extended model called The Fama and French three factor model. The model is commonly used, and is an extension of the CAPM but is added with two more variables. Fama and French (1993) found the two variables, size and value, that explains much of the average stock returns. The additional factors included adjusts for the fact that value and small-cap stocks outperform markets on a regular basis.

The formula for the Fama French Model is (Fama & French, 1993):

$$R_{i,t} - R_{f,t} = \alpha_{i,t} + \beta_{1,i}\left(R_{Mt} - R_{ft}\right) + \beta_{2,i}SMB_t + \beta_{3,i}HML_t + \varepsilon_{i,t} \quad (2.6.1)$$

i = The i:th stock

t = Time t

Ri,t = Return on stock i at time t

Rf,t = Risk-free rate at time t

i,t= Alpha, the risk-adjusted abnormal return for stock i

1-3,i= The Betas of the regressors

(RMkt-Rf,t)=The market risk premium, the difference in expected return of the market minus the risk-free rate in time t

SMBt=Small Minus Big, the difference in expected return with respect to the company size at time t

HMLt= High Minus Low, the difference in expected return with respect to the market-to-book ratio at time t

i,t = Error term for stock i at time t

The market risk premium provides an investor with an excess return as compensation for the additional volatility of returns over and above the risk-free rate (Fama & French, 1993).

Small Minus Big (SMB) is a size effect that is based on the market capitalization of a company. There is a negative correlation between the stock and size of a firm, a smaller company is found by Fama and French (1993) to be more sensitive to a movement in the market and therefore tend to generate higher returns than a large company.

High Minus Low (HML) is a value premium (Fama & French, 1993). It accounts for the spread in returns between companies with a high book-to-market value ratio and companies with a low book-to-market value ratio. Fama and French (1993) found a positive correlation between the

return of a company's stock and the book-to-market ratio, in long term a company with a high book-to-market ratio (a value stock) has higher returns than a company with low book-to-ratio (a growth stock).

Based on the presented research above, that shows a link between increased transparency regarding sustainability reporting and improvement on firm performance, we believe that our research will also find a relationship between a narrower part of the CSR concept, poverty reduction, and an effect on the cost of equity. We believe that we will find this link by including another dimension in the Fama and French model that takes into account whether or not the company is involved in targeted poverty reduction.

3. Data

Since the aim of the study is to investigate whether the involvement of targeted poverty alleviation in Swedish companies affects their cost of equity, a selection of companies from the Stockholm Stock Exchange (SSE) was made. Companies of varying sizes were desired. A selection was made of all companies included in the OMX Stockholm 30 Index (OMXS30), which can be regarded as large companies as it includes the 30 most traded shares on Nasdaq Stockholm. Then additional companies from the index fund "PLUS Småbolag Sverige Index" were added to get a larger and expanded sample with companies of medium and small size. This index includes all companies listed on Nasdaq OMX Stockholm except the absolute largest found in OMXS30.

Bartholdy and Peare (2005) means that the more observations being used and analyzed the better the results and this argues that as long a time period as possible should be used. However, they also mean that a long estimated time period could affect the true value of the beta as it changes over the period and that the estimation result of the beta thus will be biased. Therefore, they believe that one should avoid a too long period of time. Bartholdy and Peare (2005) suggests that one can increase the number of observations over a somewhat shorter period of time by increasing the sampling frequency. However, they mean that substituting monthly returns to daily returns in your data collection for example, can decrease the effectiveness of the estimators as the daily returns may increase the risk of including noise in the data and may lead to less valid values.

Because of this, a trade-off between time period and sampling frequency had to be made and finally a five-year period with weekly data was chosen. We have chosen to analyze data from the period 2015-2019.

To be able to estimate average weekly returns for all companies included in the sample, closing prices for every stock was conducted. Data points for each company on a weekly basis over the time period 2015-2019 were retrieved from Yahoo Finance. Likewise, this was done for the OMXS30, as this was used as a proxy for the market return. The OMXS30 is a value-weighted index and this was used as a proxy for the market since it is common to use such types of indices as a proxy for the market (Jagannathan & Tang, 1996; Fama & French, 1992).

The return from the 3 Month Treasury Bill was downloaded from the website of the central bank of Sweden and used as the risk-free rate (Sveriges Riksbank, 2020). The risk-free rate represents the return an investor can get without taking any risk and T-bills are usually used as a proxy for the risk-free rate in previous research (Fama & French, 1992; Steven, 2012 etc.).

The Fama-French Factors being used was retrieved from Kenneth Frenchs' official website and weekly data for the SMB- and HML-values included in the regression model were downloaded. These are based on US data and used since European data or Swedish data for the selected time period and frequency were not available and a calculation of these are considered outside the scope of this thesis.

Annual and sustainability reports were read in full and analyzed to identify which companies were engaged in targeted poverty alleviation. This is discussed in more detail in Chapter 4. For data processing the software Stata 16.0 was used.

In summary, a total of 102 companies and sustainability reports were analyzed. Each of the 102 companies contains data of 260 observations, so 26 520 observations in total. The companies analyzed can be seen in the Appendix.

During the data collection phase of our study we encountered some missing values. We excluded companies that had not existed on the stock exchange for the period of our investigation period (2015-2019) and we also excluded observations with missing research variables. Therefore, this study will use strongly balanced data, which means that observations with missing values will be excluded, resulting in 102 dropped observations. Thus, according to Park (2005), the total number of observations becomes nT (26 520 in this study).

According to Bailer and Martin (2007), the literature expresses that outliers for equity returns can inflate the estimation errors and thus our dependent variable "weekly price return" were winsorized at a 1% and 99% level. To mitigate the impact of outliers and to remove extreme values, we also winsorized all the independent variables at the 1 % and 99 % level since outliers were detected.

4. Method

This section describes the methodology that is used in order to test our hypothesis. First, we will explain further how the model is tested. Going back to our purpose, we aim to find empirical evidence that shows there is a difference on the cost of equity for a company being involved in targeted poverty alleviation compared to a company that is not. To reach a conclusion for this a chow test is conducted. This is then followed by the approach on how we assessed whether a company is being involved in poverty alleviation or not, and for this, a dummy variable is used as a tool to investigate the relationship between poverty alleviation and the cost of equity.

4.1 The Model and Statistical Tests

Since we wanted to observe variables from several companies across time, we organized our data as panel data which according to Park (2005) is a combination of cross-sectional and time-series data. Since our aim of the study is to look at differences between companies involved in poverty alleviation and companies that are not and its effect on the cost of equity, we created two subsamples, on which we ran OLS regressions according to the Fama French three-factor model. This is a good approach according to Manoranjan and Bharati (2019) to test for differences between groups and if a regression equation has the same structures in both situations.

First we have run the Fama and French regression model for our two subsamples separately. Regression model (4.1.1) is for group 1 and represents all the companies involved in targeted poverty alleviation. Regression model (4.1.2) is identical but is run for group 2 and involves a subsample of all the companies not involved in targeted poverty alleviation.

$$Cost\ of\ Equity = \alpha_1 + \beta_1(MKT - RF) + \gamma_1 SMB + \delta_1 + HML + \varepsilon_1 \tag{4.1.1}$$

$$Cost\ of\ Equity = \alpha_2 + \beta_2(MKT - RF) + \gamma_2 SMB + \delta_2 + HML + \varepsilon_2 \tag{4.1.2}$$

The two equations above have the same model specification and are based on the French and Fama model for calculating the cost of equity. They have the same dependent variables that are linearly related to the market risk premium and the SMB and HML factors in both groups.

However, the values of the slopes in the two regressions may differ. We are interested in testing whether there is any difference between companies that are involved in targeted poverty alleviation and companies that are not. Therefore, we want to test the hypothesis that all the coefficients are the same between the two groups which results in testing the null hypothesis (Manoranjan & Bharati, 2019):

$$H_0: \alpha_1 = \alpha_2, \beta_1 = \beta_2, \gamma_1 = \gamma_2, \delta_1 = \delta_2$$

$$H_A: \text{Not } H_0$$

A so-called Chow test is run in Stata to test the null hypothesis. However, there is one important limitation of the Chow test regarding that the null hypothesis allows for no differences whatsoever between the groups (Woolgridge, 2008). Therefore, in most studies, it is more convenient to allow for an intercept difference between the groups and then test for differences in the slopes. One way to do this is to incorporate the group dummy variable and all interaction terms in the model and then test for joint significance of the interaction terms only (Woolgridge, 2008). So to test the differences in regression functions across the two groups we let a dummy variable interact with our other independent variables. We run the joint regression that allows for slope differences as well as its own intercepts, to test for potential differences between the two groups.

The Chow test is done by a standard F test on the joint model stated above that contains interactions between the dummy and all the independent variables. The Chow Test is performed on the results of the Fama-French regressions for each group. The F statistics are calculated with the formula (Manoranjan & Bharati, 2019):

$$CHOW = \frac{(RSS_p - (RSS_1 + RSS_2))/k)}{(RSS_1 + RSS_2)/(N_1 + N_2 - 2k)} \tag{4.1.3}$$

RSS_p = Pooled (combined) regression line

RSS_1 = Regression line for group 1

RSS_2 = Regression line for group 2

k = Number of estimated parameters

N_1 = Number of observations in group 1

N_2 = Number of observations in group 2

If one or more slopes between the groups differ you can reject the null hypothesis (Manoranjan & Bharati, 2019). If so, the model is different for companies involved in targeted poverty alleviation compared to companies that are not.

4.2 Poverty Alleviation

As Miller, Eden and Li (2020) and Yi et al. (2020) we used a dummy variable as a proxy if a company is being involved in targeted poverty alleviation. The dummy is 1 if the company is involved in poverty alleviation, and 0 if not.

The dummies are used to present two subsamples. The companies with a dummy equal to 1 are then divided as one subsample (group 1) and the companies with a dummy equal to 0 as another subsample (group 2), in order to test for differences between the two groups.

The assessment of whether a company is being involved in targeted poverty alleviation is done by reading through a company's sustainability report. What needs to be noted is that none of the companies has poverty alleviation as a part of their core business.

The contribution of a company in poverty alleviation may look very different from company to company, as poverty is not only about not having money. It can also be seen in the form of social exclusion, not having a job, not having food, not being able to go to school etc (De la Cuesta & Valor, 2004). The contribution made by companies in eradicating poverty is therefore dependent on reducing these inequalities, and their action has to actually have an impact on a person's life and taking them one step further away from living in poverty. We have therefore drawn the line that the involvement of a company in alleviating poverty must be direct in order to be 1 as a dummy.

Firstly, we have searched for *poverty* in every company's sustainability report, which is the easiest way to find any evidence for involvement. However, as explained, poverty can take form in multiple different ways, and it is few companies that denote their actions with the word poverty. Therefore, we have made a list of words that we search for in every report that could be linked with eradicating poverty. Words that have been used in the assessment is:

poverty	*resources*	*in need*
clean water	*donation*	*low-income*
basic needs	*volunteer*	*poor*
creating jobs	*campaigns*	*charity*
developing countries	*infrastructure investments*	*poverty*
poor	*education*	*school*
low-skilled	*health facilities*	*water*

Descriptions associated with these words are then read to see if it is about poverty alleviation. If none of the words are found to be associated with poverty, the report is carefully read through in order to not miss anything that could be mentioned in any other way.

To exemplify how the direct versus indirect involvement may be expressed in the reports, SCA has included SDG 1 (End poverty in all its forms everywhere) in their sustainability report, and commented how they are contributing to the goal:

"*Requirement that suppliers comply with SCA's Supplier Standard (for example minimum wages). Risk-based audits performed on-site. Indirect impact"* (SCA 2019, p. 135)

Since their involvement is only indirect, the dummy for SCA is 0. Another example of a company that mentions poverty in their annual report is Fabege:

"Green financing is to be used exclusively for investments to promote the transition to low-carbon, climate resistant and sustainable properties. .... The investments must also conform to the UN's 2030 Agenda and 17 Sustainable Development Goals. The SDGs aim to achieve long-term sustainable economic, social and environmental development to eradicate extreme poverty, reduce inequality and injustice in the world and tackle climate change."
(Fabege 2019, p. 23)

Their work with Green Financing is directly related to a sustainable environment, however they describe that they also take into account the goal by the UN to eradicate poverty, but it is clear that this is only an indirect impact made by Fabege. Therefore the dummy for the company is also 0.

Looking at another company, SAAB, they describe in their report:

"Saab began working during the year with the Hummingbird cultural network in São Paulo, Brazil. The operation serves children living in slums with the goal of preventing them from falling into poverty and criminality. The leaders have managed to lift themselves out of similar situations and now serve as a role model. The children, who are between the ages of 5 and 18, have the opportunity to participate in a number of activities from the arts and culture to education and sports. Saab supports similar initiatives in slum areas in Cape Town and Centurion, South Africa." (SAAB 2019, p. 31)

This example displays a more direct involvement in targeted poverty alleviation. And the dummy variable for SAAB is 1, since their involvement in poverty alleviation has a direct impact. Another company that has also been assessed with dummy 1 is Loomis AB that writes:

"The plastic project is based on building infrastructure to collect plastics in countries like Haiti, Indonesia and the Philippines. The collected plastic is exchanged at a local "plastic bank" for money, food, clean water or money for school, to help people with basic needs while also cleaning up plastic in natural environments." (Loomis 2019, p.71)

The contribution may look different between the companies, but what is common for all of them is that they have a direct impact on poverty alleviation.

5. Empirical Results

In this part our results from our hypothesis are presented. The chapter starts with a summarized statistics table of the data that is used in the test and is then followed by our regression results. The report analyzes a total of 102 companies, and out of these there were 79 companies which are reporting according to the GRI standards and 35 companies were identified to be involved and contribute to poverty reduction in some way.

5.1. Descriptive Statistics

Table 2 reports some basic descriptive statistics of the explanatory variables in the Fama French Three Factor Model. Our sample is composed of weekly returns of 102 companies and the observation period ranges from January 2015 to December 2019 for a total of 260 weeks. Accordingly, the panel data yields 102 x 260 weekly observations = 26 520 total observations. The table displays the number of observations, mean value, standard deviation, minimum value and maximum value for all quantitative variables in the model.

Table 2. Summary of statistics.

Variables	N	Mean	Std	Min	Max
Market Risk Premium	26,520	0.0062103	0.0210559	-0.0496549	0.0592257
SMB	26,520	-0.000465	0.0104754	-0.027	0.0262
HML	26,520	-0.0008881	0.0122213	-0.0264	0.037

Table 2 shows that the average excess return of the market portfolio is 0.62 % per week. The weekly mean return for the size (SMB) and value (HML) factors both produces negative values, -0.0465 % and -0.0888 % respectively for the period 2015-2019. The negative HML value is worth noticing as it contradicts the Fama and French theory that stocks with a high market-to-book ratio should outperform stocks with a low market-to-book ratio. The negative HML value means that the stock with a high market-to-book ratio generates lower return than those with a low market-to-book ratio on average during this time period (2015-2019). The negative SMB

value is more expected based on the Fama and French theory. This means that stocks invested in small companies yielded a lower return than the stocks for large companies on average during the selected time period.

5.2. Regression Results

Table 3 displays the results from the Fama French Three-Factor Model (FFTFM) after the sample has been split into two subsamples. Model 1 shows the results for the regressions for the FFTFM for each subsample without the dummy, while model presents the results of the regressions run when we have let our dummy to interact with each independent variable in the FFTFM and is also included in the regression. Model 1.1 represents group 1 containing all the companies involved in targeted poverty alleviation and model 1.2 represents group 2 that contains all companies not involved in poverty reduction without any effect of the dummy. Column 2.1 presents the results for group 1 and column 2.2 presents the results for group 2 with the effect of the dummy.

Table 3. Results from the regressions according to the Fama French Three Factor Model.

	Model 1		**Model 2**	
Variables	**1.1**	**1.2**	**2.1**	**2.2**
CONS	-0.00403***	-0.00199***	0.00230***	0.00119**
	(0.00037)	(0.00026)	(0.00027)	(0.00037)
MKT-RF	0.840***	0.688***	0.840***	0.688***
	(0.01697)	(0.01198)	(0.0181)	(0.01256)
SMB	0.155***	0.236***	0.155***	0.236***
	(0.0342)	(0.02412)	(0.03645)	(0.02530)
HML	-0.0862**	-0.143***	-0.0862**	-0.143***
	(0.02898)	(0.02045)	(0.0309)	(0.02145)
DUMMY	-	-	-0.00633***	-0.00318***
			(0.00048)	(0.00046)
N	8840	17680	26520	26520

SE statistics in parentheses.
** Statistical significance at the 1% level; *** statistical significance at the 0.1% level.
Note: The estimates in model 2 is interacted with poverty alleviation *dummy* variables, but not shown.
CONS, constant of the regressions; MKT-RF, risk-premium; SMB, small minus big/size effect; HML, high minus low/value factor; DUMMY, representation of the subsamples.

The coefficients for the independent variables: market risk premium and the SMB and HML factors in the FFTFM are the same for each group in the two models with only a slight difference in the standard errors. The slope for the intercept is significantly different from zero and differs for the groups in each model. In model 1 the betas of the intercepts are significantly negative at a 0.001 level in the two groups, but in the second model the betas of the intercept show significantly positive values, at a 0.001 level for group 1 and a 0.01 level for group two. According to the efficient market hypothesis the value of the alpha should be significant and equal to zero if all factors in the model explain the cost of equity. If it differs from zero, it may be that the cost of equity is explained by other factors outside of the SMB and HML factors (Bodie, Kane & Marcus, 2011). As the alpha reflects the risk-adjusted abnormal return, significantly positive values of the intercept may imply that the model underestimates the returns for the stocks and negative significant alphas means that the model overestimates the returns.

Additionally, model 2 contains the coefficients for our dummy as this is included and interacted in the second model. The betas for the dummies both demonstrate significantly negative values at a 0.001 level, -0.00633 for group 1 and -0.00318 for group 2. This means that both groups generate lower cost of equity. The results show that group 1, i.e. involvement in poverty alleviation, lowers the cost of equity by almost twice as much as the group with companies not involved in poverty alleviation.

For both of the groups and models, the coefficients for the market risk premium is positive and significant at a 0.001 level. This is also the case for the SMB (small minus big) factor, the coefficients are both positive and significant at a 0.001 level for the two groups in both models. When it comes to the coefficients for the HML (high minus low) variable they have a negative factor loading on the dependent variable in both of the groups in both models. For group 1 the coefficient is significant at a 0.01 level in the two models and for group 2 it is significant at a 0.001 level in the respective model.

When it comes to the Chow test and the comparison between the two F-tests of the regressions, there was a significant difference between the variables in the two groups ($F_{4,26512} = 15.85$, $p < 0.0000$). This means that two separate regression lines fit the split data set best and that the data set should not be represented with a single regression line. We also tested the effect of the dummy by conducting t-tests for each explanatory variable which reinforced our findings from the Chow test and did not yield anything new.

To summarize, the results of the tests confirm that there is a statistically significant difference between companies that are involved in poverty reduction and companies that are not. The results also show that involvement in poverty reduction improved the company's cost of equity.

6. Conclusion

6.1 Contributions

This study focuses on the differences in the effect on the cost of equity if a company is involved in targeted poverty alleviation and if a company is not involved. This is an area that is unexplored especially on the Swedish stock market, and this study therefore contributes with conclusions about the effect of information disclosure that goes beyond the earlier, over-researched concept of CSR.

The empirical results show that there is a difference between Swedish companies that are involved in targeted poverty alleviation and companies that are not. Our results are partially supporting previous research as they indicate that companies that work with poverty reduction and report on it have a greater improvement on the cost of equity compared to companies that do not work with this or report on it, with almost twice the effect. Since the intercept also differs between the models and are slightly closer to zero in model 2, where the dummy is included, interpretation can be made that this model explains the cost of equity better.

To summarize, reporting and involvement in poverty alleviation does matter for the evaluation of cost of equity with the French and Fama three factor model, so a regression where the dummy is included and has interacted with all independent variables is relevant. That means, running two separate regressions is a good idea. We can reject the null hypothesis, *There is no difference on the cost of equity of a company participating in targeted poverty alleviation and a company that is not,* and conclude that there is difference in regression functions across companies involved compared to companies that are not involved. In other words, the relationship between cost of equity and the Fama French three factor model depends on a company's involvement in poverty reduction.

We thus achieved our purpose with the study, as we found a relationship between involvement in poverty reduction and the cost of equity with significant results.

6.2 Limitations of the Study and Future Research

Based on the results that have been concluded in this thesis and the above discussion section, as well as the limitations of the study, the following suggestions for future research is proposed.

Due to the restricted time frame, a limitation on the number of companies analyzed in the study has to be taken into consideration. This may have affected the significance of the result and by increasing the sample and adding more companies to the study would probably have yielded even better results. In addition to increasing the sample, a suggestion for future research is to investigate how sustainability reporting differs between larger and smaller companies, and if this might have an effect on the involvement in poverty alleviation and the cost of equity. Another proposal would be to examine how the participation in specific poverty alleviation projects such as school-, health- and infrastructure- projects affect the company economically.

One limitation of our study is that we have used US data when it comes to the SMB and HML factors in the French and Fama model. A proposal for further research would be to calculate the corresponding Swedish values to see if the results somewhat change.

An additional suggestion for future research is to estimate the cost of equity with a different model, or to add more variables to the equation such as the size, age leverage and turnover of the company, to see if the outcome will be the same. This might generate more statistically strong evidence than what is possible to achieve by the Fama French model with a dummy variable in a regression.

We would also like to mention that an association-based empirical study, such as this paper, could be undermined by the so-called *Halo effect* (Rosenzweig, 2007). This means that one quality is contaminated by another more easily accessible quality. If a company is doing well in the sense that it has rising sales, high profits, and an increasing stock price, there is a tendency that investors infer that the company has a sound strategy, a visionary leader, motivated employees or other characteristics. But since many of these factors are highly correlated, the effect of each factor could potentially be less than proposed. This halo effect could be damaging to the data used in research, since it is difficult to differentiate between the single effect of the various elements. In our case with the specific quality of poverty alleviation, this may also be an indicator for other factors, such as for example the quality of management (Rosenzweig, 2007). This should be in mind when the results are presented in empirical studies.

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Appendix:

Company	GRI	Poverty Alleviation
AAK AB	✓	1
ABB Ltd	✓	1
AddNode Group AB		1
AddTech AB	✓	0
Alfa Laval	✓	1
Assa Abloy	✓	0
AstraZeneca		1
Atlas Copco A	✓	1
Atlas Copco B	✓	1
Atrium Ljungberg AB	✓	0
Autoliv SDB	✓	1
Avanza Bank Holding AB	✓	0
Axfood AB	✓	1
Beijer Alma AB	✓	0
Beijer Ref AB		0
Betsson AB		0
Bilia A AB		1
BillerudKorsnas AB	✓	0
BioGaia AB		1
Biotage AB		0
Boliden	✓	1
Bure Equity AB	✓	0
Castellum AB	✓	0
Catena AB	✓	0
CellaVision AB		1
Clas Ohlsson	✓	1
Cloetta AB B	✓	1
Concentric AB	✓	0
Dios Fastigheter AB	✓	0
Duni AB		0
Electrolux B	✓	1
Elekta AB	✓	1
Ericsson B	✓	1
Fabege AB	✓	0
Fagerhult AB	✓	0
FastPartner AB A	✓	0
Fingerprint Cards AB	✓	1
Getinge B	✓	1
Gränges AB	✓	0
HEBA Fastighets AB	✓	0
Hennes & Mauritz B	✓	1

Hexagon B		0
Hexpol	✓	0
HMS Networks AB	✓	0
Holmen AB	✓	0
Hufvudstaden AB	✓	0
Husqvarna AB	✓	0
Indutrade AB		0
Intrum Justitia AB	✓	0
Investor B	✓	0
INVISIO Communications AB		0
JM AB	✓	0
Karo Pharma AB		0
Kinnevik B	✓	1
Klövern AB		0
Kungsleden AB	✓	0
Lagercrantz Group AB		0
Lifco AB	✓	0
Lindab International AB	✓	0
Loomis AB	✓	1
MyCronic AB	✓	0
NCC B	✓	0
NetEnt AB	✓	0
Nobia AB	✓	0
Nordea Bank Abp	✓	0
NP3 Fastigheter AB		0
OEM International AB		0
Peab AB	✓	1
Platzer Fastigheter Holding AB	✓	0
Ratos AB	✓	0
Recipharm AB	✓	1
Saab AB	✓	1
Sagax AB	✓	0
Samhällsbyggnadsbolaget i Norden		0
Sandvik	✓	0
SAS AB	✓	0
SCA B	✓	0
Scandi Standard AB		1
SEB A	✓	0
Sectra AB		0
Securitas B	✓	0
Skanska B	✓	0
SKF B	✓	0
Skistar AB	✓	0
SSAB A	✓	1
Sv. Handelsbanken A	✓	1
Sweco AB	✓	0

Swedbank A	✓	1
Swedish Match	✓	1
Swedish Orphan Biovitrum AB	✓	0
Swedol AB	✓	0
Systemair AB	✓	1
Tele2 B	✓	0
Telia Company	✓	0
Thule Group		0
Trelleborg AB	✓	1
Wallenstam AB	✓	0
Wihlborgs fastigheter AB	✓	0
Vitec Software Group AB		0
Vitrolife		0
Volvo B	✓	1
ÅF Pöyry AB B	✓	0