Can intangibles lead to superior returns?

- Global evidence on the relationship between employee satisfaction and abnormal equity returns.

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Summary

Subject background and discussion: In recent decades, issues of human rights, labor and environmental change has been hot topics world wide, which also has influenced the financial market. More and more investors use socially responsible investing (SRI) screens when constructing their portfolios. One form of SRI screen is to choose companies that have satisfied employees. Existing theory says that employee satisfaction is an intangible asset to the firm that will positively affect a firm’s performance in the future. Intangible assets are often unrecognized by the market and thereby not incorporated in the stock price.

The efficient market hypothesis has been studied and debated for several decades. Proponents of the EMH argue that all available information is incorporated in the stock price, thus it is not possible to systematically beat the market. However, EMH is controversial, since research has shown different results regarding the possibility to make abnormal return from various investing strategy.

Research question: Is it possible to make abnormal returns by investing in a portfolio of worldwide firms with top scores on the SRI screen employee satisfaction?

Purpose: The main purpose of this study is to examine investor’s possibility to make abnormal return with controls for multiple risk factors by investing in worldwide firms with top scores in employee satisfaction. One sub-purpose is to examine how the market values intangibles depending on the degree of market efficiency. Another sub-purpose of the study is to test two different portfolio weighting methodologies, equally- and value weighted, and observe the differences between them.

Theory: This study deals with the efficient market hypothesis and the concepts of SRI, employee satisfaction, intangible assets and several risk-adjusted measurements.

Method: We have chosen to perform a quantitative study with a deductive approach to answer our research question. We used a sample size of 696 firms based on “Great Place to Works”- lists of companies with high employee satisfaction to construct sex portfolios with different holding periods and strategies. These portfolios have been explored and tested significantly with both equally and value weighted methods.

Result/Analysis: The study finds significant evidence of an average annual abnormal return of 3,66% and 2,43% for our main portfolio over the market for equally- and value weighted, respectively, using the three-factor model. When adjusting for momentum, thus employing the four-factor model, all the predictive variables still identify strong persistence in the abnormal return, with statistical significance.

Conclusion: The results show that it is possible to make abnormal returns, during the observed time period, regardless of the weighing methodology, although the equally weighted received higher abnormal returns. Thus, the market efficiency appears to be in weak form and does not fully value intangibles.
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Invest your money where employees invest their emotions.
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Introduction

1 Introduction
This chapter provides an introduction to our problem, followed by a discussion of our subject, which will provide an overview and a demonstration of the relevance of our subject. Furthermore, this chapter will result in a problem statement that will culminate in the purpose of the study. Finally, we will describe the limitations and delimitations made in connection with the study and explain a number of different concepts and definitions.

1.1 Subject background
Making money on stocks appears quite simple. What many forgets though, is to include the variety of risk exposures that is incurred in buying stocks. However, historically, investment in stocks has been a very successful form of savings. This form of saving has produced an average annual return of about 8.2% in the large market capitalization, S&P 500, since the beginning of the 1980 until the end of 2012 (Standard & Poors, 2013). The challenge lies instead in performing better than the index. On the other hand, it is not so easy in practice. Even impossible, many claim.

Investors have for all time tried to outperform the market. They strive to make excess return by finding firms that offer higher risk adjusted stock returns than the market. However, existing studies in the field (e.g. Fama, 1970; Malkiel, 1989) argues that it is not possible to create systematic abnormal returns due to the efficient market hypothesis (EMH). EMH states that in a fully efficient capital market the available information is always entirely incorporated in the stock price (Fama, 1970, p. 388).

“I’d be a bum on the street with a tin cup if the market were efficient”. -Warren Buffet (refered in Pare and McDonald, 1995)

Warren Buffet is a good, however extreme, example of showing that an investor can systematically beat the market and earn an abnormal return. His investment trust company, Berkshire Hathaway Inc., has historically generated a compounded annual gain between 1965 and 2011 of 19.8 % compared to the market (S&P 500) that gained 9.2 % (Berkshire Hathaway Inc., 2011). That is an excess return of 10.6 % above the market.

Although many studies suggest that the market is efficient in various forms, there is contrary evidence showing that it exists anomalies and that some markets are inefficient. Thus, investors are able to achieve abnormal returns by finding portfolios of companies that outperforms the market by conducting different kinds of stock picking techniques. Investors use mainly two different techniques, technical analysis and fundamental analysis. Technical analysis aims to use historical price performance to predict future trends (Malkiel, 2003, p. 59). The idea behind fundamental analysis is that by carefully evaluating a firm’s financial characteristics one is able to determine the value of the firm and thus evaluate if the stock is over- or undervalued (Damodaran, 1996, p. 4). Investor’s therefore tries to find mispriced stocks by for example investing in companies with high dividends, low price-to-earning ratios, growth stocks, companies that get high on various rankings, analyze historical stock patterns or maybe just follow the expert's advice. However, it is not at easy as it sounds. Bodie et al.
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(2010, p. 401) argues that the market is generally very efficient and that these mispricing’s should disappear because the market is sufficiently competitive. Also, many of these mentioned strategies does not account for the risk. Hence it is hard to draw any conclusions about the risk-adjusted returns, i.e. the performance over the risk.

One alternative investment strategy that has been used to obtain abnormal returns is investing in sustainable and responsible companies, which is called Socially Responsible Investments (SRI). According to Domini, SRI is when investors screen firms using moral and ethical criteria’s, such as human rights, diversity, environmental and consumer protections (Domini, 2001).

SRI is a controversial subject and there have been several studies that examine whether SRI is generating an abnormal return or not, thus the subject is interesting and up to date. The growth of SRI in recent years is one indicator of increasing interest and demand for such type of investments. Evidence is showing that professional management in SRI has grown from $639 billion in 1995 to $3.74 trillion in 2012. Comparing to the overall market, SRI has had a higher increase, therefore it has outpaced the total market. Due to the growing demand in SRI screens investments, many financial institutions offers SRI funds and further on SRI indices have developed. The longest running SRI index is FTSE KLD 400, which started in 1990. Since the beginning, the index has performed competitively against the S&P 500 with an average return of 9.51 % over S&P’s 8.66 % during the same period (US SIF, 2012).

There are a lot of different SRI screens used by funds and investors. Also many researchers use it to investigate if there occurs any relationships between SRI screens and stock returns. One that we will be using in this study is an SRI screen based on employee welfare.

The definition of an employee is "A person who works for another in return for financial or other compensation" (The American Heritage® Dictionary, 2011).

The way to look at employees has changed radically in recent decades. The proliferation of technology and changes in the business environment has increased the importance of human resources in the modern world. The business environment has changed. In traditional theories (Taylor, 1911), employees were thought to be motivated only by higher wages and were viewed just like other inputs such as raw materials. Today, more focus lies on famous pioneer studies of human relationship theories (Hertzberg, 1959; Maslow, 1943; McGregor, 1960) that view employees as key organizational assets, rather than expendable commodities.

Lists of firms with high employee satisfaction have arisen and is more commonly seen nowadays. The allegedly most recognized list is the “100 best companies to work for in America”, which has been listed in Fortune annually since 1998. The first published list were however released in 1984 and resulted in a book called “100 best companies to work for in America”, made by Robert Levering and Milton Moskowitz (Great Place to Work® Institute, 2013).

Robert Levering, one of the authors of the book became later on one of the founder of Great Place to Work© Institute in 1991. The institute is today creating lists of great firms to work within all over the world and is the organization behind e.g. “100 best companies to work for in America”.
“A great place to work is one in which you trust the people you work for, have pride in what you do and enjoy the people you work with.” - Robert Levering, Co-Founder, Great Place to Work© (Great Place to Work® Institute, 2013).

1.2 Subject discussion

A crucial point in order to make abnormal return is whether the market is efficient or not. One central and often applied assumption of economic theory is that the capital market is efficient. The theory of market efficiency is an area that has attracted many researchers and thus resulted in a large amount of articles and numerous essays. According to Fama (1970), in an efficient capital market the prices of securities should at any point of time fully reflect all available and relevant information. This means that an investor would not be able to assimilate excess returns by acting on public information. Once the information reaches the market, investors would immediately adjust their expectations, and the stock price would thus be adjusted (Malkiel, 2003, p. 59).

However, there are many existing studies showing inefficiencies and strategies that may outperform the market, often referred to as anomalies (Bodie et al., 2010, p. 388). One example of an anomaly with potential source of undervalue are intangible assets. Intangible assets are hard to measure and do not appear on balance sheets, thereby often unrecognized by the market and not incorporated in the stock prices (Brynjolfsson and Yang, 1997, p. 2). Employee satisfaction is an example of an intangible asset to the firm that can positively affect a firm’s performance in the future (Edmans, 2011; Goenner, 2008, p. 3).

According to Edmans (2011, p. 622), prior studies finds that intangibles are not incorporated in the stock price due to several reasons. One main reason is due to that the market lacks information of their value, also called the “lack-of-information” hypothesis. For example, R&D spending can be viewed in the financial statements and therefore communicated with the broad market but the input measure of its value is uninformative, thus hardly predictive concerning its quality or success (Lev, 2004, p. 111).

Existing theories differ greatly in terms of whether employee satisfaction is beneficial for firm value. Edmans (2011) studied the relationship between employee satisfaction and long-run stock returns through equally- and value-weighted portfolios of the “‘100 Best Companies to Work For in America’”. His results show that firms with high levels of employee satisfaction generated 2,1% higher risk-adjusted returns between 1984-2009 compared to industry benchmarks. He concludes that the stock market does not fully value intangibles and that employee satisfaction is positively correlated with shareholder returns. Further on, he claims that an SRI screen based on employee relations may improve investment returns. Other studies (Filbeck and Preece, 2003; Goenner, 2008) supports Edmans (2011) conclusions that firms that appears on the “‘100 Best Companies to Work For in America’” outperformed the overall market.

The research of Burnett and Best (2011) finds contrary results when they examine Fortune magazine’s list of the “‘100 Best Companies to Work For in America’” between the years 1998-2000. They state that the list do not provide any strategy to make abnormal return, either short-term- or long-term, due to the fact that only a subset of the firms on the list outperform the market and drives the full sample results. Also some
findings of Fulmer et al. (2003) indicates that there is no superior returns by investing in this companies.

Using the “Great Place to Work”- list is one of many ways to investigate the relationship between employee satisfaction and stock return. Another is to use the “ESG”-factors (environmental, social and governance), where employee welfare is a part of the whole corporate social responsibility. Studies (e.g. Derwall et al., 2005; Edmans, 2011; Galema et al., 2008; Kempf and Osthoff, 2007; Statman and Glushkov, 2009) made on the U.S. market show positive relationship between SRI and abnormal return, but studies outside the U.S. (e.g. Brammer et al., 2006; Velde et al., 2005) suggest that there is no correlation.

We can from this discussion see that there are disagreements about the opportunities to earn abnormal return by investing in companies with high levels of employee satisfaction. We therefore believe it is interesting to study and explore this phenomenon.

We have chosen to investigate this from a global perspective, by including all worldwide companies listed on the Great Place to Work- website. We want to investigate this since; first of all, there are relatively few studies in this area. Secondly, only small samples have been used and most studies are issued in the U.S. market. Lastly, the results concerning social responsible investing outside the U.S. market is contradictory and showing a non-significant relation, which further increases the relevance and interest in performing this study (Derwall et al., 2011, p. 2142). Therefore this study may generate increased knowledge in the field.

1.3 Research question

Is it possible to make abnormal returns by investing in a portfolio of worldwide firms with top scores on the SRI screen employee satisfaction?

1.4 Purpose of the study

The main purpose of this study is to examine investor’s possibility to make abnormal return with controls for multiple risk factors by investing in worldwide firms with top scores in employee satisfaction. One sub-purpose is to examine how the market values intangibles depending on the degree of market efficiency. Another sub-purpose of the study is to test two different portfolio weighting methodologies, equally- and value weighted, and observe the differences between them.

1.5 Theoretical and practical contribution

The theoretical contribution in this research is to provide more knowledge in the correlation between top-ranked firms on employee satisfaction and the performance on the stock market. It will also provide more knowledge in the efficient market hypothesis and how well the market catches up the intangible asset of having top scores in employee satisfaction. Furthermore, it will contribute to the research and importance of social responsible investments (SRI).

Since this study will examine the possibility of earning an abnormal return on the stock market, the practical contribution will mainly be for private investor’s all over the world, but also for fund managers and other financial institutions because they can
replicate our trading strategy or avoid the trading strategy depending on the outcome of the study. The result will also describe the degree of importance in employee welfare. Hence, it will also give some practical contribution and be of value for corporate managers and hopefully give incentives to imply modern human relationship.

1.6 Research demarcations

This research will only be based on the employee satisfaction rankings made by the Great Place to Work® Institute. No other rankings or other lists will be considered in this study.

Most of the lists in “Great Place to Work” started from 2003, especially lists for other countries than USA and also list for other continents than North America (Great Place to Work® Institute, 2013). We therefore chose to demarcate the measurement period of this study to 10 years starting from 2003 to 2012.

We have also chosen not to include transaction costs or taxes in our calculations, as this would be far too extensive and time consuming.
1.7 Definition of terms

Corporate social responsibility (CSR): refers to corporate decisions to assess and take responsibility in social, corporate governance, ethical and environmental issues (Renneboog et al., 2008a, p. 1723).

Degrees of freedom: In statistics, it refers to the number of observations used that is independent and free to vary.

Employee satisfaction: In this study employee satisfaction attempt to describe whether employees are satisfied and fulfilling their desires and needs at work. It is a factor in employee motivation, goal achievement and positive morale at the workplace.

Environmental, Social and Corporate Governance (ESG): A general term for SRI issues.

Excess return or abnormal return (alpha or \(\alpha\)): In this study, excess- and abnormal return refers to the same, the risk-adjusted return (denoted alpha), which is the return controlled for multiple risk factors.

Inside information: In this study, we refer to inside information as when information is not public to the market participants.

Intangible assets: An intangible asset is an identifiable non-monetary asset without physical substance (IFRS, 2013).

Market index: Displays the average value trend of a particular market.

Socially responsible investments (SRI): is an investment process that integrates social, environmental, and ethical considerations into investment decision making (Renneboog et al., 2008a, p. 1723)

SRI screen: When mentioning SRI screens, we refer to the positive or negative social responsible investment criteria’s an investor can use. Employee satisfaction is for example in this study our positive SRI screen but other examples of positive screens can also be environment, diversity, human rights or governance.
Theoretical method

2 Theoretical method

This chapter starts with the choice of subject and our practical and theoretical preconceptions, which laid the foundation for this study. The following chapter will also explain the views on research philosophy, research approach along with research design that we believe have shaped our study. Finally, to facilitate a critical review of our study, the process of literature search and source criticism will be highlighted.

2.1 Choice of subject

The first step in the research process is to decide what to investigate. According to Patel and Davidson (2011, p. 41) an important question that the researcher must take into consideration before deciding which subject to investigate is whether the study can contribute to the growth of knowledge in the area and if someone has practical benefit of the investigation. They further argue that the subject and the research questions often emerge through own interests, curiosity and unanswered questions.

We knew from the start that we wanted to investigate the financial market in some way, since both of us have an interest in the financial market, both from trading to some small extent on our own and from studying for a Degree of Master of Science in Business and Economics in finance.

The growing interest and demand for SRI quickly caught our attention. When starting to explore this area we could se that there is no clear results whether SRI investments are profitable or not. In study in particular that we found very interesting was Edmans (2011) study, investigating the relationship between employee satisfaction and abnormal return. This study showed an outperformance of stocks with high level of employee satisfaction compared to a benchmark. As his study only focuses on the U.S. market, we decided to investigate the abnormal return on employee satisfaction on a global perspective, since no studies on employee satisfaction using data from Great Place to Work had been done outside U.S. and results regarding SRI factors outside the U.S. market showed non-significant relationships.

2.2 Preconception

It is important that we as authors of this thesis are well aware of the preconception that we possess, since it will affect the thesis both consciously and unconsciously (Bjereld et al., 2002 p. 14). Values and biases can appear at any time during a study and influence the interpretation of the study results, it is therefore important that we as researchers strengthen the awareness by explaining to the reader what preconceptions we have and by being self-reflective (Bryman, 2011, p. 43-44).

The preconceptions that we, as the authors of this study, have in this subject are acquired through seven semesters at Umeå School of Business. Both of us have studied at the Degree of Master of Science in Business and Economics program which includes core courses in economics and business administration, as well as statistics and law. After the first four semesters the program goes into a more individual path where we both have chosen to specialize in finance and accounting.
Theoretical method

Furthermore, we both studied a semester abroad. One author studied finance courses on C- and D level at National Taiwan University in Taiwan and the other author studied finance and marketing courses on C- and D level at University of North Carolina in Pembroke, USA.

Apart from the academic knowledge both of us have, we also have an interest in the financial market and experience from investing in stocks and mutual funds, which has contributed to a basic knowledge of stock trading. One author have beside the academic work also valuable insights from having engaged in consultancy and specialized courses in excel and the other author have four years working experience in Nordea Bank AB beside academics that will contribute to further understandings.

We believe that this combined knowledge will serve as a good foundation in order to carry out the study. However, we do not believe that our preconceptions will affect the study in any significant direction. The fact that we are aware of the preconceptions and clearly explains this makes the results objective. This study will also be conducted in a deductive manner, which makes the study less affected of own values.

2.3 Research philosophy

The choice of research philosophy will reflect important assumptions of how researchers interpret the world and concerns the nature of the knowledge and how it develops (Saunders et al., 2009, p. 107). The research philosophy has two major ways of interpreting the world, the first is called epistemology and the second is called ontology (Saunders et al., 2009, p. 109).

Epistemology can be described as the science of knowledge (Bryman, 2011, p. 29-30). It aims to describe which epistemological questions that is or should be viewed as knowledge within a specific topic. Further on, a key point in epistemology is to answer the question whether the social reality can or should be studied by the same principles, methods and view of reality that applies in natural science.

Ontology, on the other hand, covers questions concerning how to understand the universe and how the humanity and the societies true nature and beginning is perceived (Patel and Davidson, 2011, p. 15). According to Saunders et al. (2009, p. 110), ontology is the nature of reality and raises questions as how the world operates and commits with its viewers.

Saunders et al. (2009, p. 108) mentions several philosophies, which can be divided into four categories, positivism, realism, interpretivism, and pragmatism. These are the four main subgroups. According to Saunders et al. (2009, p. 108-109), it is easy to fall into a trap thinking one of these research philosophies is better than another. Although the philosophies differ, they admit that some of them are surely better in certain circumstances. Therefore the choice of philosophy depends on what type of research question that should be answered. However, they also emphasizes that a research in almost all cases tends to cross over into more than one philosophical domain.

Since we are, in this research, examining the possibility of earning an abnormal return by using the SRI screen employee satisfaction, we will throughout the study be objective and independent of social actors. Therefore an objective view of the world and
how to interpret knowledge is essential for us. Since we will observe credible data, we will base our conclusions objectively and strive to make them reliable. However, there is a risk that our result is affected by some subjective decisions regarding simplifications and other choices. Still, since we are performing an objective study, our choice fell naturally on positivism. So both in terms of epistemology and ontology we will have the research philosophy positivism. Saunders et al. (2009, p. 119) explains that interpretivism is more socially constructed and realism is in between interpretivism and positivism, thus both objective and social. While pragmatism is a more external philosophy saying that both observable and subjective meanings can provide research knowledge.

Bryman (2011, p. 36) however divides the ontological considerations into objectivism and constructionism were the objectivism is clearly related with Saunders ontological issue positivism. He describes that the difference between those can be illustrated by organization and culture. Objectivism is basically saying that social phenomena and their relevance have an existence that is independent of other social actors, while constructionism says that it is generated by the social actors interaction. Therefore the objectivism ontological consideration is clearly the most suitable in our research.

2.4 Research approach

In the implementation of social science research, there are mainly two different approaches a researcher can use when determining how the relationship between theory and research is described. The research approach can either be deductive or inductive.

A deductive approach is characterized by setting up and empirically testing hypotheses based on conclusions drawn about individual phenomena from general principles and existing theories (Patel and Davidson, 2011, p. 23). Bryman (2011, p. 26) argues that the importance of the research lies in how well the researcher is able to break down the problem and manages to make the information measurable. In order to make the information measurable it is necessary to select a large sample to be able to generalize the results to the whole population (Saunders et al., 2009, p. 124-125). Bryman (2005, p. 23) describes the deductive approach as a six-stage step as shown in Figure 1.

![Figure 1 - The process of deduction](Bryman, 2005, p. 23)

The alternative to a deductive approach is to implement an inductive research approach. Inductive theory works in the opposite direction as theory is assumed to be the outcome of research (Bryman, 2011, p. 28). In other words, the researchers observations and results lays ground for the creation of theory. This approach is more concerned with gaining an understanding of the meanings connected to an event, and is therefore more associated with qualitative research. It is also less concerned with the need to generalize (Saunders et al., 2009, p. 125-126).

However, it is not always easy to stick to just one approach. The deductive approach involves elements of the inductive approach and vice versa (Bryman, 2011, p. 28).
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When a researcher collects data to establish theory, he or she may want to collect further data after declared the theory valid or not. In this way the researcher goes back and forth between data and theory. Such a strategy is called iterative approach and is located somewhere between the deductive and inductive approach.

For our thesis we have chosen to use existing theories and based on these theories deduct hypotheses to test, in order to answer our research question. Our goal is to find a relationship between two variables - in this case, the employee satisfaction and abnormal return - which makes it more appropriate to use a deductive approach.

What kinds of approach you choose is closely linked to the research strategy that you make use of. There are two main research strategies: the quantitative- and qualitative method. In the most basic overview of the two strategies, one could distinguish them from one another by the process of collection the data (Bryman, 2005, p. 40-41). The quantitative method is focusing on the collection of numerical data from measurable variables in order to examine relationships. In order words, quantify a problem to test theories. The qualitative method instead uses information in form of words rather than numbers, which are not measurable and hard to generalize to any wider population. Researchers that use this strategy whish to understand and analyze participants and try to describe reality, thus be theory generating.

Since we intend to study the ability to generate abnormal returns by investing in firms with high rated employee satisfaction from numerical data and want to be able to generalize our findings to a wider population, it is clear that we consider the quantitative approach to be preferable. As we discussed earlier in this chapter, this study uses a deductive strategy to test the reality in an unbiased and scientific way, thus being positivistic and objectivistic, which according to Bryman (2011, p. 40) suits a quantitative method. The alternative would be to carry out the following study with a qualitative approach, in form of interviews to people with insight in the companies to see if they think employee satisfaction will generate higher returns. This alternative would involve less companies and thus being harder to generalize.

2.5 Research design

The research design covers, research strategy, research choices and time horizon (Saunders et al., 2009, p. 136-137). Together they focus on the process of turning the research question into a project. It can be viewed as an initial plan on how to proceed to reach the result, in other words how to receive an answer to the research question.

To be able to transform our research question into a project we need to figure out the purpose of our study. According to Saunders et al. (2009, p. 139-140) there are three different research purposes, exploratory, descriptive and explanatory. Exploratory studies aims to explain and give understanding to a specific problem. A descriptive study on the other hand seeks to describe and portray a profile of a person, event or situation. The last one, explanatory, pursues to establish a relationship between different variables. Hence, the explanatory is the most suitable in this study since we want to examine the relationship occurrence between employee satisfaction and long-run stock return. We will also be studying a specific situation to explain our relationship, which is essential in explanatory studies.
Theoretical method

2.5.1 Research strategy
There are several research strategies to use in academically studies. Some of them are more related to the deductive approach and other to the inductive approach. But according to Saunders et al. (2009, p. 141), one strategy should not be allocated to only one approach since it can be used with both, however it is not so common that it differs. The research strategy is, according to Saunders et al. (2012, p. 173), the guideline to help the researcher achieve the desired goal. It can therefore be defined as the course of action of how to go when answering the research question.

Our chosen strategies, experiment and survey, is commonly used within the deductive approach but can also be used in the inductive approach (Saunders et al., 2012, p. 160). We chose these strategies because they applies best in our case since we wanted to make an empirical investigation of secondary historical data by performing hypothesis tests and therefore get a deep understanding and exploration of the subject, mostly due to the many observations we will examine. This differs from interviews for example where the ability to explore and understand drastically decreases due to the limitation of data that can be explored (Saunders et al., 2009, p. 145-146). Experiment strategies purpose is to study probabilities of changes in the dependent variables by changing the independent variable, which is basically what we will perform in our study, where the independent variable is employee satisfaction and the dependent variable is abnormal return (Saunders et al., 2012, p. 174). It is also commonly used in a wide range of natural sciences fields such as psychological and social science research. Hence issues within this area can be explored and clarified. The survey strategy, similar as experiment strategy, is common within quantitative and deductive research, which is mainly used within business and management fields (Saunders et al., 2012, p. 176). It allows the researcher to collect quantitative data, which can be used to analyze statistically and is therefore both comparatively and easy to explain and understand. This goes hand in hand with our approach and describes how we can answer our research question in the most appropriate way. The survey strategy, also like the experiment strategy, aims to suggest several possible reasons regarding relationships between various variables. So, to be consistent with Saunders (2009) research design we chose to use a version of both the experiment- and survey strategy, since it best matches our study, even if it might be ambiguous. The main point with these strategies is conversely that it collects and analyses quantitative data simultaneously, which is exactly what we will do in this research.

2.5.2 Research choices
The choice of how to gather the data is called the research choice. It is basically explaining the combination between quantitative and qualitative techniques that is used within a research (Saunders et al., 2009, p. 151). An easy way to distinguish between these two techniques is by interconnecting the usage of quantitative techniques with numerical data collections and qualitative techniques with non-numerical data collections, for example words. In our research we will only be using a quantitative method with a numerical data collection. Furthermore, we needed to collect data from several sources, i.e. to extract historical stock prices, market values, industry classifications, “Great Place to Work” top lists, several indices, risk-free rates and risk factors. Therefore, a multiple data collection technique and analysis procedure has been used. This is according to Saunders et al. (2009, p. 151) called multi method and is therefore used as our research choice. The multiple method technique is, according to Saunders et al. (2012, p. 164), increasingly advocated within business and management
Theoretical method

research. That is partially because it will overcome weaknesses associated with only using one source of data; hence it gives a richer approach, which lays ground for broader analysis and interpretations. The contrary to multi method is mono method where only one data collection is used to answer the research question.

2.5.3 Time horizon
An important detail in planning the research is to decide whether the study aims to reflect a “snapshot” at a particular time or a series of multiple “snapshots”, which extends over a period of time. These types of time horizons are according to Saunders et al. (2009, p. 155) called cross-sectional studies (particular point in time) and longitudinal studies (over a given period). They also emphasize that the time horizon chosen by the authors are completely independent of which research strategy or choice that has been pursued as research design.

Cross-sectional studies are mostly used within survey or interview studies since it aims to describe a specific phenomenon at a specific time (Saunders et al., 2009, p. 155). Therefore a qualitative method goes hand in hand with the cross-sectional study approach. To be able to study changes and developments over time, the longitudinal study approach is preferable and is commonly used with quantitative methods (Saunders et al., 2009, p. 155).

In order to conduct a reliable research we have decided to use the longitudinal study approach. The reason for that is because we want to study changes over time and make comparison of the results. By using a longitudinal study time horizon, we can easily compare the return from our trading strategy, containing firms with high employee satisfaction, to the total market return, in other word reject or confirm the abnormal return on employee satisfaction. It will also give a distinctive result whether there is any relationship between employee satisfaction and stock return by allowing us to perform statistical signification tests.

2.6 Literature search
When writing an essay, it is essential to first conduct a thorough literature review. It is important to find out what has been done in this area before, and take advantage of this knowledge, according to Bryman, "[...] to avoid having to reinvent the wheel" (2008, p. 97).

Furthermore, he described that a good study strengthens the author’s credibility with knowledge of the research area (Bryman, 2008, p. 97-98). He also points out that it is required that authors have a critical ability to review information in order to interpret and use it to support their own views and arguments.

What we initially did was to conduct a comprehensive literature search in Business Source Premier, Google Scholar and DIVA in the subject of employee satisfaction in order to find out what has been done in this research area. Example of keywords that were used are, among others; employee satisfaction, job satisfaction, firm performance, employee attitude, employee performance, employee motivation, SRI, socially responsible investments, great place to work, 100 best companies, best workplaces, best companies to work for, market efficiency, efficient market hypothesis, intangible assets, abnormal returns, excess return, motivational theory and human relations theory. These
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searches has been made in both English and in Swedish in order for us to get a broader view of what has been studied in the field of employee satisfaction. The searches resulted in a number of scientific articles in the chosen area of research, employee satisfaction, and SRI. Through these articles, several other relevant articles were found by references made to them. Other student papers on employee satisfaction and SRI have also been useful for finding relevant scientific articles and inspiration.

Through studying these articles and thesis we gained more knowledge in the area. We also found that there were some studies done in the area, but most of them were based on the US market. However, we did not find any previous studies that covered our topic, more specific on a global perspective. More precisely, there is no study investigating the SRI screen employee satisfaction from the Great Place to Work Institute outside the U.S. market. In other words there is a gap that we hope that this study will fill.

2.7 Source criticism

For the collection of scientific articles, literature, information from the Internet and other sources relevant to this study, it is of great importance to critically examine them. That is due to the reliability and veracity that can vary greatly between different sources, depending on if the researcher has been neutral in their examination. Ejvegård (2003, p. 62-65) states four requirements that have to be met when you review the literature in a critical way; authentication, independency, freshness and concurrency.

In order to meet these requirements, we have tried as much as possible to go back to the original source and thus make use of primary sources. The study is mainly based on primary sources found on recognized and established databases such as Google Scholar, EBSCO Business Source Premier and Emerald. Also, our data is collected from Bloomberg’s equity database and Kenneth R. French Website data library, which both are primary sources. However, the most of our data is obtained from Thomson Reuters DataStream, which is a secondary source. These databases are well known and frequently used sites by researchers and analyst. The fact that we mainly make use of primary sources reduces the risk that the study is biased, which ensure its authenticity and relevance, as well as timeliness (Patel and Davidson, 2011, p. 55-56).

Yet, in some cases it has not been possible to find the original source due to insufficient resources in the form of restricted databases that we have access to. In these cases we have been forced to refer to secondary sources. To make sure that these secondary sources are credible we have used the scientific articles that are well acknowledged and well cited. The fact that most of the scientific articles used have undergone a “peer-review”, which means that these are reviewed and approved by a third party who possess great knowledge about the subject, further increase the credibility and meets the requirement of authenticity and independency.

Throughout this study we have attempted to make use of recent articles and books. The majority of the scientific articles we use are from the 2000s, some from the 1990s. However, there are some who are older, primarily in human relationship theories and market efficiency, but it is essentially pioneering studies, that most researchers use and refer to. In view of this, we believe these are of relevance to our work because of the sources timeliness.
Theoretical background

3 Theoretical background

In this chapter, we will describe the theories and previous research that will form the basis for our study. The purpose of the selected theories is to explain how various factors affect the possibility that employee satisfaction can lead to excess returns. Initially, we present the market efficiency hypothesis. Furthermore, we will explain the concept of Intangible asset and whether these are incorporated in the stock price or not. Then we deal with different theory views of how an employee is justified and review the emerging concept of social responsible investing (SRI). Finally, we will present several risk-adjusted measurements.

3.1 Market efficiency hypothesis

The efficient market hypothesis (EMH) serves as the foundation of modern financial theory and underpins the basis for many other theories in economics. The question whether the market is efficient have concerned numerous of researchers during the years, and is one of the most studied areas in financial theory. Despite all the research in this area it shows different results.

The efficient market hypothesis is an attempt to explain why stocks behave the way they do in terms of information availability. Eugene Fama is considered to be the originator of the efficient market hypothesis in 1970, when he published an article summarizing prior research on the topic. Although theories about market efficiency have existed since the early 1900s, they did not receive any attention, and most researchers thought that the use of technical or fundamental approach could lead to excess return (Fama, 1970, p. 389; Lawrence et al., 2007, p. 161). First in the 1950s and 1960s studies began to contradict this view, showing evidence that stock price follow a random walk (Fama, 1970, p. 389). Kendall and Hill (1953) concluded that the stock price had a tendency to change randomly from one time to another. Samuelson (1965) and Mandelbrot (1966) finds evidence that returns can not be predicted, in a rational market, due to the fact that the market adjust stock prices rapidly when new information comes out. This theory faced a strong support and was widely accepted by academic financial economists at that time. Malkiel said “[…] a blindfolded chimpanzee throwing darts at the Wall Street Journal could select a portfolio that would do as well as the experts” (1973, referred in Malkiel, 2003, p. 60).

As mentioned before, Fama’s (1970) work is considered to be the birth of the efficient market hypothesis. His article “Efficient capital markets: A review of theory and empirical work” can be summarized as it is not possible to beat the long-term market because the prevailing security prices always reflect the information available (Fama, 1970, p. 383). It thus implies that an efficient market is always correct valued, making it impossible for an investor to profit from under-and over-valued assets. If information is released about a company an efficient market will immediately adjust prices of securities at the right level before investors have time to benefit from the news. Hence, neither methods that are based on the historical price performance to predict future trends (technical analysis) nor methods based on financial information like reported earnings and value of assets to forecast its future development (fundamental analysis) would be beneficial for investor. (Malkiel, 2003, p. 59)
Fama (1970, p. 387-388) sets three conditions for a market and the pricing if it to be efficient; no transaction costs, all information should be equally available to everyone and that all market participants are assumed to be rational, i.e. to value current information in the same manner. However, if some of these conditions do not hold, the market is not necessarily inefficient, they are just potential sources of it. Further on, for the market to be efficient there must be actors in the market who compete with each other to set the market price to its intrinsic value. When information comes out indicating over- or underpricing of a certain stock, these actors sees an opportunity to make profit and immediately trade on the information, whether it is good or bad, which moves the price to its new intrinsic value, where only normal rates of return can be expected. It is therefore not possible to find mispriced assets based on the information available (Bodie et al., 2010, 372). This is consistent with the idea of random walk theory, which the efficient market hypothesis is highly associated with. The random walk theory states that a stock's future price is impossible to predict, regardless of historical price patterns, which means that the stock price can go either way from one day to another (Malkiel, 2003, p. 59). New information may affect the price, but because it is impossible to predict what information is released, it therefore becomes impossible to predict a stock’s future course and any return above the risk-adjusted are due to chance.

Market efficiency is also highly dependent on the set of information available to the active investors and different markets can have different levels of information efficiency. In addition to summarizing previous research Fama subordinated the efficiency into three levels depending on degree of information implemented in the price of the security (Fama, 1970, p. 388).

The first level is called weak form of market efficiency and asserts that only information of past prices is already incorporated in the security price (Fama, 1970, p. 383). In other words, you cannot predict how stock prices will develop based on historical information. Technical analysis of stocks is therefore useless to beat the market.

Semi-strong form of market efficiency unlike the weak form also incorporates public information like for example stock splits, stock issues, and annual reports (Fama, 1970, p. 388). This means that neither public information nor historical information can be used to earn abnormal earnings, since all investors already know that information and thus incorporated in the security price. Only investors with inside information can outperform the market.

In the last form of market efficiency, the strong form, investor also have access to inside information beside historical and public, thus all information is instantaneously incorporated in the security price (Fama, 1970, p. 388). In a strong efficient market no one can make abnormal returns no matter what information you have. This level of efficiency is quite difficult to test. Information asymmetry between insiders and outsiders should give the insider a significant advantage, but because of very strong regulations against insider trading, insiders do not outperform the market (Howells & Bain, 2005, p. 544).

Much of the published research on the efficient market hypothesis is based on which of the three forms of efficiency that should be applicable in real conditions. Empirical evidence has been mixed, but has generally not found support for that overall efficiency
Theoretical background

could exist in the strong form (Dimson and Mussavian, 2002, p. 96). In the 1980s, when
the stock market crashed academics started to challenged the theory. Shiller's (1981)
studied the stock market volatility concluded that stock market prices are way to volatile
for the market to be efficient. De Bondt and Thaler (1985) formed portfolios of best-
and worst-performing stocks and find that when stocks are ranked on three- to five-year
past returns, past winners tend to be future losers, and vice versa. Lo and MacKinlay
(1999) finds that short-run serial correlations are not zero which enables them to reject
the hypothesis that stock prices behave as true random walks. Banz (1981) studied finds
that small firms had on average higher risk adjusted return compared to large firms.
Even Fama (1970) himself questioned the theory, when Fama and French (1988) finds
that a significant portion of the variance of future stock market returns could be
predicted by the dividend yields of the market index. Further on, Campbell and Shiller
(2001) uncovered stock-market patterns that questioned the semi-strong efficient market
hypothesis. They find that stocks with low price/earnings and/or price/book multiples
produce above-average returns over time. Also studies done by Lakonishok et al. (1994), Fama and French (1992) and Capaul et al. (1993) all show that there is a
correlation between a high book-to-market ratio/low price-to-book ratio and abnormal
returns. Barberis et al. (1998) shows that investors tend to overreact and overreact to
new information, due to the fact that non-professional investors follow optimistic
analysts and financial journalists, which create the reactions to positive information
and/or negative information. Also Easterwood and Nutt (1999) and De Bondt and
Thaler (1990) find evidence that analysts tend to overreact both to negative and positive
information. All these results do not support the overall efficient market hypothesis.
Although, many of the findings that disprove the efficient market hypothesis have been
challenged on the grounds of data interfering, trading costs, sample selection biases, and
inappropriate risk adjustments. But the attacks on efficient market hypothesis have
resulted in a growing number of academicians that have become skeptical of its validity.

We have seen that one implication of the efficient market hypothesis is that when
purchasing a security, you cannot expect to earn an abnormally high return, a return
greater than the equilibrium return. This implies that it is impossible to beat the market.
Followers of the efficient market hypothesis would thus argue that our problem is fairly
easy to answer, i.e. to invest in a portfolio consisting of shares of companies with high
employee satisfaction, will not beat the benchmark. The efficient market hypothesis is
the theory that clearly denies the possibility to outperform the index, but as we have
demonstrated, there are disagreements about whether it is possible to beat the market or
not. This is why we found it necessary to provide the theory and its appearance a
thorough explanation.

3.2 Intangible assets

As described in the previous section, there is doubt whether the market is fully efficient
or not. A variety of existing research demonstrates that the market fails to incorporate
intangibles thus leading to mispricing of stocks.

There is very strong theoretical as well as empirical evidence that investment is
important for companies’ economic growth. Traditionally, essential assets to invest in
were assumed to consist of tangible assets, such as land, buildings, machinery and
unskilled labor (Brynjolfsson and Yang, 1997, p. 2). In recent decades, there has been a
structural change due to the rapid technological development, the increasing
globalization of trade and reduced regulation (Hand and Lev, 2003, p.1). As a result, the soft parts of a company often referred to as intangibles are increasingly taking a central role in firms business strategies and a tremendous amount of resources are invested in intangible assets such as R&D, marketing, and staff training (Hand and Lev, 2003, p. 1-2). According to Brynjolfsson and Yang (1997) the most successful firms are often those that best leverage information and knowledge assets. Brynjolfsson et al., (1998) argues that intangibles such as skills, organizational structures, know-how and information have found to be large and have substantial productivity benefits.

However, measuring intangible assets is associated with a number of problems because they are just intangible and invisible (Brynjolfsson and Yang, 1997, p. 2). For example, compared with the effect of a machine used directly in production, it is difficult to estimate the effect of future production from the skills of the staff. Further on, intangible assets do not appear on most firms balance sheets, instead these assets are shown as software and training and so on. This makes it very hard for investors and the market to capture the real value of them. Edmans (2011, p. 622) argues that the market lacks information of intangibles value, thus lead to mispriced stocks.

In an efficient market, a tangible variable that is unmistakably beneficial to firm value will be promptly capitalized and not lead to excess returns (Edmans, 2011, p. 622). However, a broad strand of existing research demonstrates mispricing of intangibles. Lev and Sougiannis (1996) find a 4.6% abnormal return based on R&D capital and Chan et al. (2001) shows that R&D-intensive growth stocks tend to outperform growth stocks with little or no R&D and companies with high R&D relative to equity market value show strong signs of mispricing with an average excess return of 6.12% per year. Other studies showing evidence of excess returns are Edmans (2011) showing 2.1% above industry benchmark when examine employee satisfaction and Zhen Deng et al. (1999) study indicates that most of the patent attributes leads to subsequent stock returns and market-to-book ratios.

Today it is widely accepted by economists, investors and managers that intangible assets create value and growth (Hand and Lev, 2003, p. 1). As we demonstrated above, there seems to be consensus that it is difficult for investors to obtain sufficient information about the company's intangible assets and their economic effects. This results in volatility in stock prices, over- and undervalued shares and misallocation of resources in the capital markets (Hand and Lev, 2003, p. 1-2). Since we intend to investigate whether employee satisfaction, which can be classified as an intangible asset, can lead to abnormal returns we believe it is important to highlight why the market anyway fails to value intangible assets fully and what the existing research on the subject shows.

3.3 Employee satisfaction

One intangible asset that has been found hard to measure for investors is employee satisfaction. In order to understand how employee satisfaction can lead to mispriced stocks we need to examine the concept of employee satisfaction and how it may affect the company's performance. As we mentioned in the beginning of this report, the way to look at employees has changed radically in recent decades. Traditional theories (Taylor, 1911) view at employees as unskilled inputs just like raw materials to today view as key organizational assets. A number of studies, especially in human resource management,
have examined the relationship between firm performance and employee satisfaction to establish whether pleased workers also perform better. The common belief is that satisfied employees are seen as an intangible asset that affect business performance through improved productivity, customer satisfaction and reduced staff turnover (Goenner, 2008, p. 3).

### 3.3.1 Motivational theories

Most existing studies in the area of employee satisfaction have explored different ways to get employees motivated and thus satisfied. Motivation theory tries to explain what organizations can do in order to enhancing employee’s performance. When talking about motivation at work, it is often divided into two types, intrinsic motivation and extrinsic motivation (Armstrong, 2002, p. 55-56). Intrinsic motivation focusing on the individual and refers to motivation driven by interesting and challenging tasks that will influence employees to behave in a certain way. Personal responsibility, development and career opportunities are examples of intrinsic factors. Extrinsic motivation concerns external factors and includes rewards such as increased pay, promotion and good feedback but also punishment for misbehavior.

The early motivational theories are based on extrinsic motivation and investigating how rewards affect the behavior of individuals and teams. Instrumentality theory states that motivation is driven by rewards and punishments tied directly to employees performance. Taylor (1911) wrote: “[...] it is impossible, through any long period of time, to get workmen to work much harder than the average men around them unless they are assured of a large and permanent increase in their pay” (Taylor, 1911, p. 121). Also behavioral theory advocates extrinsic motivation and believes in reinforcing behavior through rewards (Skinner, 1976).

Motivational theories focusing on the needs that motivate employees to take action, i.e. more related to intrinsic motivation, are called needs or content theories (Armstrong, 2002, p. 58). Most of these theories agree that motivation begins with individual needs. Unsatisfied individual needs create tensions, which makes people want to find ways to reduce or satisfy these needs. The stronger the needs are, the more motivated one are to satisfy them. Consequently, an unsatisfied need creates motivation. Perhaps the most famous theory in this area is Maslow's hierarchy of needs. Maslows (1943) model is based on a pyramid divided into five categories of needs starting at the bottom with physiological needs, consisting of the need to satisfy biological requirements for hunger, thirst and sleep (Maslow, 1943, p. 372-375). Next step in the pyramid is safety needs, which is the need for a secure environment and the absence of pain, threat, or illness (Maslow, 1943, p. 376-380). Following safety needs is Love needs, which includes the need for affection, belongingness and interaction with other people (Maslow, 1943, p. 380-381). Almost at the top he place, Esteem needs, including self-esteem through personal capacity and achievements as well as prestige and respect from others (Maslow, 1943, p. 381-382). At the top of the hierarchy is self-actualization, which represents the need for self-fulfillment (Maslow, 1943, p. 382).

Maslow recognized that several need levels motivate behavior simultaneously, but is mainly motivated by the lowest unsatisfied need at the time. As the person satisfies a lower level need, the next higher need in the hierarchy becomes the primary motivator. Maslow puts it as "[...] when a need is fairly well satisfied, the next prepotent (‘higher’) need emerges, in turn to dominate the conscious life and to serve as the center of"
Theoretical background

*organization of behavior, since gratified needs are not active motivators. Thus man is a perpetually wanting animal."* (Maslow, 1943, p. 395).

Another well-known need theory is Alderfers (1969), which uses empirical research to modify Maslow’s hierarchy of needs into only three main categories of needs; existence, relatedness and growth (ERG). He argues that these needs can operate at the same time compared to Maslow’s hierarchy (Alderfer, 1969, p. 142). Also McClelland (1975) question the fact that a certain level must be satisfied before the next level can be satisfied. He categorizes the factors for motivation as achievement, power and affiliation and argues that it depends on each individual, thus one need tends to be dominant (McClelland, 1975, p. 255).

Hertzberg (1959, p. 114-119) provides a mix of intrinsic and extrinsic motivations in his famous two-factor theory. Motivators, e.g. achievement, responsibility and recognition, provide positive motivation. Hygiene factors such as salary, working conditions and benefits on the other side do not lead to motivation, thus the lack of it results in negative affect at motivation.

Another form of motivational theory is cognitive theory which emphasizes more on the psychological factors and explains the interaction between the individual, the situation and the surroundings (Armstrong, 2002, p. 59). Vroom (1964) has presented a model that implies that motivation is a function of expectancy, instrumentality and valence (Armstrong, 2002, p. 60). Expectancy has to do with a person’s perception of the probability that a given action will lead to results. A person who sees no connection between his work and the results will be totally without expectations. Instrumentality refers to the individuals’ perception of the likelihood that the project will result in certain outcomes, positive or negative. If a person believes that one will get a higher salary if one does something, the person shows high instrumentality. Valence has to do with a person’s perception of the value of the expected outcome, i.e. a person in need of growth and self-realization will perceive consuming tasks and greater responsibilities as motivating because these factors have greater valence. This model suggests that motivation is likely to occur only when it is a strong relationship between performance and outcome.

Goal theory is about setting goals for motivating employee performance. Latham and Locke (1979) states that motivation and performance are influenced in a positive direction when employees are set goals (Latham and Locke, 1979, p. 68). However, the goals needs to be specific rather than vague and challenging, yet reachable (Latham and Locke, 1979, p. 77).

We can see that motivational theory use incentives to encourage employees to be satisfied and thus make them perform better, which in the long run, lead to better outcome. Money is obviously the primary incentive, since without it few, if any, employees would come to work. Although money alone is not always enough to motivate high performance, other incentives, such as responsibility, achievements and goal-setting inducements, together with participation in decision-making, job enrichment and organizational development also is essential and important in order to obtain motivated employees and high degree of performance.

### 3.3.2 Employee satisfaction and firm performance

Despite the above belief that satisfied employees would perform better outcome, most
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evidence from empirical studies shows only a weak relationship between employee satisfaction and employee performance. Iaffaldano and Muchinsky (1985) find that satisfaction and performance are “[…] only slightly related to each other” by performing a meta-analysis on 74 existing studies with 217 correlations showing a mean correlation of only 0.17. (Iaffaldano and Muchinsky, 1985, p. 251, 270) Also Brayfield and Crockett (1955) and Vroom (1964) show similar findings of no or minimal relationship. A more recent study, however showing that there exist some form of relationship is Judge et al. (2001). They did a meta-analysis indicating a mean correlation of 0.30 after studying 312 correlations from 254 studies (Judge et al., 2001, p. 385).

Early studies on employee attitudes such as McGregor (1960) suggested that the way employees experience their work would be reflected in organizational performance (Schneider et al., 2003, p. 836). More recent studies on organizational level find stronger positive correlations compared to the studies in previous part that is performed on individual level.

Ostroff (1992, p. 969) question that satisfaction and performance are not strongly correlated in a study of the relationship between employee attitudes and organizational performance. In that research, she examines if teacher attitudes influence’s student satisfaction and in turn student performance. Data on organizational performance were collected at 298 schools and data on employee satisfaction from 13 808 teachers working at these schools (Ostroff, 1992, p. 963). Her findings shows that teacher attitudes such as employee satisfaction and organizational commitment were simultaneously related to school performance, measured by several different criteria like academic achievement and teacher turnover. Ostroff (1992, p. 965) argues that the relationship is stronger at organizational level due to the fact that individual-level measures of performance do not take interactions between workers into account. Employee satisfaction may not lead to better individual performance, but instead contribute to the overall performance of the organization (Ostroff, 1992, p. 969). Harter et al. (2002) support this view finding correlations of 0.37 using a meta-analysis. Also Ryan et al. (1996) find significant relationship on organizational level between employee attitude factors and customer satisfaction but also for employee attitude factors and turnover (Ryan et al., 1996, p. 866).


Towler et al. (2011) test if the care of employees had a positive effect on employee’s service and how this in turn had a positive effect on customer satisfaction. They find support for that better employee-employer relations leads to satisfied customers, which in turn results in a positive financial outcomes (Towler et al., 2011, p. 402).

There are also a number of studies examining the relationship between employee satisfaction and shareholder return, more specifically, excess returns. These studies are
conducted in a similar manner as ours, by making use of lists from the “Great Place to Work”. Most of these studies show a positive correlation (e.g. Edmans, 2011; Filbeck and Preece, 2003; Goenner, 2008). We will review these studies in more detail later in this study (see existing empirical research in chapter 4).

3.4 Socially responsible investments

In recent decades, issues of human rights, labor and environmental changes has been a hot topic worldwide, which is also reflected in the financial market. From concept of CSR, a new increasingly popular way to invest has emerged, which briefly can be described as to select sustainable and responsible investment option (Sjöström et al., 2010, p. 11, 17). A beloved child has many names, it is said, and it also applies to this type of investment. In existing research it goes by many names, ranging from ethical investments, sustainable investments, best-of-class investment, green investments, responsible investments to socially responsible investments. We choose to go by the most commonly used name; socially responsible investments and henceforth call it by the acronym SRI (Viviers and Eccles, 2012, p. 1).

According to Renneboog et al. (2008a, p. 1723), SRI is an investment process that involves taking non-financial criteria’s such as environmental, ethical and social principles into consideration when determining which companies to include in portfolio management. By complementing the purely financial analysis of companies with assessments of how well they meet the above criteria, shareholders seek to influence companies to take social and environmental responsibility in their operations. In other words, these shareholders are not only interested in the companies profit, but also how they make a profit. Investors are also willing to forgo financial benefits in exchange for the non-financial value they get from the SRI attributes (Derwall et al., 2011, p. 2137).

There are various methods that investors can make use of when they choose to invest responsible. However, the three main strategies that appears to be the most common are screening, shareholder advocacy and community investing (Schueth, 2003, p. 190). Screening is when investors use a set of investment screens to select or exclude assets based on the ecological, social, governance and ethical criteria. Positive screening refers choosing companies that are working for a more sustainable world by having superior working conditions, outstanding employer-employee relations, safe products, respect human rights and have a strong environmental practices. Exert negative screening means that investors exclude and avoid companies whose products and business practices are harmful to individuals, society, and the environment. This means that some industries are excluded from the investment if it is not in accordance with corporate responsibility. It may for example be in industries such as alcohol, tobacco, weapons, gambling and pornography (Sjöström et al., 2010 p, 32). However, the screening decisions are never black and white, investors know that there is no perfect companies so they try to find the better-manage or best-in-class companies trough careful research (Schueth, 2003, p. 190). This means that an oil company can be considered as responsible and therefore an SRI investment because they are taking extra care of the environment relative to other oil companies. Another method is shareholder advocacy, which takes the form of investors trying to influence corporate environmental and social responsibility through active ownership i.e. by express themselves through dialogue with company management, shareholder resolutions, or divestment (Schueth, 2003, p. 190-191). Major shareholders have the power to put pressure on companies to take
Theoretical background

responsibility, and threaten to sell their holdings unless companies listen to investor’s advocacy efforts. A third method that is usually connected with SRI is Community investing (Schueth, 2003, p. 191). It is when investors give a small percentage of their investments to well-fare institutions in order to provide capital to people in need.

Since the process of screening requires extensive research into company policies and practices, most SRI investors rely on mutual funds to manage their screened investments. From 1995 until 2012, there has been a tremendous growth. In 2012 there were 333 mutual fund products in the U.S. that reflect environmental, social, or corporate governance (ESG) criteria, compared to only 55 in 1995. This corresponds for of an increase with assets of billion dollars from 12 to 640.5. (US SIF, 2013)

Many researchers have been interested in how returns from investments in practices of SRI stand in comparison to those who do not use SRI screens. The results from studies vary, and it is therefore not possible to draw any clear conclusions. The results are to a large extent dependent on the choice of method for analyzing data. Most results, however, indicate that there is no significant difference between the returns of SRI and traditional investment strategies (e.g. Bauer et al., 2007; Brammer et al., 2006; Burnett and Best, 2011; Schröder, 2007; Velde et al., 2005). Some researchers argue that SRI provides better returns (e.g. Derwall et al., 2005; Edmans, 2011; Kempf and Osthoff, 2007) while others, yet very few, report weak to moderate evidence that it provides lower returns (Jones et al., 2008; Renneboog et al., 2008b).

However, according to Renneboog et al. (2008a, p. 1734) there is two arguments supporting that SRI screened investments should give abnormal returns. The first point they make is due to the fact that good environmental and social performance indicates managerial quality, which in turn can lead to positive financial performance. Second, it should decrease the likelihood of suffering high costs during environmental disasters or corporate social crises, which financial markets not take into account when setting the stock price, thus tend to undervalue.

Form existing SRI literature we can see a tendency that the social responsibility features of stocks are not correctly priced in the financial market, consistent with the theory of intangible assets. In chapter 4 we will go through the most prominent studies in greater depth.

3.5 Risk-adjusted performance measurements

According to Bodie et al. (2010, p. 849-850) it is completely pointless to compare stocks or portfolio performance only based on average return alone. To make the comparison useful, the stocks or portfolios must be adjusted for the risk. There are of course many ways to do this. The simplest and most popular way to adjust for the risk is to compare the result against a benchmark or investment fund with similar risk characteristics. This type of performance comparison is a beneficial first step in measuring the performance. Evaluations using mean-variance criteria’s came to be of importance later on during the beginning of the capital asset pricing model (CAPM). Jack Treynor, William Sharpe, and Michael Jensen one after another gradually recognized the potential in using the CAPM as rating performance for managers.

Our chosen risk-adjusted ratios and models are written and described below.
3.5.1 Treynor’s Ratio
One of the first risk-adjusted measurement is developed and produced by Treynor (1965). Treynor’s ratio presents the excess return per unit of systematic risk, referred to as market risk (Bodie et al., 2010, p. 850).

The Treynor’s ratio formula is as follows (Bodie et al., 2010, p. 850):

$$ TR_P = \frac{\bar{r}_p - \bar{r}_f}{\beta_p} $$

Where:

- $TR_P$ = Treynor’s ratio for portfolio
- $\bar{r}_p$ = Average portfolio return
- $\bar{r}_f$ = Average risk-free rate
- $\beta_p$ = Portfolio beta

3.5.2 Sharpe Ratio
Sharpe (1966, p. 119) came to extend the work of Treynor. His paper in 1966 aimed to subject Treynor’s proposed measure to empirical tests to be able to evaluate the predictive ability of the model. The paper also emphasized and subjected the relationship between recent developments in capital theory of that time and alternative mutual fund performance.

The Sharpe ratio divides the average extra return over the risk-free rate by the standard deviation over the sample period (Bodie et al., 2010, p, 850). By doing so, the reward to total volatility trade off is measured. Hence, the formula account for total risk instead of only market risk as Treynor’s ratio.

The Sharpe ratio formula is as follows (Bodie et al., 2010, p. 850):

$$ S_P = \frac{\bar{r}_p - \bar{r}_f}{\sigma_p} $$

Where:

- $S_P$ = Sharpe ratio for portfolio
- $\bar{r}_p$ = Average portfolio return
- $\bar{r}_f$ = Average risk-free rate
- $\sigma_p$ = Portfolio standard deviation

3.5.3 Jensen’s Alpha
Jensen’s alpha is a risk-adjusted measurement derived by Jensen (1968). The main purpose of Jensen’s alpha is to obtain the abnormal return of a portfolio or fund over the theoretical expected return.
By using the results and assumptions of the capital asset pricing models (CAPM) by Sharpe (1964), Lintner (1965a) and Treynor (Undated), Jensen was able to derive Jensen’s alpha (Jensen, 1968, p. 3).

CAPM describes risky assets through a variety of predictions concerning equilibrium expected returns (Bodie et al., 2010, p. 308).

The capital asset pricing model formula is as follows (Jensen, 1968, p. 3-4):

\[
CAPM_i = E(r_i) = r_f + \beta_i [E(r_m) - r_f]
\]

Where:

- \(CAPM_i\) = Capital asset pricing model for security/portfolio \(i\)
- \(E(r_i)\) = Expected return on security/portfolio \(i\)
- \(r_f\) = Risk-free rate
- \(\beta_i = \frac{\text{cov}(r_i, r_m)}{\sigma_{r_m}}\) = the measure of risk (systematic risk) for security/portfolio \(i\)
- \(E(r_m)\) = Expected return on the “market portfolio”

The CAPM formula (Equation 3) simply explains what a given security/portfolio can be expected to earn given its level of systematic risk (\(\beta\)) (Jensen, 1968, p. 4). The expected return of a security or portfolio is therefore equal to the risk-free rate plus a risk premium, which is derived by the product of beta \((\beta_i[E(r_m) - r_f])\).

Jensen’s alpha on the other hand measures the average excess return of the portfolio over and above the predicted CAPM, given some assumptions including beta of the portfolio and the average market return (Bodie et al., 2010, p. 850).

The Jensen’s measure (portfolio alpha) formula is as follows (Bodie et al., 2010, p. 850):

\[
Jensen's \ Alpha = \alpha_p = \bar{r}_p - E(\bar{r}_p)
\]

Substituting the expected portfolio return \(E(\bar{r}_p)\) with CAPM we get the following formula (Bodie et al., 2010, p. 850):

\[
Jensen's \ Alpha = \alpha_p = \bar{r}_p - [\bar{r}_f + \beta_p [\bar{r}_m - \bar{r}_f]]
\]

Where:

- \(\alpha_p\) = Jensen’s alpha for portfolio
- \(\bar{r}_p\) = Realized return for portfolio
- \(\bar{r}_f\) = Average risk-free rate
Theoretical background

\[ \beta_p = \frac{\text{cov}(r_i, r_m)}{\sigma^2 r_m} \] is the measure of risk (systematic risk) for security/portfolio \( i \)

\( \bar{r}_m \) = Average return on the “market portfolio”

3.5.4 Modigliani risk-adjusted performance (M²)

The Modigliani’s developed and extended the Sharpe ratio in 1997 and obtained their own risk-adjusted measurement tool abbreviated M² (Modigliani and Modigliani, 1997). The main advantage and benefit with this measurement compared to the Sharpe ratio is that it is presented in units of percentage as opposed to the Sharpe ratio; a non-dimensional and abstract ratio that is difficult to interpret. Bodie et al. (2010, p. 851) discusses the meaningless of comparing Sharpe ratios against each other where one can express the best of two investments but not with how much. The M² measure focuses on the total volatility as a risk measure, just like the Sharpe ratio.

The Modigliani risk-adjusted performance formula is as follows (Modigliani and Modigliani, 1997, p. 47):

\[ M_i^2 = \frac{\sigma_m}{\sigma_i} (r_i - r_f) + r_f \]

Substituting \((r_i - r_f)\) with \(e_i\) we get the following formula:

\[ M_i^2 = \left(\frac{\sigma_m}{\sigma_i}\right) e_i + r_f = e(i) + r_f \]

Where:

\( M_i^2 \) = Modigliani risk-adjusted performance for portfolio \( i \)

\( \sigma_m \) = Market standard deviation

\( \sigma_i \) = Portfolio standard deviation

\( r_i \) = Return on portfolio \( i \)

\( r_f \) = Risk-free rate

\( e(i) = \left(\frac{\sigma_m}{\sigma_i}\right) e_i \)

3.5.5 Fama-French three-factor model

The Fama-French three-factor model uses firm characteristics to approach and specify macroeconomic factors that represent the systematical risk Bodie et al. (2010, p. 363). These empirical characteristics are essential to proxy for the risk exposure. They are also grounded on past evidence of average return. Hence, they are useful in order to capture risk premiums on the market. The three-factor model has therefore become the most dominant and used model within empirical research and industry applications. The market return does play a role in the model when coming to capture the systematic risk. Even the firm-characteristic factors are essential and chosen because of long-standing observations, which deviate from average stock returns. These two firm-characteristics are corporate capitalization (firm size) and book-to-market ratio. According to Bodie et al. (2010, p. 363), Fama and French pointed out that these characteristics (variables) captures the sensitivity to risk factors on the market. For example, financial distress is
more likely to occur for firms with high book-to-market ratio while small stocks are more exposed to changes in business conditions.

The Fama-French three-factor model formula is as follows (Bodie et al., 2010, p. 363, 447-448):

\[
E(r_i) - r_f = \alpha_i + \beta_{i,FMB} [E(r_m) - r_f] + \beta_{i,HML} HML
\]

(Note: The formula is in some extend simplified)

The risk-adjusted return/performance (alpha), according to the Fama/French three-factor model, can then be written as:

\[
\alpha_p = \bar{r}_p - E(\bar{r}_p) = \bar{r}_p - (r_f + \beta_i [E(\bar{r}_m) - r_f] + \beta_{i,SMB} SMB + \beta_{i,HML} HML)
\]

Where:

\(\alpha_p\) = Risk-adjusted return (alpha) for portfolio

\(\bar{r}_p\) = Average realized return for portfolio

\(E(\bar{r}_p)\) = Expected average portfolio return

\(r_f\) = Risk-free rate

\(E(\bar{r}_m)\) = Expected average market return

\(\beta_i\) = Coefficients of the betas of the stock on each of the three factors (factor loadings)

\(SMB\) = Small minus big, i.e., the return of a portfolio of small capitalization stocks in excess of the return on a portfolio of large capitalization stocks

\(HML\) = High minus low, i.e., the return of a portfolio of stocks with a high 

3.5.6 Carhart four-factor model

Carhart’s four-factor model is an extension of Fama and French’s (1993) three-factor model, which in itself is derived from CAPM (Carhart, 1997, p. 60). According to Carhart the four-factor model includes and adds the one-year anomaly factor from Jegadeesh and Titman (1993), which presents evidence that buying last 12 month well-performed stocks and selling last 12 month poorly-performed stocks generated significant positive returns.

Carhart (1997) also concluded that a momentum strategy holds and exists, which means that funds with high return previous year tends to show high performance in the near future while the reverse is true for funds with poor performance last year (Carhart, 1997). By adding the momentum factor it will reduce the risk of having firms with great/poor performance during the previous 12 month. Carhart (1997) find that what appeared to be allocated to the alpha could in fact be explained by sensitivities to market momentum (Bodie et al., 2010, p. 453).

The Carhart four-factor model formula is as follows (Carhart, 1997, p. 61):
Theoretical background

Equation 10 - Carhart’s four-factor model

\[ E(r_i) - r_f = \alpha_i + \beta_i[E(r_m) - r_f] + \beta_{i,SMB}SMB + \beta_{i,HML}HML + \beta_{i,WML}WML \]

(Note: The formula is simplified and modified to match the extension of the three-factor model)

The risk-adjusted return/performance (alpha), according to the Carhart four-factor model, can then be written as:

Equation 11 - Alpha formula according to Carhart model

\[ \alpha_p = \bar{r}_p - E(\bar{r}_p) = \bar{r}_p - (r_f + \beta_i[E(\bar{r}_m) - r_f] + \beta_{i,SMB}SMB + \beta_{i,HML}HML + \beta_{i,WML}WML) \]

Where:

\[ WML = \text{Winners minus losers, i.e., the return of a portfolio of stocks with last 12 months winners in excess of the return on a portfolio of stocks with last 12 months losers} \]

3.6 Summary of theories

To better understand the purpose of our study and to clarify the relationship between all the chosen theories, we created a simple model to follow. It basically represents our approach and aims to answer our research question. Our own designed model in Figure 2 describes the relationship between social responsible investment screens, in our case employee satisfaction, which is an intangible asset, and the market efficiency theory (EMH). This is done by hypothetically test firms with high employee satisfaction and then observes the result, whether it is abnormal- or non-abnormal return. Lastly, conclusions can be drawn concerning the degree of market efficiency and to which extend the market value this intangible.

![Figure 2 – The intangible market-valuation model](Ballout & Nygård, 2013)
Theoretical background

The first four boxes show how existing theory on employee satisfaction is connected to possibilities to generate abnormal return. The model starts with the box SRI screen, since our research is based on an SRI investment strategy using a positive screening method. The portfolios underlying this study are constructed through screening companies that have high employee satisfaction, by the use of the “Great Place to Work” ranked lists. Therefore employee satisfaction represents the second box. The third box is intangible asset. According to existing theory the SRI screen employee satisfaction can be classified as an intangible asset that the market sometimes fails to incorporate when evaluating a firm, which can lead to mispriced stocks. In order to examine if or to which extend the market incorporates this intangible asset we performed several risk-adjusted measurements to test our hypothesis, showed in box number four in order.

The lower right corner of the model shows possible factors, inside information or no inside information, which affects the outcome on the underlying market. If the risk-adjusted measurements show no signs of abnormal return regardless of the degree of inside information it implies that there is high level of market efficiency, in other words the strong form of EMH holds. It also indicates that the market values intangible assets correctly. If the risk-adjusted measurements instead show evidence of abnormal return the strong form of EMH can be rejected immediately. Depending on the degree of inside information in the different portfolios, further levels of market efficiency can be questioned. Abnormal return with some degree of inside information indicates that market not fully value intangibles and that there is semi-strong form of efficiency. However, it is difficult to determine the degree of market efficiency since one might not conclude whether the abnormal return is due to the inside information or not. Portfolios with inside information could in other words also show significant abnormal returns with only public information. Therefore our model suggests a non-relationship connection when obtaining abnormal returns using inside information. Abnormal return without any inside information on the other hand rejects the semi-strong form and implies that the market do not value intangibles, hence the market efficiency is classified as weak-form.
Existing empirical research

In this chapter we will describe some of the most cited studies in the field and of interest to the study’s purpose and problem formulation. This chapter begins with a summary table of the previous research on employee satisfaction and abnormal return. This is followed by a brief description of each of these studies and ends with a summary of studies made on several social responsible investment factors.

4.1 Studies on employee satisfaction and equity returns

The table below shows and summarizes the existing studies made on employee satisfaction using data from Great Place to Work. Note that all of the studies are performed on the U.S. market, hence this is the first study to examine the relationship between employee satisfaction and abnormal return this outside U.S, more precisely on a global perspective.

<table>
<thead>
<tr>
<th>Study</th>
<th>Region</th>
<th>Period</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulmer et al., 2003</td>
<td>U.S.</td>
<td>1995-2000</td>
<td>P/NS</td>
</tr>
<tr>
<td>Goenner, 2008</td>
<td>U.S.</td>
<td>2005</td>
<td>P</td>
</tr>
</tbody>
</table>

Table 1 - Summary of previous similar empirical studies

“P” indicates the study suggests a positive relationship between employee satisfaction and an abnormal stock return, “N” indicates a negative relation and “NS” a non-significant relationship. Note: Since the finding of the studies is hard to interpret, the relationship stated in the table above is our subjective interpretation about what the study suggests.

4.1.1 Edmans (2011)

Edmans (2011) has written the pioneer study and probably the most primary study within this field in 2011. The study is also the first recognized study, published in Journal of Financial Economics. Therefore we chose to follow and replicate this study, although some different choices have been made in our study. The study is an extended version of his work from 2008, with the same title (Edmans, 2008). The study aims to answer the question whether the stock market fully value intangible assets. To be able to answer the question with high precision, the author analyzes the relationship between employee satisfaction and long-run stock returns (Edmans, 2011, p. 621).

Edmans (2011) constructed both an equal- and value-weighted portfolio from firms in the “100 Best Companies to Work for in America”- list between the periods 1984-2009 (Edmans, 2011, p. 625-626). The first best company- list came out in 1984 and it was not until 1993 the next list were published. Hence, the list was reformed in 1993. From 1998 onwards the list consequently got executed and published each year (Great Place to Work® Institute, 2013). Between 1984-1993 and 1993-1998 the same firms were hold the whole period as in the previous best company- list (Edmans, 2011, p. 627-628). After that, the portfolio was updated each year. To measure the outperformance, a control for the four Carhart alphas was made. Further on, three different returns were calculated, risk-free rate, industry-matched portfolio and characteristics-adjusted
Existing empirical research

benchmark return. When examining the results between 1984-2009, both the equal- and value-weighted methods, generated significantly higher returns over all benchmarks. Due to the less salient information between 1984-1998 (only published in book form), Edmans (2011) also examined the same for the period after 1998, that will say 1998-2009 (featured in fortune magazine), to see if the mispricing of intangibles is due to lack of information. Even when the information is highly salient, the result showed that factors other than lack of information are representing the misevaluation of intangibles, for example the difficulties in incorporating intangibles in the price using traditional valuation models (Edmans, 2011, p. 629).

The study makes even more robustness test. First of all, it also investigates whether the mispricing of intangibles stems from outliers whereby winsorization is performed (Edmans, 2011, p. 629). Same test are therefore established, but excluding firms with x% highest and x% lowest return from the best company- list. Edmans (2011) chose an x factor of 5 and 10. The findings of the winsorized portfolios showed that the risk adjusted return were even higher than without winsorization. Hence, the mispricing is not due to firms that drive up the full sample. Secondly, tests concerning earnings announcement is also presented (Edmans, 2011, p. 629-630). Edmans (2011) claims that employee satisfaction is beneficial to firm value but not immediately capitalized by the market. Only way to incorporate this into the price by the market is when this intangible asset expresses in tangible outcomes. The conclusion is then that a superior long-run return is obtained. Therefore he measures whether employee satisfaction generates higher shareholder value in terms of earnings surprises using accounting performance. The findings, earnings surprises contra stock price, reveal that firms in the most recent best company- list obtain significantly higher abnormal return than other firms, precisely 0.28% higher, and 0.36% higher announcement return than firms with similar book-to-market ratio and size. The third and last test that has been exhibited is concerning longevity of outperformance (Edmans, 2011, p. 631-632). Employee satisfaction is first of all according to Edmans (2011) not a permanent characteristic, therefore the mispricing of the intangible asset should decrease since firms usually tend to drop from the list. Secondly, the intangible asset of firms that are listed on the top 100 lists for several years should be corrected over time since the market slowly learns about the intangible. According to the author the correction can take over five years. Therefore the longevity of the excess return must be examined. To calculate this both cumulative abnormal return and buy and hold returns has been measured. The findings shows that the cumulative abnormal return turns zero in the middle of the fifth year while the buy and hold return decreases from 3% to 2% in the fourth year to close to zero in the fifth year. Edmans (2011) finds therefore that the drift dies out in the fifth year.

4.1.2 Fulmer et al. (2003)

Fulmer et al. (2003) examines the relationship between listed firms on the “100 Best Companies to Work for in America”-list and firm performance in the US market between 1995-2000. To easy make comparisons with similar firms the authors used a control firm matching procedure and made sure that the control firms never have been listed on the “Great Place to Work”-list (Fulmer et al., 2003, p. 974). This was done for maximum comparison effect. Industry, size and operation performance was the criteria’s of the matching firms and had to be met in the matching year.
Existing empirical research

The study thereafter analyzed the financial market performance through annual and multiyear comparisons made between the best companies- portfolio and the matching firm portfolio and between the best companies- portfolio and the market index (Fulmer et al., 2003, p. 980). For both portfolios market returns were compared.

Findings of the study, in terms of financial market performance, shows that the best companies- outperform the market in cumulative returns (long-term) but points out that it is not consistent in annualized returns (Fulmer et al., 2003, p. 987). Furthermore it does not find any outperformance by the best companies- to their peer firms in the matched group, except in 1998. But when looking at cumulative returns, they do outperform in between 1995-1997. In conclusion, the authors emphasizes that abnormal returns are less frequently seen in the broad market and the matched group and that the 100 best companies are able to successfully manage great connections with shareholders and employees.

4.1.3 Filbeck and Preece (2003)

Filbeck and Preece's (2003, p. 777) study is divided into two purposes. First of all it examines the share price reactions of the “Fortune’s 100 best companies to work for” list announcement. Secondly it observes and measures the holding period return of the best companies- and compared them to a sample of matched firms, similar to the study of Fulmer et al., (2003). Along with that, they also looked at long-term performance by estimating the Buy- and Hold Abnormal Return. Since it only uses Fortune’s publication the study is only applicable to the U.S. market. Hence the firms come from the “100 Best Companies to Work for in America”- list.

When studying the market share price response from the announcement, using an event study methodology, a period containing only the 1998 list is used while a longer period of 1987-1999 is obtained when studying the stock market return (Filbeck and Preece, 2003, p. 777-778). The authors of this study obtains that there is positive significant experience for the 100 best firms to the official announcement of the list (Filbeck and Preece, 2003, p. 784-785). This result can be translated to that the stock market perceives good employee relations as great investments. Even when looking on long-run buy- and hold strategy the result for the following year of the Fortune publication, namely 1998, is consistent where the firms outperform the benchmark firms in all return categories. When looking at the raw returns the best companies- statistically outperform the matched sample in two years (Filbeck and Preece, 2003, p. 788). Based on the Sharpe reward-to-variability measure, the best companies- overtook the matched group in 10 out of 13 annual periods and in all 10 multi-year periods. The multi-year periods contains of 9 different five-year periods and one period that extends during the whole measurement period (1987-1999). Finally, the Buy- and Hold Abnormal Return measurement found that the best companies- outperformed the matched firms in 8 out of 12 single year comparisons and in 8 out of 10 multi-years comparisons, although only two single comparisons and two multi-year comparisons where statistically significant.

4.1.4 Burnett and Best (2011)

Burnett and Best (2011) has made a more recent study in 2011. The research hypothesizes if shareholders can gain higher returns through satisfied employers (Burnett and Best, 2011, p. 36). Even this study uses Fortune’s “100 Best Companies to Work for in America”- list but the sample is from the list in 1998, 1999 and 2000. They first examine if there occurs any announcement effect of the list being published using
Dodd and Warner (1983) event study methodology. They also study whether the inclusion of the announcement leads to a buying demand of the companies by the market participants on a long-term basis. To do that, the authors investigated an 11-month holding period after the announcement. To be able to do that they constructed a portfolio of matched firm by some identification criteria’s like market value, book-to-market ratio, and by standard industrial classification codes. This method is similar to what Barber and Lyon (1997) detected when investigating the empirical power of event studies, which resulted in a designs of a long-run abnormal stock return model. Results of the research show that there is no excess announcement return with the inclusion of the Fortune list between the years 1998-2000 (Burnett and Best, 2011, p. 40). Concerning the abnormal holding period examination, the study concludes that the total sample statistically generated an outperformance of their control sample, although according to Burnett and Best (2011, p. 40) it appears to be misleading since there only is a subset of firms that seems to drive up the sample in whole.

4.1.5 Goenner (2008)

Goenner's (2008) study, together with Edmans (2011), is probably the most similar to our study since it does not investigate the announcement effects of the list inclusion. In the same manner as our study it instead focuses on constructing a trading portfolio containing only the best companies. However, like other studies, Goenner (2008) only examines the “100 Best Companies to Work for in America”- list. Hence, it is only valid to the U.S. market. The authors chose to examine the period between 1998-2005, i.e. a period of eight years.

The main purpose of the study is to investigate whether a portfolio containing firms with high employee satisfaction, in this case best companies-, can outperform the market by designing specific investment strategies (Goenner, 2008, p. 1). The investment strategies in this study consider the buy and hold strategy and the active strategy (Goenner, 2008, p. 8). The buy and hold strategy buys the best companies the following month after the announcement using an equally weighted portfolio and holds these firms throughout the sample period, i.e. until the end of 2005. The active strategy in contrast to the buy and hold strategy does not hold the same firms throughout the period. Instead the active strategy actively rebalances in the beginning of each year of the sample period so the firms correspond with the new best company-list. Even the buy and hold strategy adjusts so the portfolio maintain equally weighted.

Unlike the other similar studies, Goenner (2008, p. 10) did not make comparisons with a matched group of firms but instead compared the results against the S&P 500 index. The conclusion he draws is that, when looking at the result, it appears to be some kind of relationship between happy workers and higher returns. Therefore he suggests that it is profitable to add the best companies- into the private portfolios since they offer a higher risk adjusted return than the S&P 500. Both the active and buy and hold strategy outperformed the S&P 500 index for each year of the sample period. The best companies- also outperformed the S&P 500 in all seven multi-year periods and seven out of eight annual periods (excluding 1998). When the author took transactions costs into account it clearly showed that the buy & hold strategy beat the active strategy, due to the transaction costs to brokers when buying and selling shares to maintain the right firms in the active strategy (Goenner, 2008, p. 12). Another interesting detail is that the top 25 firms in the list outperformed the whole 100 best- list, which means that the ranking in the list has a big impact as well.
4.2 Studies on SRI factors

Using the “Great Place to Work”-list is one of many ways to investigate the relationship between employee satisfaction and stock return. Whether this is the best way or not is controversial and many researchers, e.g. Edmans (2011, p. 622), claims that using the best company-lists is the best and most optimal way to answer the question. Most of the other studies within this subject have not focused entirely on employee satisfaction, but rather on environmental, social and governance factors, where employee is a fraction of the whole corporate social responsible.

Kempf and Osthoff (2007), Statman and Glushkov (2009) and Galema et al. (2008) investigates if investors can improve their performance by incorporating SRI screens into their investment process in the U.S. market. These studies base its data from KLD Research & Analytics (www.kld.com), which is a leading provider of investment decision support tools. The only SRI study that does not use data from KLD Research & Analytics (www.kld.com) in the U.S. market, besides Edmans (2011) that uses the best company-list, is Derwall et al. (2011), which uses data from Innovest (www.theinnovestgroup.com).

Also non-U.S. studies have been done. Brammer et al. (2006) examines the relation between corporate social performance and financial performance in the UK while Velde et al. (2005) examines the same in the EMU area. The UK study used data from EIRIS (www.eiris.org), a global leader in responsible investment services. The EMU study on the other hand uses data from Vigeo (www.vigeo.com), a European expert in firms with regard to their performance on environmental, social and governance (“ESG”) issues.

Derwall et al., (2011) summarizes the results from these studies in a similar table as Table 2 below. The table will only present the findings of the corresponding study. That is to give an overview of existing studies, hence also provide a broader knowledge of the subject.

<table>
<thead>
<tr>
<th>Study</th>
<th>Period</th>
<th>Environment</th>
<th>Employee</th>
<th>Diversity</th>
<th>Human rights</th>
<th>Community</th>
<th>Product</th>
<th>Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel A: Studies on environmental and social SRI criteria in the US market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edmans, (2011)</td>
<td>1984-2006</td>
<td>NS</td>
<td></td>
<td>NS</td>
<td>NS</td>
<td>P/NS</td>
<td>NS</td>
<td>N/NS</td>
</tr>
<tr>
<td>Panel B: Studies on environmental and social SRI criteria in the non-US market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Velde et al., (2005)</td>
<td>EMU,</td>
<td>NS</td>
<td></td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 2 - Summary of previous empirical studies on SRI

“P” indicates the study suggests a positive relationship between employee satisfaction and an abnormal stock return, “N” indicates a negative relation and “NS” a non-significant relationship. (Derwall et al., 2011, p. 2142)
5 Practical approach

In this chapter we will describe the approach (hypotheses, data and methods) we have used in order to collect the data that our study is based on and how this data was compiled. To create a greater understanding for the reader and to facilitate a critical review of the empirical data, we will describe the operationalization of the hypothesis, how we construct portfolios and the various calculations and statistical methods that we have used in this study. The chapter will however start with a simple model describing our practical process.

5.1 The practical process

The practical process model in Figure 3 is constructed in order to give the reader a simple view of our practical approach, from defining hypothesis to in the end reach a result and be able to draw conclusions from it. Our course of action started with defining hypothesis, both statistical and non-statistically. Secondly, we collected the relevant data through Thomson Reuters DataStream and processed it in Microsoft Excel. Next step was to construct our portfolios and assign them with a variety of different conditions. The fourth step was to actually calculate whether abnormal return exists or not using risk-adjusted measurements. Lastly, the results is obtained and can be viewed in chapter 6 and the conclusions is drawn in chapter 7.

Note: The practical process model does not aim to describe the structure of this chapter but instead focuses on presenting a simple model of all the stage used in this research to process this study. This chapter is however as far as possible structured in a chronological order.

5.2 Justification of study choices

Initially, we chose to study long-run stock to examine the abnormal return of the SRI screen employee satisfaction and the market incorporation of that intangible. We did this in the same manner as Edmans (2011, p. 622) and according to him this is the best way to measure abnormal returns for three main reasons. First of all, comparing long-run stock to valuation ratios and profits appears to suffer more reverse causality issues. For example, it can occur positive correlations between valuation/profits and satisfaction due to performance satisfaction. Since profits are a tangible asset, future superior return should already be incorporated in the stock price today. Hence, it makes it easier to study long-run stock to examine intangibles. Second, Edmans (2011, p. 622) emphasizes that long-run stock returns are more connected to shareholder value than profits; therefore one might for sure capture all the channels through which employee satisfaction may benefit shareholders and receive a higher degree of representation of the returns they actually receive. Studying long-run returns also allows for controls for risk and includes other tangibles valued by the market, such as new products or
Practical approach

contracts. Lastly, previous studies clearly shows that both valuation ratios and event-study returns noticeably underestimates any relationship, in terms of market valuation of intangibles. These underlying arguments by Edmans (2011) are the basis for our decision concerning the study approach.

Due to the difficulties in deciding an investment date we chose to create several portfolios. Four of our portfolios are what we call yearly active, which means that we invest in the firms listed on all lists on a certain year, at a specific date. Some of those portfolios will therefore be trading on a degree of inside investment, which we have taken into account. The other two portfolios is monthly active, which means that we add the firms to the portfolio the month after they have been published on any list; hence no inside information is used in these portfolios. We also chose to examine a 10-year long period (2003-2012). We started with 2003 because that’s the year several countries started to establish “Great Place to Work for”- lists. The examination period is throughout 2012 since it is the latest date with available data. By observing a 10-year period between 2003 and 2012 we will capture a full business cycle with both high growth at the beginning of our chosen period and a recession at the end of 2008. Hence our result will not be due to a period that enjoys strong returns or the opposite.

Further on, we chose to use monthly returns based on three main reasons. The first reason is to be consistent to the study of Edmans (2011), which also uses monthly returns. Secondly, it is because of limitations in Thomson Reuters DataStream. Using daily returns for example would give us a smaller sample since it is not available for all stocks. Lastly, daily returns would result in much more data processing and therefore requires better equipment, e.g. computer and programs.

In line with Edmans (2011) we also chose to investigate the result with both the equally- and value-weighted method. This is performed to see if our result is robust to both the two methodologies and because Fama and French (2008) suggests that the weighted-value method does not fulfill robustness requirements against a number of anomalies. The discussion concerning the best approach is controversial and many claims different. However, the value-weighted is the most used methodology within studies since the most market indices is value-weighted.

5.3 Definition of hypothesis

5.3.1 Main hypothesis
In this study we aim to investigate whether firms with high employee satisfaction generates an abnormal return. To accomplish that we will construct trading portfolios with firms on the “Great places to Work”- lists. These tests will provide us with more knowledge on how the market perceives employee satisfaction and how the market incorporates intangibles. Hopefully this will also provide us with an answer whether this strategy is robust or not, in terms of abnormal return, and the degree of market efficiency.

Our belief is that the best companies, or firms with high degree of employee satisfaction, will generate an abnormal return like many existing studies suggests. By following our practical approach and trading strategy one will therefore also be able to earn an excess return in contrast to the risk and the entire market.
To answer our research question and to achieve our research purpose several portfolios has been composed and subjected for statistical tests to see which strategy that offers the highest risk-adjusted return and whether it is statistically significant or not. Our hypothesis is consistently used throughout the entire empirical investigation and thus all trading portfolios in this research. Note that, from our hypothesis, a 2-tailed test will be performed. This is to allow possible negative significances to be spotted as well. The null hypothesis suggests a non-significant relationship between employee satisfaction and abnormal return. In other terms, the actual/realized risk-adjusted return is equal to the expected return. The alternative hypothesis suggests the opposite, consequently that the actual/realized risk-adjusted return is not equal to the expected return. Positive significance proposes that the actual/realized risk-adjusted return is higher than the expected return while a negative significance proposes that it is lower.

\[ H_0: RAP_{t,i} = E(R_{t,i}) \]
\[ H_1: RAP_{t,i} \neq E(R_{t,i}) \]

Where:
\( RAP_{t,i} \) = Risk-adjusted performance for security/portfolio \( i \) at time \( t \)
\( E(R_{t,i}) \) = Expected return for security/portfolio \( i \) at time \( t \)

5.3.2 Other hypothesis
We have also set different non-signification hypothesis in our study. First of all, since we quoted in section 5.3.1 our belief concerning that the result will show a significant abnormal risk-adjusted return, we therefore hypothetically assume that the market does not value the intangible of employee satisfaction correctly. Hence, our belief is that the market is not fully efficient and that we reject the strong-form market efficiency and questions the semi-strong form market efficiency.

Secondly, our assumptions are that our equally weighted portfolios will show a stronger performance than our value-weighted performance in terms of cumulative returns, abnormal returns (alpha) and concerning our chosen risk-adjusted ratios consistently with the study of Plyakha et al. (2012). This assumption is due to the fact that the equally weighted methodology tends to overvalue the small-cap firms, which probably are facing a stronger future growth than large-cap firms. This is even when adjusting for the four risk factors since the models cannot capture the full movements in the portfolios, hence the equally weighted portfolios will benefit from this resulting in that these portfolios receive some of the extra return provided from the small-cap firms. The equally weighted portfolios therefore get rewarded for bearing this risk in a higher proportion than the risk is revealed resulting in that the risk adjusted measurements still gets higher for equally weighted portfolios contra value weighted portfolios. The assumptions is based on the findings of Plyakha et al. (2012), which finds evidence that the higher alpha of the equally-weighted methodology arises from the monthly rebalancing required to maintain equal weights. Alpha therefore only depends on the monthly rebalancing and not on the initial choice of weights.

Furthermore, although our three-factor model is our main regression analysis (due to lack of MSCI AC Momentum Index), we still think that by adding the fourth factor, a higher explanatory grade will be obtained, consistent with the findings of Derwall et al. (2005).
5.4 Data

5.4.1 Data sources
Our data are based on four main sources, “Great Place to Work”, Thomson Reuters DataStream, Kenneth R. French Website data library and Bloomberg’s equity database. The essential and central data source, which our study revolves around, is the firms listed on the “Great Place to Work” website.

The Great Place to Work institution is a leading provider in leadership coaching and culture consulting services to all kind of firm industries in over 40 countries on all six continents (Great Place to Work® Institute, 2013). They also produce annually “Best Companies to Work For”- lists in all of these countries, of which the best known and famous one, “Fortune 100 Best Companies to Work For”- list, in the U.S. The institutional model is based on 25 years of research and data collection through their own Trust Index© Employee Survey, which makes it the world’s most prestigious award within its category employee satisfaction.

The institute describes a great place to work in a fundamental model, see Figure 4. The key concept for a great workplace lies in three elemental and basic words, trust, pride and enjoy (Great Place to Work® Institute, 2013). Briefly it says that trust is created and obtained through credibility and that employees feel they are treated with respect and fairly among each other. Employee satisfaction also obtains, by firms and managements, through additional underlying components, such as high level of camaraderie and high degree of pride.

Over 10 million employees have taken the Trust Index © Employee Survey during its 25 years of existence. The survey aims to capture the employee’s engagement regarding opinions, perceptions and attitudes on the levels of trust towards the management and
between colleagues (Great Place to Work® Institute, 2013). According to Edmans (2011, p. 625-626), which has been in contact with the “Great Place to Work” institute, the Fortune best company-list is divided into two sections. The first contains 57 open-ended questions and are answered by 250 randomly anonymously employees in each firm. The second part of the scoring comes from evaluation of factors, such as demographic makeup, pay and benefits program, and culture, which is done and evaluated by the “Great Place to Work” institute. The first section (questionnaires) represents two thirds of the whole survey while the second part (evaluation of factors) represents one third. This is however not generalizable over all “Great Place to Work”-lists and institutes since all countries are using different methods in carrying out the surveys and valuations.

Further, Bloomberg equity database is first used to match our best companies with the Bloomberg equity names and further on to obtain the ISIN code on each stock. After that, Thomson Reuters DataStream were used to extract data such as return indices, industry classifications, market values and world index data while Kenneth R. French provided us with risk free rates and momentum factors to our Carthart four-factor model.

5.4.2 Sample
One of the most important tasks a researcher is facing is the decision regarding the sample of the study (Svenning, 2003, p. 101-102). To be able to generalize the study result a total survey is to prefer. A total survey is however rare within quantitative studies since it is very time consuming, sometimes not even possible to perform. Therefore an alternative to total survey is preferable, for example using only a sample. The main point with using a sample is to try to reflect the total population with a smaller selection using probability samples. It is like creating a miniature copy of the whole population.

Although it is difficult and time consuming, a total survey has always been our goal. By using a total survey, our result will better reflect the firms globally and will give us more robust results. It would also provide us with more knowledge about the degree of importance of employee satisfaction internationally.

As stated before, a total survey is very difficult, if not impossible. We came to the sense that we were not able obtain a full total sample due to the many limitations from the “Great Place to Work” website and Thomson Reuters DataStream. Since we could not perform a total sample we instead focused on getting as many observations as possible. We did in the end receive a sufficiently large sample of best companies, especially in contrast to existing studies within this area that only uses one “Best to Work for”-list. This sample is conversely not population reflected in terms of firms. In other words, we did not take into account how many firms we received from each country since it is unnecessary for our study and would not provide us with more conclusions. Hence, a big sample as possible is instead more preferable for our study.

Our population is publicly quoted/equity firms listed on “Great Place to Work” between 2003-2012 in every country- and continent list. Our sample however is 696 firms that complete the criteria’s.
5.4.3 Data collection, processing and dropouts

Many studies have been done concerning abnormal return on the American best companies-list and since other continental lists would be similar to the US list, due to the many multinational firms listed, we decided to examine all firms ever listed between 2003-2012. Hence the study will be applied internationally as stated before. To do so we wanted to have a sample as large as possible. After getting familiar with the “Best Place to Work” website and their database we found out that many lists were not categorized, nor correctly categorized. In the search engine you can choose ownership (private, publicly quoted/held, government, non-profit or cooperative). Since not all firms are categorized after ownership you will miss out on important data and since some firms is categorized incorrectly an assumption of extracting only best companies that are classified as publicly quoted would give us an indecent result. To solve that problem we decided to download all available data within our time horizon using a programming script. Thus our data is large and incomplete since many firms are not even publicly quoted (e.g. private or non-profit). We received totally 17655 firms, although many were the same since they appeared on several lists at the same year.

The next step was to adjust all firm names extracted from the website in order to get a unified list where firms intended to represent a specific firm has the same name. We did that because many firm names were quoted different on the website and some firms also included name suffixes. Further on we also adjusted the data so it was sorted after country and best list. We finally established a unique firm list of 4420 companies.

Bloomberg’s equity database played then the key role in matching these names with the associated ISIN code. By obtaining a list with more than 400,000 equity names from Bloomberg Open Symbology (http://bsym.bloomberg.com) and an excel add-on called Fuzzy Lookup from Microsoft Research (http://research.microsoft.com) we could match these names and retrieve a similarity score, where 1.0 showed a perfect match. We then decided to manually check all firms with a similarity of 0.85 and higher since they appeared to be somewhat the same. It appeared that 714 out of 4420 firms were within our range (between 1.0 and 0.85) and also correctly matched. Bloomberg were then used to find the ISIN codes for these firms. It turned out that our total unique firm list with corresponding ISIN code where 696 firms. 696 firms is therefore our full sample, which is distributed over the research period (10 years). Note that all 696 firms may not be included in our portfolios sinceDataStream does not obtain historical stock prices or market values for all our firms due to unavailability. The distribution of industries of our firm sample can be seen below in Table 3.
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<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of firms</th>
<th>Percentage of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financials</td>
<td>128</td>
<td>18,7%</td>
</tr>
<tr>
<td>Industrials</td>
<td>112</td>
<td>16,3%</td>
</tr>
<tr>
<td>Basic Materials</td>
<td>29</td>
<td>4,2%</td>
</tr>
<tr>
<td>Technology</td>
<td>102</td>
<td>14,9%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>55</td>
<td>8,0%</td>
</tr>
<tr>
<td>Consumer Services</td>
<td>91</td>
<td>13,3%</td>
</tr>
<tr>
<td>Consumer Goods</td>
<td>99</td>
<td>14,4%</td>
</tr>
<tr>
<td>Oil &amp; Gas</td>
<td>18</td>
<td>2,6%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>14</td>
<td>2,0%</td>
</tr>
<tr>
<td>Utilities</td>
<td>11</td>
<td>1,6%</td>
</tr>
<tr>
<td>Unquoted equities</td>
<td>1</td>
<td>0,1%</td>
</tr>
<tr>
<td>Not classified</td>
<td>26</td>
<td>3,8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>696</strong></td>
<td><strong>100,0%</strong></td>
</tr>
</tbody>
</table>

Table 3 - Industry classifications of our sample firms

Table 3 shows the industry classifications for all our sample firms. The classifications are extracted from Thomson Reuter DataStream. Note that 26 firms were not classified in DataStream.

5.5 Trading strategies

5.5.1 List inclusion

Unlike other studies within this area, e.g. Edmans (2011), we used several country lists instead of just one. We did that to be able to get as large a sample as possible. The main list that has been used in similar research purposes is the “Fortune’s 100 best companies to work for”, which is the U.S. list. However in our study, we used all listings from countries all over the world. See appendix 1 for all the lists used in this study.

When only following and investing in a single list, the trading strategy becomes more or less simple. Just invest when the information is publicly known, in other words when the list becomes published. Our dilemma however is that all the country and continental lists get published at different periods. When examining the “Great Place to Work” website we found that the inclusion date for the lists are scattered over the year depending on which institute that releases the information (Great Place to Work® Institute, 2013). For example, the Swedish 2012 “Best to Work For” list gets released in March 2012 while the corresponding U.S. list releases in January 2012. That causes difficulties when deciding an easy trading strategy. Furthermore, the release of the 2012 “Best Companies to Work For” lists releases during 2012 for all country lists, but the surveys itself is performed during 2011. Italy is however an exception where the listings have historically been published in December the same year, in our example the 2012 list was released in December 2011. Many South American countries on the other hand released their lists in the last quarter of the subsequent year (e.g. 2012 list releases in December 2012) while most European countries releases their lists sometime during the first six months of the year.

By investigating the “Great Place to Work” website and compiling all the release dates we got a clear overall picture, which formed the basis for our portfolios as can be seen in the next section (5.5.2).
5.5.2 Portfolios

The increased complexity due to the differential list inclusions emerged us to construct several portfolios. Our goal is, as many other similar studies, to form a trading strategy that earns an abnormal return by only investing in firms with high employee satisfaction. Like Edmans (2011), Fulmer et al. (2003), Burnett and Best (2011), Filbeck and Preece (2003) and Goenner (2008) we wanted to construct a portfolio where the investor only needs to invest once per year. This is problematic because the lists are published at different dates as mentioned above. Therefore we chose to construct four different portfolios with different investment dates during the year. The drawback of this is that part of the portfolios will trade on inside information since the information is not publicly known by the market participants, except portfolio 1, which trades at the end of the year after all lists has been published. We have chosen to call these four portfolios for yearly active portfolios since the holding only updates yearly when new lists are published. See Table 4 for a summary of the portfolios.

We have also chosen to construct two additional portfolios in contrast to the mentioned ones above, which we have chosen to call monthly active portfolios. They are, as the name suggest, monthly updated. These portfolios do not trade on inside information but instead adding the firms (if already not in the portfolio) the month after the inclusion month. If data is not available but gets available under a certain month, we add the stock to the portfolio from the first full month where monthly data is available. The same applies for all yearly active portfolios (portfolio 1-4) although the firms stay the same since they only updates every year. See Table 4 for portfolio summary.

5.5.3 Portfolio summary

As mentioned in section 5.5.2, we have constructed six different portfolios. Below is a summary of the portfolios we have chosen to examine.

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Strategy type</th>
<th>Investment period</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yearly active</td>
<td>From 2003-12-31</td>
<td>Update portfolio every 31th December*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 2012-12-31</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Yearly active</td>
<td>From 2003-08-31</td>
<td>Update portfolio every 31th August*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 2012-12-31</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Yearly active</td>
<td>From 2003-04-30</td>
<td>Update portfolio every 30th April*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 2012-12-31</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Yearly active</td>
<td>From 2002-12-31</td>
<td>Update portfolio every 31th December prior year**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 2012-12-31</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Monthly active</td>
<td>From 2002-12-31</td>
<td>Update portfolio the end of every month***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 2012-12-31</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Monthly active</td>
<td>From 2002-12-31</td>
<td>Update portfolio the end of every month****</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To 2012-12-31</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 - Portfolio summary

* The investments take place the same year as the list year, e.g. 2006 list starts to trade the date in 2006.
** The investment takes place the year before the list year, e.g. 2006 list starts to trade 31th December 2005.
*** The investment holding-period is 12 month. Invest in firm if they have been published last 12 months.
**** The investment holding-period is 6 month. Invest in firm if they have been published last 6 months.
Degree of inside information investment:
Portfolio 1: No inside information investment
Portfolio 2: Low inside information investment
Portfolio 3: High inside information investment
Portfolio 4: Full inside information investment
Portfolio 5: No inside information investment
Portfolio 6: No inside information investment

With full inside investment we mean that all firms is invested through inside information. Therefore the firms are invested in before the corresponding list was published. With high inside investment we claim that most of the firms were traded as inside information while low inside investment suggests that a few firms is invested before the information was public. As can be viewed above, three portfolios are labeled with no inside information. Those portfolios are the ones that we with 100% confidence can say that our portfolios did not trade on inside information. Hence, the portfolio either automatically adds the stocks the month after the inclusion month or, as portfolio 1, an end trade date where all lists are known by the market has been chosen. Trading on inside information is of course not an ideal scenario and thus not the purpose of this study. However, since the best companies are on different lists and we still wants to examine whether only investing at a single time a year instead of every month is profitable versus its risk, we chose to include those portfolios in our study. They will also provide us with key information when deciding the degree of market efficiency. The use of these portfolios will otherwise mostly contribute us with comparison conclusions but you might also argue that these portfolios can be obtained by predicting the future inclusion lists, however very difficult.

5.6 Calculations

Throughout this study we have performed many calculations. These calculations has been computed and solved in Microsoft Excel. All of the formulas for the calculations included in the study are those that follow in this section.

Like Edmans (2011) and several similar studies, this study will consistently and fully ignore transaction costs and taxes. This is due to the difficulties occurred when taking them into account. The difficulty arises because of the dissimilar transaction costs in different clearinghouses and banks. This barrier is especially significant in our study since we invest in firms from many different countries and stock exchanges.

Few studies have taken transaction costs into account. One that has, is the study of Kempf and Osthoff (2007), which constructs and concludes a portfolio both with and without transaction costs. The result of the study suggests that the abnormal returns remains significant even when taking transaction costs into account. One might then assume that transaction costs do not affect the result even if this assumption is not generalizable. Also Goenner (2008) find that when transaction costs were added it did not significantly affect his result.

Throughout the calculations within this study, we have consistently been using the same market index, which is the MSCI All Country World index (www.msci.com). The index is applied to obtain the market returns for the three- and four factor models, but also for our risk-adjusted ratios. When calculating the SMB and HML factors we used these
following indices: MSCI AC World Large Growth, MSCI AC World Large Value, MSCI AC World Small Growth and MSCI AC World Small Value. Since we are investigating employee satisfaction and stock returns on a global perspective the MSCI All Country World indices are the most suitable benchmark to use. That is because the MSCI AC World index includes firms from all continents, inclusive undeveloped regions, which many other indices excludes, in similar as our study. The MSCI ACWI index consists of 45 country indices containing 24 developed and 21 emerging markets (MSCI Incorporation, 2012). The idea of using the MSCI AC World indices comes from Lundgren and Olsson (2010). Moreover, we have also been consistent regarding the market risk-free rate, acquired from Kenneth French’s Data Library (http://mba.tuck.dartmouth.edu). In the same manner as our indices, we chose global factors regarding our risk-free rates.

Fuzzy Lookup, which we will mention is section 5.4.3, is a Microsoft Excel add-in used for data cleaning (Microsoft Corporation, 2013). The tool’s main and core task is to perform record matching of contexts. Microsoft Research and BI Labs developed the add-in; hence it is a reliable and widely used tool by many corporations and researchers, especially within Business Intelligence. It basically helps the user to identify and match similar textually string data in Microsoft Excel (Microsoft Corporation, 2011). According to the developer’s it is “[...] robust to spelling mistakes, synonyms, missing or added words and a number of data quality problems frequently encountered in the real world”.

5.6.1 Return index and actual returns

To be able to calculate the actual returns we downloaded all the RI’s (return indexes) fromDataStream, which presents the value of a notional stock holding (Thomson Reuters, 2013). We chose RI because it best describes the return an investor would get from holding a certain stock. RI is the total return with the assumption that all dividends or any cash distribution is reinvested. It is also adjusted for stock splits. This measure reflects the performance in a great way for analysis purpose.

Return index is defined as (Thomson Reuters, 2013):

\[
RI_t = RI_{t-1} * \frac{PI_t}{PI_{t-1}} * \left(1 + \frac{DY * f}{n}\right)
\]

Where:

\(RI_t\) = Return index on day \(t\)
\(RI_{t-1}\) = Return index on previous day
\(PI_t\) = Price index on day \(t\)
\(PI_{t-1}\) = Price index on previous day
\(DY\) = Dividend yield of the price index
\(f\) = Grossing factor (normally 1) – if the dividend yield is a net figure rather than gross, \(f\) is used to gross up the yield
\(n\) = Number of days in financial year (normally 260)*100

To extract the monthly actual returns from the RI’s we used this formula:
Practical approach

Equation 13 - Monthly returns

\[ AR_t = \frac{RI_t}{RI_{t-1}} - 1 \]

Where:

\( AR_t \) = Actual return on month \( t \)
\( RI_t \) = Return Index for month \( t \)
\( RI_{t-1} \) = Return index on previous month

5.6.2 Calculations of weighting methodologies

In this study we construct both equal- and value-weighted portfolios, which is common in similar examinations.

When calculating the equally weighted method we simply used this formula:

Equation 14 - Equally weighted formula

\[ AR_{p,ew} = \frac{\sum_{i=1}^{n} [AR_i]}{n} = \text{Average} \left[ \sum_{i=1}^{n} AR_i \right] \]

Where:

\( AR_{p,ew} \) = Actual return for the portfolio with the equally-weighted methodology
\( AR_i \) = Actual return for stock \( i \)
\( n \) = Number of observations

To calculate the value weighted methodology we used this formula:

Equation 15 - Value weighted formula

\[ AR_{p,vw} = \sum_{i=1}^{n} \left[ \frac{AR_i \times MV_i}{MV_p} \right] \]

Where:

\( AR_{p,vw} \) = Actual return for the portfolio with the value-weighted methodology
\( AR_i \) = Actual return for stock \( i \)
\( MV_i \) = Market value for stock \( i \), obtained from DataStream

5.6.3 Conversion from monthly- to annual returns

To transform and convert our calculated monthly average- and abnormal returns we used the following formula:

Equation 16 – Conversion to annualized returns

\[ r_a = (1 + r_m)^{12} - 1 \]
Practical approach

Where:

\( r_a \) = Annual return
\( r_m \) = Monthly return

5.6.4 Three- and four-factor model

In the similar way as Brammer et al. (2006), Edmans (2011), Galema et al. (2008), Kempf and Osthoff (2007), Statman and Glushkov (2009) and Velde et al. (2005) we used the Fama-French three-factor model but also performed tests for the extended four-factor model by Carhart (1997) where the momentum factor also is taken into account. The abnormal returns for the three- and four-factor model were calculated as Equation 9 and Equation 11, respectively.

To get as precise SMB- and HML factors we chose to create our own factors in a similar manner as Faff (2001) and Kenneth R. French (French, 2013). In order to obtain the SMB and HML factors we used the MSCI All Country World Indices, which is the similar ones as used in Lundgren and Olsson (2010, p. 11). We calculated the SMB and HML factors as followed:

**Equation 17 - “Small minus big”- return formula**

\[
SMB_t = \frac{s_{g_t} + s_{v_t}}{2} - \frac{l_{g_t} + l_{v_t}}{2}
\]

**Equation 18 - “High minus low”- return formula**

\[
HML_t = \frac{l_{v_t} + s_{v_t}}{2} - \frac{l_{g_t} + s_{g_t}}{2}
\]

Where:

\( SMB_t \) = Small minus big (cap) return at time \( t \)
\( HML_t \) = High minus low (book-to-market) return at time \( t \)
\( s_{g_t} \) = Small cap growth index return at time \( t \)
\( s_{v_t} \) = Small cap value index return at time \( t \)
\( l_{g_t} \) = Large cap growth index return at time \( t \)
\( l_{v_t} \) = Large cap value index return at time \( t \)

Since MSCI momentum indices could not be accessed in DataStream, international momentum factors were retrieved from Kenneth R. French’s website for the four-factor model. Note that regression analysis is performed both with and without the momentum factors. Thus, we can analyze and make comparisons between the results.

Calculations of the three- and four-factor model is thereafter computed in Excel in the same manner as Equation 8 and Equation 10, which can be found in section 3.5.5 and 3.5.6 respectively. The models are also regressed as quoted in Equation 19 and t-tests were performed as Equation 20 and Equation 21. The models includes Jensen’s alpha in Equation 5, which the statistical tests are performed upon.
5.6.5 Risk-adjusted ratios

Our risk-adjusted ratios were further on also performed in Excel. Those were calculated as Equation 1 for Treynor’s ratio, Equation 2 for Sharpe ratio and Equation 6 for Modigliani’s risk-adjusted performance measure. Note that these ratios do not undergo statistical regression analysis but instead just presented in its entirety.

5.7 Statistical tools

5.7.1 Regression analysis

To make quantitative estimates of the relationship between firms employee satisfaction and abnormal return, we test the relationship between them using regression analysis. Regressions analysis is used in order to predict the value of one variable on the basis of other variables (Keller, 2005, p. 578). In order to do this, one use a mathematical equation that explains the relationship between the variable to be forecast, the dependent variable denoted Y, and variables that one believes are related to the dependent variable, the independent variables denoted as X.

Much of the economic research focuses on the relationship between cause and effect. A common mistake, concerning cause and effect, is to think that a significant result from a regression analysis shows that there is a causal relationship (Keller, 2005, p. 602). Although many economic relationships of nature are causal, regression analysis can only show that a statistical relationship exists, not that one variable causes another. Instead causal relations are mostly justified by theoretical relationships.

We have chosen to do a multiple regression in order to investigate the relationship between employee satisfaction and abnormal return. The following formula provided by Keller (2005, p. 627) are used:

\[
y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \varepsilon
\]

Where:

- \( y \) = Dependent variable
- \( X_1, X_2, \ldots, X_k \) = Independent variables
- \( \beta_1, \beta_2, \ldots, \beta_k \) = Coefficients
- \( \varepsilon \) = Error variable
- \( k \) = Degrees of freedom

In order to evaluate how well the model fits the data, there are four requirements that have to be satisfied about the probability distribution relationship of the error variable (\( \varepsilon \)). These required conditions are according to Keller (2005, p. 591):

1. The probability distribution of the error variable (\( \varepsilon \)) is normal.
2. The mean of the distribution is 0; that is \( E(\varepsilon) = 0 \).
3. The standard deviation of (\( \varepsilon \)) is \( (\sigma_\varepsilon) \), which is a constant regardless of the value of x.
4. The value of (\( \varepsilon \)) associated with any particular value of \( y \) is independent of (\( \varepsilon \)) associated with any other value of \( y \).
5.7.2 **Student’s T-test**
In order to statistically ensure the results of our study and thus to reject or accept our null hypothesis, we have chosen to use the Student's t-test. Student’s t-test is very commonly used in statistical inference to test significance of the results (Keller, 2005, p. 260). If the required conditions for the error variable mentioned above are satisfied, the t-statistic formula is as follows according to Keller (2005, p. 596):

\[
\text{Equation 20 - Student's T-test} \]

\[
t = \frac{b_1 - \beta_1}{SE_{b_1}}
\]

Where:
- \( t \) = T-value for the regression
- \( b_1 \) = The slope coefficient
- \( \beta_1 \) = The slope coefficient as the null hypothesis presupposes
- \( SE_{b_1} \) = Standard deviation for \( b_1 \)

As our null hypothesis is formed, assuming there is a non-significant relationship between employee satisfaction and abnormal return, \( \beta_1 \) becomes 0 and therefore the formula can be rewritten as (Keller, 2005, p. 596):

\[
\text{Equation 21 - Student's T-test (assuming the null hypothesis holds)} \]

\[
t = \frac{b_1}{SE_{b_1}}
\]

5.7.3 **P-value**
To test our assumption that it is possible to generate excess return when investing in a portfolio consisting of firms with high level of employee satisfaction, we have chosen to use a two-tail test with a 1-percentage, 5-percentage and 10-percentage significance level. Through the use of a two-tail test we can test both negative and positive returns. In order to be sure that we do not reject or accept the null hypothesis incorrectly, we calculated the p-value.

The formula we used in excel is <T.DIST.2T>, inserting our T-statistics and degrees of freedom. See appendix 2 and 3 for our p-values on our models, which shows the amount of statistical evidence that supports the alternative hypothesis and describes the probability of obtaining a test statistic at least as extreme as the one that calculated, given that the null hypothesis is true (Keller, 2005, p. 333-334). For example, a p-value of 0.081 is significant at the 10-percentage level but not at 5- or 1-percentage level.

5.7.4 **Type 1 and type 2 error**
Hypothesis testing can cause two types of incorrect decisions, called Type I error and Type II error (Keller, 2005, p. 326-327). A Type I error occurs when one reject the null hypothesis, although it is true. Type II error occurs when the opposite occurs, that is when we accept the null hypothesis when it is false, then the alternative hypothesis is true. The probability of Type I error is denoted by \( \alpha \), also called significance level and the probability of Type II error is denoted by \( \beta \). These two are inverse related, in other words, any attempt to reduce one of them will increase the other.
This risk of making a Type I error can be reduce by a larger selection sample (Keller, 2005, p. 347-350). Through the use of a large sample, we believe that we have reduced the risk of Type I error as far as possible. The probability of Type I error can be calculated, while the probability of Type II error is usually an unknown number. These risks in hypothesis testing emerge us to be extremely cautious in accepting the null hypothesis in our conclusions.

5.8 Source criticism on the practical methodology

Data used in this study are obtained from reliable sources, and given that the data is in quantitative terms, we consider it free from own values. There is always a risk that human error can affect the processing of data in a quantitative study. In the execution of our practical approach, we faced some problems with how we would process the lists published on the Great Place to Work website. Given that different countries designed their lists in different ways, and also different from year to year, we had to find a solution to match the company names on the lists against the correct company name. As mentioned before we controlled manually all firm names match between the best companies and Bloomberg’s equity names that retrieved a similarity rate of 0.85 and higher, which could have caused minor mistakes in our data.

There is also the risk that it may be a few errors in calculations of different measures that we use or that there may be other measures that actually reflects what we intend to examine better. Although the risk is were small, due to the fact that the calculations and analysis we have done are double-checked by our supervisor and both of the authors. Furthermore, the measurements we have used are those commonly used in similar studies such as Edmans (2011), which we as far as possible tried to imitate.

In the calculation of abnormal return we have used closing prices for each trading day, which is known as the adjusted price, because it takes all events that have occurred during the day, such as splits and dividends into account. However, we have chosen not to include transaction costs and taxes in our calculations, since it would complicate the calculations considerably. We are aware that this has influenced the results.

Our measurement period is the study is from 2003 to 2012. During those 10 years, the financial crisis occurs with some years of strong downward trend, which may have influenced our results. The measurement period also includes years of good growth and we therefore believe that the measurement period reflects business cycles, although rather extreme. However, we believe that our results should provide a representative view of the risk-adjusted performance because we have a measurement period of 10 years and examines a large sample.
6 Result & Analysis

The purpose of this chapter is to present the results from the study and analyze these results. In order to create a greater understanding for the reader, we choose to first present an overview of what we will present in this chapter. Followed by presentations of the different outcomes from the portfolios with related discussions and analysis of our result.

6.1 Presentation of results

The result of our study will mainly be presented in charts and tables. We will throughout this result and analysis chapter refer to the same hypothesis as mentioned in the definition of hypothesis (section 5.3) for all portfolios. Note once again that, from our hypothesis, a 2-tailed test will be performed. This is to allow possible negative significances to be spotted as well. The null hypothesis suggests a non-significant relationship between employee satisfaction and abnormal return. In other terms, the actual/realized risk-adjusted return is equal to the expected return. The alternative hypothesis suggests the opposite, consequently that the actual/realized risk-adjusted return is not equal to the expected return. Positive significance proposes that the actual/realized risk-adjusted return is higher than the expected return while a negative significance proposes that it is lower.

\[
H_0: RAP_{i,t} = E(R_{i,t}) \\
H_1: RAP_{i,t} \neq E(R_{i,t})
\]

Where:
\( RAP_{i,t} \) = Risk-adjusted performance for security/portfolio \( i \) at time \( t \)
\( E(R_{i,t}) \) = Expected return for security/portfolio \( i \) at time \( t \)

In this chapter we will present the various results from investing in the six different portfolios. Note that during the analysis section of this chapter we will refer mostly to portfolio 5, which we will call our main portfolio. This is because portfolio 5 certainly does not make any investments due to inside information and since similar studies also uses a holding-period of 12 month for each list, although our portfolio is adjusted for several lists.

During this chapter all results will be presented for the two different weighting methodologies, equally weighted and value weighted, as proposed in our sub-purpose. We will start by presenting the results from the cumulative returns and then average returns for the portfolios, which is without considering the risk involved with the investments. That is done in order to give the reader a broad view over how the return has developed over the investment period. To see how the abnormal returns have fluctuated over time we then present the rolling-window alpha. Note that our arguments regarding the abnormal returns, degree of market efficiency and the difference between the two chosen weighting methodologies is discussed first under the analysis of our three- and four factor models, where statistical tests has been performed. After that we will take into consideration the risk involved and present the results with two different risk-adjusted measures, first the three-factor model followed by the four-factor model where momentum factor is added. Lastly we will present different risk-adjusted ratios for further robustness test of our results.
To easily follow and understand our analysis and discussion in this chapter we refer to the overview and summary of our portfolios in Table 4.

### 6.2 Cumulative returns and average returns

In a first step we chose to calculate the returns for all portfolios and the market index between 2004-01-01 and 2012-12-31. The returns show how much one invested unit has developed over time. Note that these charts do not account for the risk in each portfolio and that the cumulative returns in the charts begin from 2004-01-01. That is because portfolio 1 does not start to trade before that date and therefore it would not be comparable to use an earlier date. However, when calculating the average returns, data from the whole portfolio sample period is used. The cumulative returns for both our equally- and value-weighted portfolios can be seen below in Figure 5 and Figure 6 while the average annualized returns can be seen in Table 5.

#### 6.2.1 Result & analysis of equally weighted cumulative returns

![Equally weighted cumulative returns](image)

**Figure 5 - Cumulative returns for our equally weighted portfolios**

**Analysis:** When analyzing the result for cumulative returns for equally weighted portfolios you might see that all our portfolios have outperformed the market when not accounting for the risk. Portfolio 4 has the largest outperformance with an increase of
214% over the period. The market benchmark (MSCI All Country World Index) showed an increase of 70% over the same period. Therefore you might conclude that the SRI screen of employee satisfaction has substantially gained more in value in contrary of the index. This result also goes hand in hand with our assumptions of inside investment where portfolio 4 has a high degree of inside information, which can be one of the explanatories of the high cumulative return, see section 5.5.3. Our main portfolio earned and total return of 175% over the study period. This result is consistent with the study of Goenner (2008), which also shows that his buy and hold and active strategy outperforms the market in terms of cumulative returns. When only looking at this graph without any considerations of the risk involved in investing in these portfolios you might say that there occurs a positive association between employee satisfaction and stock return.

6.2.2 Result & analysis of value weighted cumulative returns

![Value weighted cumulative returns](image)

**Figure 6 - Cumulative returns for our value-weighted portfolios**

**Analysis:** Some analysts and researchers argue that the value-weighted portfolios are to prefer when comparing with an index since the most of the indices are value weighted. The value-weighted cumulative returns in Figure 6 shows the returns for our comparison index and our portfolios. The result between the portfolios and the index is as they suggest more uniformed than the comparisons in the equally weighted
cumulative returns in Figure 5. As can be seen, the market index is a lot more volatile than our portfolios, which are substantially stable over time. None of our portfolios succeeds to outperform our benchmark index although they are close to match it. While the market gained a 70% cumulative return our best portfolio, portfolio 4, gained 69%. Also here it appeared that portfolio 4 is the best of our portfolios. As suggested in the analysis of the equally weighted chart it might depend on the high degree of inside information that the portfolio trades on. Our main portfolio earned a cumulative return of 64%. When considering the value-weighted methodology and not account for the variety of risk factors we can conclude that there does not occur any outperformance from our value-weighted portfolios.

### 6.2.3 Result & analysis of average monthly & annual returns

<table>
<thead>
<tr>
<th></th>
<th>Annualized return</th>
<th>Statistical test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equally weighted</td>
<td>Value weighted</td>
<td>T-test</td>
</tr>
<tr>
<td>Market</td>
<td>6.11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portfolio 1</td>
<td>11.67%</td>
<td>5.43%</td>
<td>1.8946</td>
</tr>
<tr>
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<tr>
<td>Portfolio 3</td>
<td>12.07%</td>
<td>5.89%</td>
<td>1.8276</td>
</tr>
<tr>
<td>Portfolio 4</td>
<td>13.57%</td>
<td>5.97%</td>
<td>2.1508</td>
</tr>
<tr>
<td>Portfolio 5</td>
<td>11.92%</td>
<td>5.62%</td>
<td>1.8624</td>
</tr>
<tr>
<td>Portfolio 6</td>
<td>11.24%</td>
<td>4.44%</td>
<td>1.7197</td>
</tr>
</tbody>
</table>

Table 5 - Average monthly and annual returns

* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level. Note: df stands for degrees of freedom. Note that the result is without control for risk factors.

**Analysis:** The result of the average annual return and corresponding statistical test regarding the difference in the two weighting methodologies can be seen in Table 5. Note that the results are without regard to risk factors. Therefore it might be unjustly to draw strong conclusions from it. The results are, however, consistent with the cumulative return figures, showing that the equally weighted portfolios enjoy stronger average returns. When comparing the results of the difference, in terms of returns between the equally weighted portfolios and the value-weighted portfolios, it is clear that the equally weighted portfolios outperform the value-weighted ones. As can be seen in the right side of Table 5, the outperformance from the equally weighted portfolios is statistically significant on the 10% level for 5 out of 6 portfolios. Concerning portfolio 4, the result is even more robust, showing a 5% significance level. This results is consistent with existing studies (e.g. Cheong et al., 2010; Plyakha et al., 2012) showing outperformance of equally weighted portfolios. See the discussion section in 6.5 for more arguments regarding the outperformance of the equally weighted methodology.
6.3 Rolling-window alpha

In the same manner as Derwall et al. (2011) we estimated our portfolios performance over time in terms of abnormal return. We chose to roll the regression analysis over a window of 36 month. Hence, the abnormal return is based on the last 36 months returns. In that way, we received the fluctuations of the alpha over time. We will only present our main portfolio (portfolio 5) since it is the most relevant portfolio and trading strategy. This rolled alpha analysis is done to see whether the market has learned of the positive correlation between employee satisfaction and future returns. One might expect the returns to go down over time. However, since intangibles are difficult to incorporate into stock prices one can claim that the superior returns may persist going forward. Figure 7 shows the volatility in abnormal returns between the period 2005-12-31 and 2012-12-31.

6.3.1 Result & analysis of the rolling-window alpha

![Rolling-window alpha](image)

Shown are the varying annual alphas over time. We regress, respectively, the equally weighted and value weighted versions of our main portfolio (portfolio 5) over a rolling-window of 36 month.

**Analysis:** As proposed in our hypothesis the average abnormal return for our equally weighted portfolio (portfolio 5) is higher than the value-weighted portfolio during the
whole sample period. The equally weighted annual abnormal returns for our main portfolio ranges from 1.55% to 11.33% while the value weighted portfolios ranges between -2.41% and 4.78%. The abnormal return on both valuation methods follows somehow a similar pattern, were both decreases at the beginning of 2006 to then receive a strong upswing at the beginning of 2009. They also both starts do decrease during 2011 again. It is difficult to see any trends throughout this chart. Our main portfolio for both equally- and the value weighted methodology seems to be quite unstable over our examination period, which is consistent with the same investigation by Derwall et al. (2011, p. 2145). However, he finds that the abnormal returns of his strong employee-relations portfolio declines rapidly as the performance evaluation horizon increases, which is not the case for us. One might say that the decrease in the alpha during 2011 and 2012 in Figure 7 shows that the market is updated and has learned about the accessible abnormal return, but that is a rough assumption. To truly investigate about the volatility in alpha, a longer examination period and regression analysis over the volatility must be performed. Derwall et al. (2011, p. 2145) on the other hand examines the period 1992-2008 and provides strong evidence that the abnormal return decreases, resulting in that the profit-generating opportunities diminish in the long run due to investor’s ability to learn about the openings.

6.4 Risk-adjusted performance

6.4.1 Result & analysis of the regression on the three-factor model

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Alpha</th>
<th>Market</th>
<th>SMB</th>
<th>HML</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio 1</td>
<td>3.66%***</td>
<td>0.972***</td>
<td>0.547***</td>
<td>0.298***</td>
<td>0.956</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 2</td>
<td>3.66%***</td>
<td>0.982***</td>
<td>0.571***</td>
<td>0.28***</td>
<td>0.955</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 3</td>
<td>3.66%***</td>
<td>0.985***</td>
<td>0.538***</td>
<td>0.269***</td>
<td>0.955</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 4</td>
<td>6.17%***</td>
<td>1.002***</td>
<td>0.479***</td>
<td>0.19**</td>
<td>0.952</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.023)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 5</td>
<td>3.66%***</td>
<td>0.978***</td>
<td>0.507***</td>
<td>0.2***</td>
<td>0.957</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.000)</td>
<td>(0.000)</td>
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<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.027)</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 - Regression for three-factor model using the equally-weighted methodology

* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level. Annual alphas are reported and p-values are in parentheses.

Analysis: Table 6 reports the risk-adjusted performance results from estimation of the three-factor model. The influence of the SRI-screen employee satisfaction on investment performance is the alpha. According to reported alpha estimates all portfolios showing positive abnormal returns, ranging from 3.66% to 6.17% annually, where our main portfolio earned 3.66%. All these outperformances are also statistically significant at the 1% level, thus indicates strong evidence. The market risk exposure is close to one for all our portfolios, suggesting that they will move in similar pattern as the market. The coefficient on SMB is significantly positive for all portfolios, which implies a bias towards small-cap stocks over large-cap stocks. Also the coefficient on
HML is significantly positive showing that the portfolios are consisting more of value stocks than growth stocks. To further robustness check we can see that the explanatory factor, \( R^2 \), of the three-factor model is high. See appendix 2 for expanded results, including t-test factors.

**Hypothesis test: Equally-weighted portfolios on the three-factor model**

According to our result of the three-factor model on the equally weighted portfolios we can on a 1% significance level reject the null hypothesis for all portfolios. Thereby we can conclude that there is a positive difference between the actual return and the expected return. We can also reject the strong- and semi-strong form of market efficiency since abnormal returns has been achieved without using inside information.

**Three-factor model (EW):** \( RAP_{it} \neq 0 \neq E(R_{it}), \text{ reject } H_0 \)

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Alpha</th>
<th>Market</th>
<th>SMB</th>
<th>HML</th>
<th>( R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio 1</td>
<td>1,21%*</td>
<td>0,482***</td>
<td>-0,111**</td>
<td>0,063</td>
<td>0,923</td>
</tr>
<tr>
<td></td>
<td>(0,053)</td>
<td>(0,000)</td>
<td>(0,018)</td>
<td>(0,183)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 2</td>
<td>1,21%**</td>
<td>0,479***</td>
<td>-0,109**</td>
<td>0,039</td>
<td>0,912</td>
</tr>
<tr>
<td></td>
<td>(0,042)</td>
<td>(0,000)</td>
<td>(0,025)</td>
<td>(0,423)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 3</td>
<td>2,43%**</td>
<td>0,477***</td>
<td>-0,112**</td>
<td>0,045</td>
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<tr>
<td></td>
<td>(0,011)</td>
<td>(0,000)</td>
<td>(0,014)</td>
<td>(0,344)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 4</td>
<td>2,43%***</td>
<td>0,485***</td>
<td>-0,123***</td>
<td>0,024</td>
<td>0,916</td>
</tr>
<tr>
<td></td>
<td>(0,002)</td>
<td>(0,000)</td>
<td>(0,007)</td>
<td>(0,610)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 5</td>
<td>2,43%**</td>
<td>0,454***</td>
<td>-0,089**</td>
<td>0,044</td>
<td>0,913</td>
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<tr>
<td></td>
<td>(0,011)</td>
<td>(0,000)</td>
<td>(0,042)</td>
<td>(0,342)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 6</td>
<td>1,21%**</td>
<td>0,305***</td>
<td>-0,064</td>
<td>0,078*</td>
<td>0,844</td>
</tr>
<tr>
<td></td>
<td>(0,048)</td>
<td>(0,000)</td>
<td>(0,114)</td>
<td>(0,070)</td>
<td></td>
</tr>
</tbody>
</table>

* Table 7 - Regression for three-factor model using the value-weighted methodology
  * Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level. Annual alphas are reported and p-values are in parentheses.

**Analysis:** Table 7 reports the risk-adjusted performance for our value-weighted portfolios using the three-factor model. Even when examining the value-weighted portfolios, our result seems to be consistent and robust. All portfolios obtained a significant abnormal return where five out of six portfolios were even significant on the 5% level or better. Our main trading strategy portfolio earned an average abnormal return of 2,43% annually. The portfolios have a low market risk ranging between 0,3 and 0,5 approximately. Factor loadings on the additional determinant, SMB are in general significant while de HML shows the opposite, a non-sigification result. The coefficient on the SMB is in general significantly negative, which implies a bias towards large-cap stocks in our portfolio, although there only seems to be a relatively small tilt. The positive HML suggests that the portfolios are slightly more biased towards value stocks, although the result is not significant and therefore not trustworthy. The \( R^2 \) is still high when looking at our value weighted portfolios suggesting that the determinants of the model have a high explanatory power of the movements in our portfolios. See appendix 2 for expanded results, including t-test factors.
Result & Analysis

Hypothesis test: Value-weighted portfolios on the three-factor model
According to our result of the three-factor model on the value weighted portfolios we can on at least 10% significance level and on an average of 5% reject the null hypothesis for all portfolios. Thereby we can conclude that there is a positive difference between the actual return and the expected return. We can also reject the strong- and semi-strong form of market efficiency since abnormal returns has been achieved without using inside information.

Three-factor model (VW): \( RAP_{t,i} \neq 0 \neq E(R_{i,t}) \), reject \( H_0 \)

### 6.4.2 Result & analysis of the regression on the four-factor model

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Alpha</th>
<th>Market</th>
<th>SMB</th>
<th>HML</th>
<th>WML</th>
<th>( R^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4,91%***</td>
<td>0,931***</td>
<td>0,458***</td>
<td>-0,004</td>
<td>-0,217***</td>
<td>0,969</td>
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<td></td>
<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,965)</td>
<td>(0,000)</td>
<td></td>
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<tr>
<td>2</td>
<td>4,91%***</td>
<td>0,946***</td>
<td>0,485***</td>
<td>-0,009</td>
<td>-0,208***</td>
<td>0,967</td>
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<td></td>
<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,919)</td>
<td>(0,000)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>4,91%***</td>
<td>0,953***</td>
<td>0,451***</td>
<td>0,012</td>
<td>-0,184***</td>
<td>0,964</td>
</tr>
<tr>
<td></td>
<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,894)</td>
<td>(0,000)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6,17%***</td>
<td>0,97***</td>
<td>0,407***</td>
<td>-0,042</td>
<td>-0,164***</td>
<td>0,959</td>
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<td>(0,000)</td>
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<td>(0,000)</td>
<td>(0,647)</td>
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<td>5</td>
<td>4,91%***</td>
<td>0,945***</td>
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<td>(0,000)</td>
<td>(0,000)</td>
<td>(0,697)</td>
<td>(0,000)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6,17%***</td>
<td>0,952***</td>
<td>0,333***</td>
<td>0,065</td>
<td>-0,131**</td>
<td>0,913</td>
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<tr>
<td></td>
<td>(0,002)</td>
<td>(0,000)</td>
<td>(0,002)</td>
<td>(0,620)</td>
<td>(0,012)</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 - Regression for four-factor model using the equally-weighted methodology

* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level. Annual alphas are reported and p-values are in parentheses.

**Analysis:** The regression for the four-factor model using our equally weighted portfolios is shown in Table 8. This table shows the results when adding the fourth coefficient to the existing three-factor model, which takes the momentum (WML) factor into account. All portfolios earn a significant abnormal return of at least 4,91% annually at the 1%-level. The abnormal return of our main portfolio increased to 4,91% from 3,66% when adding the momentum factor. This applies in average to all our portfolios showing that the abnormal returns tend to increase when the fourth factor is considered. The SMB is still consistent and fully significant at the 1%-level showing that all the portfolios are biased towards small-cap stocks. HML on the other hand is, in contrast to the three-factor model, not significant at any level. The added momentum factor is strongly significant (five out of six portfolios at 1% level) and negative, which implies that the portfolios are tilted towards stocks with poor performance last 12 month. The \( R^2 \) remains at a high level. See appendix 3 for expanded results, including t-test factors.

**Hypothesis test: Equally-weighted portfolios on the four-factor model**
According to our result of the four-factor model on the equally weighted portfolios we can on a 1% significance level reject the null hypothesis for all portfolios. Thereby we can conclude that there is a positive difference between the actual return and the expected return. We can also reject the strong- and semi-strong form of market
efficiency since abnormal returns has been achieved without using inside information.

**Four-factor model (EW):** $R_{AP,t} \neq 0 \neq E(R_{t,i}), \text{ reject } H_0$

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Alpha</th>
<th>Market</th>
<th>SMB</th>
<th>HML</th>
<th>WML</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio 1</td>
<td>2.43%**</td>
<td>0.472***</td>
<td>-0.132***</td>
<td>-0.008</td>
<td>-0.051**</td>
<td>0.927</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.000)</td>
<td>(0.005)</td>
<td>(0.887)</td>
<td>(0.022)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 2</td>
<td>2.43%**</td>
<td>0.471***</td>
<td>-0.128***</td>
<td>-0.025</td>
<td>-0.047**</td>
<td>0.916</td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.000)</td>
<td>(0.009)</td>
<td>(0.665)</td>
<td>(0.046)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 3</td>
<td>2.43%***</td>
<td>0.467***</td>
<td>-0.138***</td>
<td>-0.029</td>
<td>-0.053**</td>
<td>0.918</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.000)</td>
<td>(0.003)</td>
<td>(0.603)</td>
<td>(0.018)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 4</td>
<td>2.43%***</td>
<td>0.471***</td>
<td>-0.154***</td>
<td>-0.073</td>
<td>-0.069***</td>
<td>0.923</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.182)</td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 5</td>
<td>2.43%***</td>
<td>0.445***</td>
<td>-0.109**</td>
<td>-0.021</td>
<td>-0.046**</td>
<td>0.916</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.000)</td>
<td>(0.013)</td>
<td>(0.691)</td>
<td>(0.031)</td>
<td></td>
</tr>
<tr>
<td>Portfolio 6</td>
<td>1.21%***</td>
<td>0.293***</td>
<td>-0.09**</td>
<td>-0.005</td>
<td>-0.059***</td>
<td>0.856</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.000)</td>
<td>(0.026)</td>
<td>(0.921)</td>
<td>(0.003)</td>
<td></td>
</tr>
</tbody>
</table>

*Table 9 - Regression for four-factor model using the value-weighted methodology*

* Significant at 10% level. ** Significant at 5% level. *** Significant at 1% level. Annual alphas are reported and p-values are in parentheses.

**Analysis:** The four-factor regression for our value-weighted portfolios is presented in Table 9. Each portfolio earned a significant abnormal return either on a 5%- or 1% level. Our main portfolio obtained a 1% significant average alpha of 2.43%, which is the same as in the three-factor model but with a higher significance level. On average, our portfolios earned a higher abnormal return when adding the momentum factor. The portfolios are consistent regarding the market risk. On average they obtained a significant low risk towards the market at the 1%-level. The significant negative SMB suggests, the same as for in the three-factor model, that the portfolios are biased towards large-cap stocks. This is due to the value weighting methodology where large-cap stocks have bigger portions in the portfolios. The result is also consistent regarding the momentum factor (WML) where it is significant that the portfolios is more tilted towards stocks with poor lately performance. See appendix 3 for expanded results, including t-test factors.

**Hypothesis test:** Value-weighted portfolios on the four-factor model

According to our result of the four-factor model on the value weighted portfolios we can on a 5% or 1% significance level reject the null hypothesis for all portfolios. Thereby we can conclude that there is a positive difference between the actual return and the expected return. We can also reject the strong- and semi-strong form of market efficiency since abnormal returns has been achieved without using inside information.

**Four-factor model (VW):** $R_{AP,t} \neq 0 \neq E(R_{t,i}), \text{ reject } H_0$

6.4.3 Result & analysis of the risk-adjusted ratios

For further tests on our portfolios we examined three different ratios, Sharpe ratio, Treynor’s ratio and Modigliani’s risk adjusted performance ($M^2$), and compared it to the
rations of the market. Note that these ratios are not significantly tested but only presented in its entirety. The result can be seen in Table 10 for our equally weighted portfolios and Table 11 for our value weighted.

<table>
<thead>
<tr>
<th></th>
<th>Sharpe ratio</th>
<th>Treynor's ratio</th>
<th>$M^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>0.1399</td>
<td>0.0068</td>
<td>0.0081</td>
</tr>
<tr>
<td>Portfolio 1</td>
<td>0.1707</td>
<td>0.0087</td>
<td>0.0099</td>
</tr>
<tr>
<td>Portfolio 2</td>
<td>0.1955</td>
<td>0.0100</td>
<td>0.0110</td>
</tr>
<tr>
<td>Portfolio 3</td>
<td>0.2229</td>
<td>0.0112</td>
<td>0.0122</td>
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<tr>
<td>Portfolio 4</td>
<td>0.2443</td>
<td>0.0122</td>
<td>0.0132</td>
</tr>
<tr>
<td>Portfolio 5</td>
<td>0.2266</td>
<td>0.0113</td>
<td>0.0123</td>
</tr>
<tr>
<td>Portfolio 6</td>
<td>0.2310</td>
<td>0.0118</td>
<td>0.0126</td>
</tr>
</tbody>
</table>

Table 10 - Equally weighted risk-adjusted ratios

Monthly data is presented. Note that the $M^2$ measurement is being expressed in units of percentage.

**Analysis:** Our result on the ratios indicates in general that our portfolios outperform the market, however not significantly tested. The portfolios outperformed the market in terms of ratios. Regarding the Sharpe ratio, all six portfolios have a distinctively higher reward to total volatility trade-off, which means that the return for every single unit of risk (total risk) is higher for the portfolios than the market. The Treynor’s ratios are also consistent and points at the same direction. All portfolios has higher Treynor’s ratio than the market. Note that only systematic risk (market risk) is considered in the Treynor’s ratio and therefore a Beta of 1.0 is used. The $M^2$ ratio also indicates that our portfolios perform better than the market. Our main portfolio earned an average annual risk-adjusted return of 15.8% while the market only received 10.2% annually. These findings are consistent with Goenner (2008, p. 15), showing outperformance of his portfolios in compared to the market, using the Sharpe, Treynor and $M^2$ measurements. However, in contrast to our findings his results are statistical significant.
Result & Analysis

<table>
<thead>
<tr>
<th></th>
<th>Sharpe ratio</th>
<th>Treynor's ratio</th>
<th>$M^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>0,1399</td>
<td>0,0068</td>
<td>0,0081</td>
</tr>
<tr>
<td>Portfolio 1</td>
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<td>Portfolio 2</td>
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<tr>
<td>Portfolio 3</td>
<td>0,1944</td>
<td>0,0099</td>
<td>0,0108</td>
</tr>
<tr>
<td>Portfolio 4</td>
<td>0,2060</td>
<td>0,0104</td>
<td>0,0113</td>
</tr>
<tr>
<td>Portfolio 5</td>
<td>0,1966</td>
<td>0,0100</td>
<td>0,0109</td>
</tr>
<tr>
<td>Portfolio 6</td>
<td>0,1944</td>
<td>0,0103</td>
<td>0,0108</td>
</tr>
</tbody>
</table>

Table 11 - Value weighted risk-adjusted ratios

Monthly data is presented. Note that the $M^2$ measurement is being expressed in units of percentage.

Analysis: When taking the weightings of the stocks into account the result does not change considerably, even though the returns becomes slightly lower than with the equally weighted methodology. Five out of six portfolios outperformed the market according to the Sharpe ratio although all portfolios outperformed the market when only accounting for the market risk in Treynor’s ratio. The risk adjusted annual percentage returns ($M^2$) is also robust and therefore shows a higher value. The main portfolio in the value weighted methodology earned 13.9% when the market only obtained 10.2% annually. Even when adjusting for the weighting of the stocks, the result seem to be coherent with prior existing findings as mentioned above for the equally weighted portfolios.

6.5 Discussion

The difficulties in deciding a specific date to invest on, due to the many lists we have used, caused us to form several portfolios. We also chose to assign these portfolios with an inside investment grade. This were done to show that we were aware of the inside investments that can occur by moving to an earlier investment date. Our benchmark portfolios are therefore the ones that we can, with 100% confidence, say do not trade on inside information (portfolio 1, 5 and 6). However, our main portfolio, as mentioned before, is portfolio 5. This portfolio actively adds new firms to the portfolio if the firm has been published on any list the last 12 months. This is the same as Edmans (2011) and other single list studies, but adjusted for our several lists that we have been using. The other portfolios are therefore mostly used for comparison reasons and for determining the degree of market efficiency.

Our analysis suggests that it is possible to make a superior abnormal return by replicating our portfolios using firms with top scores on the SRI screen employee satisfaction, even when controlling for the portfolio’s exposures to common risk-return factors. These results are consistent with the several existing studies as mentioned before. Many researchers and analyst might say and argue that these abnormal returns will disappear when taking transaction costs into account. This is a highly strong
Result & Analysis

argument for the advocates of the efficient market hypothesis and the ones who claim that SRI’s does not bear excess returns. However, Goenner (2008) showed that his result were not significantly affected when the transaction cost were added. Kempf and Osthoff (2007) also confirm this evidence. However, our study would probably be affected of the transactional costs, especially since we are investing in multiple countries were the cost of buying and selling is dissimilar and probably costly in some regions. This is still a manner of speculation but sufficient evidence is showing that it is clear that the portfolios are outperforming the market.

These results further supports human relationship theories, which suggest that satisfied and well-motivated employees will lead to stronger corporate performance in terms of valuable outcomes due to higher motivation. These findings is coherent with the study of Edmans (2011). On the contrary, the findings does not support the efficient market hypothesis, which basically says that the market is fully efficient and no abnormal return is possible to gain since information is always incorporated in the stock price. Connecting the results to our own model in Figure 2, we can immediately reject the strong form of market efficiency, which says that no abnormal returns can be achieved no matter how, including inside investments. We can also reject the semi-strong market hypothesis, suggesting that only inside investments is the main reason for excess returns since three of our portfolios are with 100% certainty trading on only public information and still achieves positive abnormal returns. The weak form of market efficiency can however not be rejected since we are using more than only historical price to detect abnormal returns.

Our questionings regarding the efficient market hypothesis can, however, not be taken for granted. According to Campbell et al. (1997, p. 24), the abnormal returns and the rejections of the market efficiency can also be due to an incorrect equilibrium model. Further on, they mention the joint hypothesis, which is a problem saying that market efficiency as such can never be rejected. On the other hand, they also argue about the unrealistic factors regarding a perfect efficient market and that the theory is unlikely to hold in practice. Allowing for that, we can only say that our rejections and abnormal returns is with respect to our chosen models and therefore not applicable on all available models. Whether the market is truly efficient or just because our models are inadequate as a pricing model can therefore not be answered.

According to Bodie et al. (2010, p. 393), Fama and French argues that the effects of small firms and low book-to-market ratios can be explained as indications of risk premiums. Therefore stocks with higher factor loadings receive higher average returns, due to the evidence of risk exposure. Our explanation for the high risk-adjusted returns that we find can thus depend on an unknown risk factor associated with employee satisfaction, or intangible as such, that our chosen models does not account for. In other words, the risk premium is not incurred in the models when only investing in firms with high employee satisfaction. The risk for employee satisfaction in our case can be that firms do not maintain the position on the best place to work lists the following year. It can also be that the cost of achieving high employee satisfaction exceeds the profit from it as earlier human relations theories has claimed. We can therefore not be sure that these abnormal returns are a sign of inefficiency.

Although our study only focuses on one SRI screen (employee satisfaction) it still supports the social responsible investment theory, suggesting that SRI stocks
outperform the market due to the misevaluation of the intangibles. One can see that our portfolios produced positive returns, controlled for several risk factors. This indicates that the market very likely has failed to incorporate the intangible of employee satisfaction, even when this information exists and is verified by the market. According to Edmans (2011, p. 638), an intangible only affects the stock price when it manifests in tangible outcomes that are valued by the market, such as earnings announcement. Even when managers communicate with the broad market about the value of their intangible, it may still not be incorporated and therefore not valued by the outside investor. This might be one of the reasons to our result concerning the mispricing of the intangible. However, as Edmans (2011, p. 623), two of our portfolios (5 and 6) added the stocks the month after the inclusion month, hence giving the market ample opportunity to react on the information. Therefore the outperformance cannot be due to lack of information, but other causes.

When examining the difference in the results between the value- and equally weighted portfolios, one might see several prominent differences. First, the abnormal returns is lower when using the value-weighted methodology and is consistent with existing studies (e.g. Cheong et al., 2010; Plyakha et al., 2012) showing outperformance of equally weighted portfolios. Plyakha et al. (2012) finds that the outperformance of the equally weighted methodology, in terms of risk-adjusted return, is due to higher alpha and for bearing a higher systematic risk due to higher market, size and value factor exposures of the equally weighted compared to value weighted. As opposed to value weighted, the equally weighted does not overweight overpriced stocks and instead underweight underpriced stocks, in other words the pricing errors are random. Further on, the higher alpha is explained by the monthly formatting to keep equal weights, which exploits lead-lag effect, reversal and volatility on a monthly basis (Plyakha et al., 2012, p. 15-16).

Second, the value weighted portfolios bear a much lower market risk for both the three- and four factor model and is due to the fact that large-cap stocks is more represented in the portfolios while the opposite regards for the equally weighted portfolios. That is also consistent with our third difference regarding the SMB factors, which basically suggests the same. The equally weighted portfolios received a significant positive SMB factor saying that the portfolios are large-cap oriented while our value weighted portfolios received a negative SMB factors proposing that large-cap stock is over represented. That also applies for both the three- and four factor models.

Further on, both models implies that the equally weighted portfolios have a higher $R^2$ factor, advising that the models better explains the movements in the equally weighted portfolios. The last difference between the methodologies is concerning the HML factor. The three-factor model show positive significance with the equally weighted methodology while no significations is shown with the value weighted. This is due to that the equally weighted methodology overvalues small-cap stocks, which in general has low book-to-market ratios. This distinction does, however, not appear in the four-factor model. No notably differences seem to show in the four-factor model regarding the momentum factor since both weighting methodologies show a significant negative factor implying that the portfolios are more biased towards stocks with poor lately performance.
The findings regarding the differences between our weighting methodologies is consistent with the study of Edmans (2011, p. 628), which also show evidence that the equally weighted portfolio outperform the value weighted in terms of abnormal return. He also discovered the same portfolio behavioral concerning the market, SMB and momentum factors. Also, the HML factors are in general not significant for our equally weighted portfolios, which is in line with Edmans (2011). However, the similarity does not apply for the value-weighted method.

One can also see differences in the three-and four-factor model, in other words, when adding the momentum factor. The main difference is concerning the $R^2$ ratio. When adding the momentum factor, our four-factor model tends to increase the $R^2$, just like proposed in our non-significant/other hypothesis (section 5.3.2), however a minor increase. This remark confirms the incremental explanatory power of a multivariate framework. The result is also in line with the study of Derwall et al. (2005) where it emphasizes that models with more factors has higher outcome prediction and therefore higher explanatory power of the movement in the portfolios. The three- and four factor models are according to Statman and Glushkov (2009) also the most standard and common used models, although it is highly a manner of subjectivity.
7 Conclusion

In this chapter, the problem statement will be answered and the objectives of the study to be investigated. The study’s contribution will be presented and the chapter ends with suggestions for future research.

7.1 Portfolio performance and abnormal return

This study’s research question was “is it possible to make abnormal returns by investing in a portfolio of worldwide firms with top scores on the SRI screen employee satisfaction?”

The result shows that it is possible to make abnormal returns, during the observed time period, by replicating the portfolio strategy in this study. The study finds, consistent with Edmans (2011) and Goenner (2008), significant evidence on abnormal return of 3.66% and 2.43% annually for our main portfolio over the market for our equally- and value weighted portfolios, respectively using the three-factor model. When adjusting for momentum, thus employing the four-factor model, all the predictive variables still identify strong persistence in the abnormal return, with statistical and economic significance. This result thus show that employee satisfaction in fact can lead to superior return and that the market fails to incorporate the correct value of satisfied employees when evaluating the stock price, consistent with studies on intangible assets. Therefore, these discoveries implicates that SRI screen based on employee satisfaction may lead to improved portfolio performance, coherent with the study of Edmans (2011).

The study's primary purpose, to answer if there is possible to make abnormal return by investing in a trading strategy of worldwide firms with top scores on the SRI screen employee satisfaction, is hereby achieved.

7.2 Degree of market efficiency

The first sub-purpose in our study was “to examine how the market values intangibles depending on the degree of market efficiency”.

Market efficiency can be questioned when some actors can systematically generate a higher return. When looking at Fama’s (1970) varying degrees of effectiveness on the market, in a strong efficient market no one can make abnormal returns no matter what information you have. Our results show, however, that it is possible by the use of inside information and thus that the strong form of market efficiency is not met during the measurement period. Furthermore, we also question the weak and the semi-strong form of market efficiency. By the use of the SRI screen employee satisfaction, even when the entire market knows the list inclusion, our portfolios exhibit significant results of abnormal return compared to our benchmark.

When applying the results to our own designed model (Figure 2 in chapter 3.6) we can draw two conclusions. First, three out of six portfolios show significant abnormal return using inside information or just tend to possess inside information, since the strong form of market efficiency implies that it should not be possible, we can prove that the strong form do not hold. However, we cannot reject the semi-strong form, which states that
inside information is the only way to obtain abnormal return. Thus the market does not fully value intangibles. Second, the remaining three portfolios makes abnormal return without any inside information, hence both strong- and semi-strong form of market efficiency can be rejected. Since our results find significant evidence of abnormal return we can conclude the market do not fully value intangible assets, in our case firms with high employee satisfaction, correctly and that the market is therefore only efficient in the weak form. These findings is in line with Edmans (2011), suggesting that the market fails to incorporate intangible assets fully into stock valuations.

7.3 Equally- and value weighted method

The second-sub purpose of this study was “to test two different portfolio weighting methodologies, equally- and value weighted, and observe the differences between them”.

Again, the results show that it is possible to make abnormal returns, regardless of the weighting method. We can thereby conclude that the results are robust for the two different weighting methodologies, although the results vary between them. The equally weighted portfolios show in average almost twice as high alphas than the value-weighted portfolios. The outperformance of the equally weighted portfolio is consistent with the findings of Edmans (2011).

When comparing the different factors we can see that the equally weighted portfolios consist of more small-cap firms while the value weighted consists of more large-cap firms, which can be an explanation of the higher alphas. The orientation of the certain market capitalization also resulted in different market risk exposures between the weighting methodologies, where the equally portfolios bear a much higher risk due to the bias towards small-cap firms. The factor loading on HML is harder to draw any clear conclusions from, however, it tends to be in favor of value stocks for the equally weighting methodology when using the three-factor model, since HML on the other model and weighting methodology do not show significant results. There is also a significantly negative coefficient on the momentum factor for both weighting methodologies indicating our portfolios are mainly consisted with firms with poor performance the last year. However, the factor does eliminate the risk of having firms with bad/good performance under the last 12 months.

7.4 Theoretical and practical contribution

Our study has achieved to contribute in many theoretical frameworks as expected. It has provided more knowledge in the correlation between top-ranked firms, in terms of employee satisfaction, and the performance on the stock market. Further on it also delivered additional knowledge in the efficient market hypothesis and the degree the market catches up the intangible asset of having top scores in employee satisfaction. Lastly, it also supplied more awareness to the research and importance of social responsible investments.

Since this study finds that there is possible to make abnormal return by replicate our trading strategy portfolios, we reached our goal to practically contribute private investor’s all over the world, but also fund managers and other financial institutions. The result also describes the degree of importance in employee welfare. Therefore it
Conclusion

will also give some practical contribution and be of value for corporate managers and hopefully give incentives to imply modern human relationship for firms.

7.5 Suggestion for further research

Along the way of writing our study we discovered several interesting suggestions for further research. First, it would be of interest to examine whether the intangible of employee satisfaction differ in terms of industry and country. It might show that some industries or countries better values this intangible, basically showing that abnormal returns do not exist. Second, more robustness test would be of interest to add when examining abnormal returns of firms with high employee satisfaction. For example, adding controls for industry tilts and extended firm characteristics.

Since we clearly showed that abnormal returns exists, depending on time and resources one might also investigate how these results changes when adding taxes and transactional costs or just simply replicate our study in the future when more “Great Place to Work For”- lists is released to see whether our findings still holds.
8 Truth criteria

In performing a quantitative study, it is important that we as authors relate science to the problem we intend to study. We will observe employee satisfaction, and our focus is to statistically either accept or reject our null hypothesis. Own opinions and values should therefore not color the study’s findings and conclusion. In this chapter we describe the concepts, reliability, validity and generalizability of the study in order to facilitate a critical examination of our study and create a greater understanding for the reader.

After going through the literature on truth criteria, we have seen that there exists several different ways to measure the quality of the study and sometimes the explanations for the different criterions differ. Johansson-Lindfors (1993, p. 55; 160-161) argue that a study carried out with an imaging approach, i.e. describe and/or explain various phenomena often by hypothesis testing, should use the concepts reliability, validity and generalizability.

8.1 Validity and generalizability

To determine if the results of the study is correct, it is important that the result contains high validity (Ejvegård, 2003, p. 70). Validity refers the absence of systematical errors in the measurements and determines how well the researcher measures what is intended to measure (Lundahl, 1999, p. 150)(Saunders, 2012, p. 193). Validity can be divided into a number of different types, however, for our study construct, internal and external validity is primarily in question because these are associated with both positivist and quantitative research (Saunders, 2012, p. 193-194).

According to Saunders construct validity is about the extent to which research measure actually measure what they are intended to measure (Saunders, 2012, p. 193). In order to meet this criterion we have mad it clear that we intend to measure the relationship between employee satisfaction and abnormal return, how we measure it, and how our chosen variables are defined. We use measures to analyze that are common in economic theory for this field and that are previously used in similar studies, for example regression analyses, Carhart’s four-factor alpha, Fama-French three-factor model, information ratio, Sharpe ratio and Treynor ratio. Derwall et al. (2011) argues that multifactor performance measure is suitable for performance evaluation and confirm that the three-factor alpha based on the Fama and French (1993) model and Carhart (1997) four-factor alpha are performance measures that are central to most of the recent equity SRI performance studies (Derwall et al., 2011, p. 2141).

Internal validity addresses the issue of the study result correspond to reality, i.e. if there is a causal relationship between two variables, in our case the independent variable employee satisfaction and dependent variable abnormal return (Saunders, 2012, p. 193). We consider the internal validity as high due to the fact that our statistical analysis confirms that there is a relationship.

The external validity concerns the generalizability of the study. Generalizability refers to how well the sample can be generalized to the population (Johansson-Lindfors, 1993, p. 94). Our study includes all publicly listed companies listed on Great Place to Work...
lists worldwide, which strengthens our external validity. It means that this investment strategy is not restricted to any specific region or sector. The research results can be generalized to the whole population in terms of the possibility of excess return by investing in the SRI screen, employee satisfaction, for this measurement period.

8.2 Reliability

Reliability is a necessary quality for the study to have a high validity, because if a measurement is used incorrectly or carelessly, it may be worthless (Lundahl, 1999, p. 152). Reliability refers to the absence of random measurement errors and is a measure of how reliable the results obtained are. In a quantitative study it is the extent to which data collection techniques will yield consistent results and determines the likelihood that the results would be the same if somebody else would repeat it (Saunders, 2012, p. 192). However, ensuring reliability is not necessarily easy, Bryman (2011, p. 49) argue that the reliability of the study may be affected by random or temporary conditions.

Our study is of quantitative nature, allowing little room for interpretation and misunderstanding. What can affect the reliability of our study is human error in data processing in excel and calculation errors in mathematical formulas. As mentioned in the practical methodology we received a very large sample of firms for the best companies-list. When manually controlling that all firm names matched between the best companies-list and Bloomberg’s equity names, we checked all names that retrieved a similarity rate of 0.85 and higher, which could have cause minor mistakes in our data resulting in human error. However, since the data was double-checked and had a high similarity rate through the reliable tool Fuzzy Lookup we believe the chance that we made errors of major impact is so small that it does not affect the reliability of the study.

The use of secondary data sources can be criticized due to the fact that data may not be accurate. Our secondary data collection was done from Thomson Reuters DataStream, which is a well-known and frequently used database by researchers and analysts. However, some known issues with DataStream has been reported, thus the data should be handled with care. Therefore several spot-checks has been made throughout our study ensuring that these issues wont be a major problem in our study. These kinds of organizations are, however, dependent on the credibility of their data, thus their data collection techniques are likely to be well thought through and accurate (Saunders, 2012, p. 325). All the information we used from this database is publicly available for other which allows those who wish to replicate the study to use the same data. Hence we consider this reliable and trustworthy.


9 References


References


References


References


References


References


References


Appendix 1 – “Great Place to Work For”- lists

100 Best Companies to Work for in America
100 Best Workplaces in the EU
16 Best - Campinas
20 Best - Advertising and communication Agency
20 Best - Parana
25 Best Companies to Work For in Latin America, 500+ employees
25 Best Multinational Companies to Work For in Latin America
30 Best - Ceará
30 Best - Rio Grande do Sul
50 Best Companies to Work For in Latin America, 50-500 employees
Best Biggest Companies
Best Companies for Executives in Brazil
Best Companies for Women in Brazil
Best Companies in Argentina
Best Companies in Bolivia
Best Companies in Brazil
Best Companies in Chile
Best Companies in Colombia
Best Companies in Ecuador
Best Companies in India
Best Companies in Korea
Best Companies in Mexico
Best Companies in Mexico CentroSur & Sureste Region
Best Companies in Mexico Northeastern Region
Best Companies in Norway
Best Companies in Paraguay
Best Companies in Peru
Best Companies in Uruguay
Best Companies in Venezuela
Best Companies List in United Arab Emirates
Best Companies Pernambuco
Best Companies to Work For - Centro-Oeste
Best Companies to Work For - Melhores Práticas
Best Companies to Work For - Nacional + Médias e Pequenas Big
Best Companies to Work For - Nacional + Médias e Pequenas Small
Best Companies to Work For - Rio de Janeiro, Brazil
Best Companies to work for – Brazil
Best Companies to Work For in Australia
Best Companies to Work For in Brazil - IT & Telecom
Best Companies to Work For in Central America and Caribbean
Best Companies to Work for in Central America and Caribbean - By region and by country
Best Companies to Work For in Japan
Best Companies to Work For in Japan - Less than 250
Best Companies to Work for in Latin America
Best Companies to Work For in México - IT and Telecom
Best Companies to Work For in Mexico Financial Sector
Best Companies to Work For in Mexico for Women
Best Companies to Work For in Mexico Northwest Region
Best Companies to Work For in Mexico Retail Sector
Best Companies to Work For in Mexico West Center Region
Best Companies to Work for in the Valley of the Sun
Best Large Companies to Work For in C&C
Best Large Workplaces
Best Large Workplaces in Canada
Best Large Workplaces in United Kingdom
Best Medium Companies in Argentina
Best MNC Companies to Work For in C&C
Best Places to Work in Omaha
Best Small & Medium Companies to Work for in America
Best Small & Medium-Sized Workplaces
Best small and medium Companies Chile
Best Small Companies in Argentina
Best Small Companies in Uruguay
Best Small Workplaces in United Kingdom
Best SME Companies in Brazil
Best SME Companies to Work For in C&C
Best Workplaces in Austria
Best Workplaces in Belgium
Best Workplaces in Canada
Best Workplaces In Canada for Women
Best Workplaces in Denmark
Best Workplaces in Finland
Best Workplaces in France
Best Workplaces in Germany
Best Workplaces in Greece
Best Workplaces in India - More Than Thousand Employees
Best Workplaces in India - Up to Thousand Employees
Best Workplaces in Ireland
Best Workplaces in Italy
Best Workplaces in Luxembourg
Best Workplaces in Netherlands
Best Workplaces in Nigeria
Best Workplaces in Poland
Best Workplaces in Portugal
Best Workplaces in Spain
Best Workplaces in Sweden
Best Workplaces in Switzerland
Best Workplaces in United Kingdom
Best Workplaces Poland, less than 500 employees
Best Workplaces Poland, more than 500 employees
Best Workplaces PYMES España
Germany's Best Workplaces in the Healthcare Sector
Las Mejores Empresas para Trabajar de Caribe
Las Mejores Empresas para Trabajar de Origen Centroamericano
Las Mejores Empresas para Trabajar en México – Equidad de Género
Maiores e Melhores "Estadão"
Scotland’s Best Workplaces
The 50 Best Large Companies to Work for in Pennsylvania
The 50 Best Medium Sized Companies to Work for in Pennsylvania
The Best Companies to Work For in Mexico for Companies with more than 5,000 employees
The Best Companies to Work® For in Mexico, 50 to 500 employees
The Best Companies to Work® For in Mexico, over 500 employees and multinationals
The Best Government Institutions to Work For in Mexico
The best Italian large workplaces
The best Italian Small and Medium Enterprises
World’s Best Multinational Workplaces
### Appendix 2 – Three-factor model regressions

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*Monthly alphas. Note: df stands for degrees of freedom.*
Appendix 3 – Four-factor model regressions

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*Monthly alphas. Note: df stands for degrees of freedom.