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Evaluating the Performance of Norwegian SRI Funds: A
Holding Data Analysis

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MSc in Business, Major in Finance

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1 INTRODUCTION

The last decades there has been an increasing interest in Socially Responsible Investing (SRI), as more investors are concerned with the ethical consequences of their investments. Though, as investors also wish to obtain adequate financial returns on those investments, questions regarding whether or not investing in SRI funds come at the cost of financial performance have received increasing attention amongst investors and researchers. Due to large data availability, most studies on the field have been conducted on the US and UK market, and there is a lacking research on SRI fund performance in Norway. Norway is known to be at the forefront of SRI, with the Norwegian Government Pension Fund setting the standards (Eurosif, 2012).

As stated by Gil-Bazo, Ruiz-Verdu and Santos (2010), standard portfolio choice theory indicates that constraining the investment opportunity set cannot improve financial performance. Thus, as SRI funds exclude companies based on specific environmental, social and governmental criteria at the least, the theory states that such funds cannot outperform conventional funds with similar characteristics. At the contrary, a number of scholars over the years have come to different, often conflicting, conclusions. While Cortez, Silva and Areal (2009) concluded that investors can choose SRI funds without necessarily sacrificing financial performance, Bauer, Derwall and Otten (2007) indicated that SRI funds underperform conventional funds. Although, most research on the field show that there is no significant difference between the financial performance of SRI funds and conventional funds and/or market indexes.

1.1 Motivation

Most previous research on SRI mutual fund performance has been conducted by comparing it to the performance of conventional mutual funds and/or a market index. These studies assume that fund management is equally good or bad across SRI funds and conventional funds. Though, according to Kempf and Osthoff (2007) those studies have drawbacks in that they do not take into account that the performance of mutual funds highly depend on the skills of the fund manager. The aim with this thesis is to extend previous research by not only comparing mutual fund performance between SRI funds and conventional funds, but also to

study how two different components of fund performance affect the overall performance of SRI funds: 1) firm level performance and 2) fund management performance.

The results of the 2016 Eurosif report on SRI practices in Europe indicate a strong and continuing growth in socially responsible investing (Eurosif, 2016). The aim with this thesis is therefore, in addition to what mentioned above, to analyze the performance results of Norwegian SRI mutual funds from two different time periods. Thus, we will divide the data set (hopefully) obtained from 2010-2017 in two, and compare the results to examine whether there has been a development in the performance of SRI funds the last eight years.

1.2 Research Approach

In this study, we will take a three-step approach in evaluating the performance of Norwegian SRI funds compared to regular mutual funds. First and foremost we will, in line with previous research, compare the overall performance of SRI and conventional funds. Next we will, with the help of a holding-data analysis, construct replicating portfolios of the conventional funds by screening the funds according to a negative screening model to rule out the unethical investments of those funds. The aim is to compare the performance of the conventional funds to those funds if they were to operate as SRI funds, holding the fund management factor constant and thus evaluating exclusively the firm level performance. Thirdly, we will compare the performance of the replicating portfolios to the SRI funds, and thus examine possible differences in fund management performance.

2 SOCIALLY RESPONSIBLE INVESTING

The general term of SRI is, according to Eurosif (2016), divided into concepts such as exclusion, impact investing, sustainability-themed investments, norm-based screening and ESG quant. The latter is gaining popularity, and is about upgrading traditional investing to include ESG factors. The past decades, investors have become increasingly aware of the importance of their investments being aligned with their values. SRI is commonly defined as an “investment discipline that considers environmental, social and corporate governance (ESG)

criteria to generate long-term competitive financial returns and positive social impact” (US-SIF, 2017). SRI is often mentioned in relation to Corporate Social Responsibility (CSR), as it is looked upon as a component of the term. CSR can be defined as “the responsibility of enterprises for their impacts on society”, and is a term that has become a part of the daily language of corporations worldwide (European Commission, 2011). The long-term question, which remains unanswered, is how socially responsible investing affects financial performance.

2.1 SRI Screening

There are multiple different investment strategies and approaches that differ based on investment manager's ethical focus when it comes to SRI. According to Eurosif (2016) one can divide these approaches into seven overall categories, which captures the most common strategies used in the European countries:

- Negative screening *excludes* companies based on specific underlying ESG-criteria. The most common industries are related to alcohol, tobacco, and weapons.
- Norms-based screening *excludes* companies based on violations of international standards and conventions.
- Positive/Best-in-class screening *only includes* companies with the best ESG score in certain sectors.
- Sustainability themed investment, where most themes relates to energy efficiency and renewable energy.
- Integration of ESG factors by asset managers into financial analysis.
- Engagement and voting on sustainability matters has a strong link to fiduciary duty, as it is driven in large part by the view that shareholders are stewards of assets who are accountable to their beneficiaries for how they manage those assets.
- Impact investing focuses on addressing social and environmental challenges, and creating long-term value in these areas.

There is no dominant strategy that outperforms the others, however there are different trends among investment managers and their preferences. Negative screening is looked upon as the “simplest” approach, while positive screening is

known to be the more proactive strategy. It is more proactive in that it doesn't only exclude certain companies, but investors go in and support the companies that have profound ESG-standards. However, this strategy is more costly and harder to perform, as it requires a thorough analysis. The "best-in-class" strategy goes beyond positive screening by making sure that the portfolio is spread across industries (Kempf & Osthoff, 2007, p. 909).

2.2 The Market

Worldwide

SRI has grown substantially over the last years - in all styles, worldwide, and at a rate that outperforms most other investment styles. As of 2016, there was an increase of 25% assets being managed professionally under responsible investment strategies compared to 2014. This increase left the number of assets at \$22.89 trillion, meaning that SRI stands for 26% of the total global asset market. The most common SRI strategy worldwide is negative/exclusionary screening, followed by ESG integration (GSIA, 2016). Negative screening dominates in Europe, while ESG integration has a dominant position in the rest of the world (Eurosif, 2016). Even though these two strategies have a strong position in the world, the other strategies have shown substantial growth between 2014 and 2016 (GSIA, 2016).

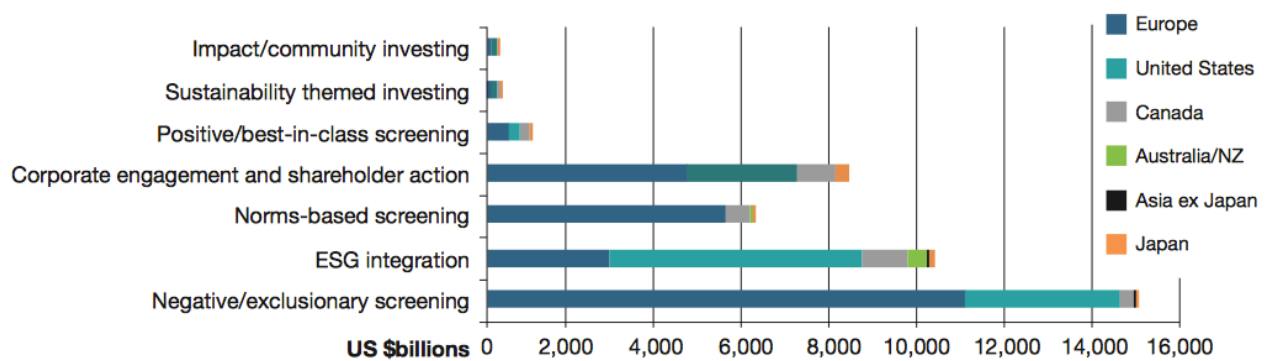


Figure 1: SRI Assets by Strategy and Region (GSIA, 2016)

Europe

Europe dominates worldwide in terms of portion of SRI assets, as it stands for 52.6% of the market. Studies show that negative screening is the most commonly used screening method, covering 48% of the total European managed assets.

Engagement follows closely, while positive screening is less common. However, this strategy has grown rapidly over the last years (Eurosif, 2016).

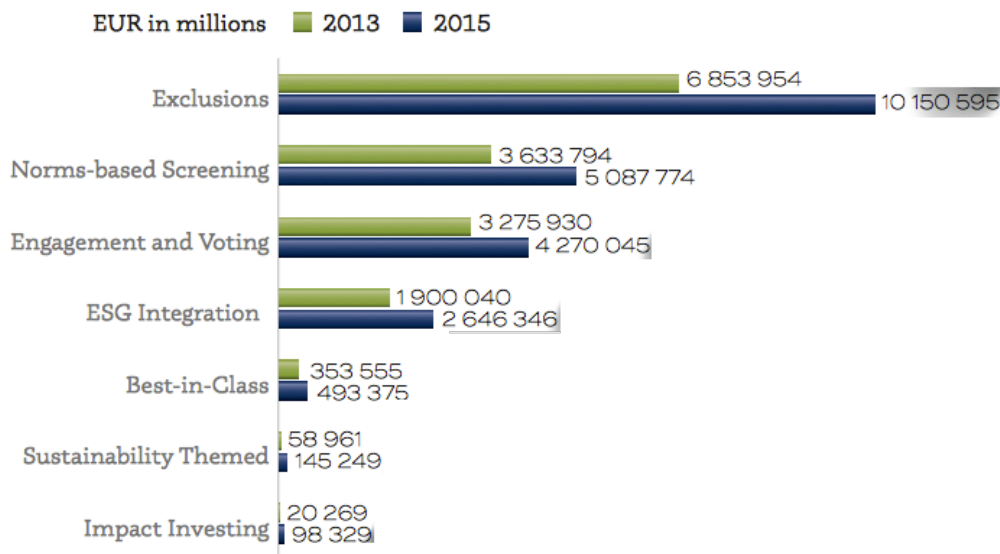


Figure 2: Overview of SRI strategies in Europe (Eurosif, 2016)

Norway

Norway is known to be in the lead of SRI, with a great part of their total amount of capital already heavily invested in ethical investments (Eurosif, 2012). In 1990, as a result of large state revenues from the petroleum industry, the Norwegian Government Pension Fund Global (GPGF) was established. The Fund’s essential mission was to work as a fiscal policy tool to underpin long-term considerations of petroleum revenues to the Norwegian economy, with an ambitious ethical commitment. Over the years, thorough management of the Fund has made sure that current and future generations may draw benefits from the wealth that petroleum brings to Norway (Government, 2017).

The most commonly used SRI strategies in Norway are exclusion and norms-based strategies, where the focus lies on excluding companies that are associated with tobacco, weapons and environmental issues (GSIA, 2016). When it comes to the Norwegian Government Oil Fund, it follows a strategy that is a combination of negative screening and engagement (Dimson, Kreutzer, Lake, Sjo & Starks, 2013). There is no set legal framework when it comes to SRI practices in Norway, however they rely profoundly on the foundation of the oil fund. The fund sets

high ethical standards in both Norway and in the international market, due to its size and great influence (Responsible Business, 2013).

3 THEORETICAL FOUNDATION AND HYPOTHESES

The theoretical foundation of this thesis is based on two different aspects of fund performance theory. The first aspect is the firm level performance, hence the performance of each firm held by the respective funds. We will review two scholars representing opposite extremes of the discussion on the relationship between a firm's CSR score and its performance. The other aspect of fund performance is at the fund management level, hence to what degree management (e.g. stock-picking skills etc.) affects the performance of mutual funds.

3.1 Firm level performance

Firm level performance looks at the relationship between a firm's engagement with CSR and its financial performance. A variation of arguments has been made throughout the years regarding this relationship, however there are two dominate schools of thought: the extremes of a positive- and negative relationship (McGuire, Sundgren, & Scheneeweis, 1988). With two so different perspectives, it has become some kind of an arm-wrestling match. One side is pushing for stricter standards, while the other side trying to pull them back (Porter & Van Der Linde, 1995).

3.1.1 Negative Relationship: The cost-concerned school

The negative relationship between CSR and financial performance is explained by the central argument of potential trade-off arising between the two (McGuire, Sundgren, & Scheneeweis, 1988). This trade-off refers to costs that a firm incurs from CSR actions, such as collecting, bringing together and analyzing information. According to this theory, firms that wish to engage in socially responsible investing will incur higher costs, which again will have negative effects on their overall financial performance and put them at an economic disadvantage compared to others (Jaggi & Freedman, 1992; Ullmann, 1985).

There have been multiple economists over the years that have supported the

theory of a negative relationship, one of the most famous being Milton Friedman (1970). Friedman was a well-known American economist, and an important advocate for the cost-concerned school. In his book *Capitalism and Freedom* (1962), he expressed:

There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engage in open and free competition without deception or fraud.

With this famous claim, he stated that the only social responsibility a business has is to its shareholders, and that any other engagement of CSR will have a negative effect on its financial performance. He argues that if socially responsible actions would have a positive effect on financial performance, it would already be incorporated in the business model (Friedman, 1962).

3.1.2 Positive Relationship: The value creation school

On the other side of the argument, we have those who argue that there is a positive relationship between CSR and financial performance. Naturally, firms who incorporate CSR into their investment decisions believe that it will benefit them and outweigh any potential incurred costs (Ullmann, 1985). A common argument is that addressing CSR can trigger innovations that lower total costs and improves the value of the company, and thus improve financial performance. Singh & Pachar (2012, p. 38) supports the argument of a positive relationship by stating that:

For a firm to be involved in some aspects, both within the firm and on the outside, will make its products and services (for example financial services) more attractive to consumers as a whole, therefore making the company more profitable.

Singh & Pachar (2012) also recognize the costs associated with CSR, but states that the potential long-term benefits will outweighs them. They respond to the commentators by arguing that any decrease in financial performance must be due

to wrongful investing in CSR that goes against company values or line of business.

Other authors that have argued that there is a positive relationship between CSR and financial performance are Porter and Kramer (2011). They argue that by recognizing societal needs, a firm is able to expand the total pool of economic and social value.

3.2 Fund management level

Traditionally a large number of empirical researches indicate that active mutual fund management do not provide superior risk-adjusted returns to passively managed funds. More recent studies provide different results, claiming the existence of some added value in employing active management (Chen et al., 2010). In Ambec and Lanoie's (2008) review of previous research on the performance of SRI funds and conventional mutual funds, they concluded that the weakness of those studies was that they did not examine the effect of fund management on performance. They argued that those studies could not easily separate the effect of management effects from the performance effects of CSR. As most previous research have simply compared the performance of SRI funds to conventional funds, these factors are not separately taken into considerations. As fund management plays an important role on the financial performance of mutual funds, this factor needs to be analyzed separately.

Despite the key influence of fund management on mutual fund performance, there is limited theory that covers the differences of fund management across SRI funds and conventional funds. According to Gil-Bazo et al. (2010) the role of fund management had in fact not been investigated at all in the literature on SRI prior to their research. They stated that this was particularly relevant to study further, as estimated differences between SRI and conventional mutual funds might not be due to SRI alone, but could be explained in differences between the companies that manage the funds.

3.3 Hypotheses

Based on the theoretical perspectives of mutual fund performance discussed above, we will in the following present the hypotheses that this thesis will attempt to answer. First and foremost, the aim is to examine the financial performance of Norwegian SRI funds relative to conventional mutual funds. By conducting a holding-data analysis of the conventional funds, this examination will be extended further. Based on the holding data, replicating portfolios will be constructed in order to examine the influence of fund managers and firm level performance separately. Lastly, two different time periods will be studied in order to compare the results and examine whether there has been a development in the performance of Norwegian SRI funds the last eight years. Hence, the following hypotheses form the basis of this thesis:

The first hypothesis investigates the relationship between the financial performance of SRI funds and conventional funds.

Hypothesis 1:

H0: SRI screening does not affect the financial performance of mutual funds.

H1: SRI screening have a positive/negative effect on the financial performance of mutual funds.

The second hypothesis examines the relationship between the financial performance of the conventional mutual funds and the replicating portfolios, hence whether/how CSR practices affects financial performance of firms.

Hypothesis 2:

H0: CSR practices do not affect the financial performance of firms.

H1: CSR practices have a positive/negative effect on the financial performance of firms.

The third hypothesis examines whether/how fund management differs between SRI mutual funds and conventional mutual funds.

Hypothesis 3:

H0: Fund management does not differ between SRI mutual funds and conventional mutual funds.

H1: Fund management differs between SRI mutual funds and conventional mutual funds.

Hypothesis four examines whether there has been a development in the financial performance of Norwegian SRI mutual funds relative to conventional mutual funds over the period of 2010-2017.

Hypothesis 4:

H0: The financial performance of SRI mutual funds has not changed relative to conventional mutual funds during the period of 2010-2017.

H1: The financial performance of SRI mutual funds has strengthened/weakened relative to conventional mutual funds during the period of 2010-2017.

4 LITERATURE REVIEW

In this section previous research will be presented, in which comparable studies of the financial performance of SRI funds relative to conventional mutual funds has gotten the most attention. The reason is that most previous research covers this field, and do not go any further. Two additional research papers are presented, one that examines the role of mutual fund managers on SRI financial performance and the other examines the relationship between CSR and financial performance of regular mutual funds.

Financial Performance of SRI funds**Hamilton, Jo and Statman (1993)**

Hamilton et al. (1993) studied the performance of 32 American all equity mutual funds, with data provided by Lipper Analytical Services, from the period 1981 to 1990. Using Jensen's alpha they measured the excess returns of each mutual fund, and compared the results to a random sample of 320 conventional funds during the same period. The results of the study indicated that socially responsible factors

had no effect on expected stock returns or companies cost of capital, and that SRI funds do not significantly outperform conventional funds.

Goldreyer and Diltz (1999)

Goldreyer and Diltz (1999) examined a sample of 49 SRI mutual funds, and compared the performance of these funds to a random sample of conventional mutual funds. Using Jensen's alpha to measure, the results of the study conclude that SRI/screening does not systematically affect the performance of mutual funds. The results further indicate that SRI funds that employ positive screening/inclusion outperform those that do not.

Statman (2000)

Statman (2000) evaluated the performance of 31 all equity SRI mutual funds against 63 conventional funds in his study of the American SRI market with a sample from the year of 1990 – 1998. Statman used both indexes from the same period and matching pair analysis to evaluate the performance of the funds. The results from the study indicated that the SRI funds performed better than the conventional mutual funds of equal asset size, but the difference was not statistically significant.

Bauer, Koedijk and Otten (2005)

Bauer et al. (2005) used an international database of 103 German, UK and US SRI mutual funds for the period 1990 – 2001 to review and extend previous research on the performance of such funds. In order to overcome the benchmark problems that many previous studies had experienced before, they applied the Carhart multi-factor model. The 103 SRI funds were compared to the performance of 4384 conventional funds during the same period. The study provided three interesting findings: First, they found no evidence of significant differences in risk-adjusted returns between SRI funds and conventional funds during the period. Second, SRI funds underwent an initial phase of “catching up” relative to the mutual funds, before eventually delivering similar financial returns. The researchers conclude from this that the ethical funds are going through a so-called “learning phase” in the beginning. Finally, SRI funds show clear evidence of a different investment style compared to the conventional funds. For example, the ethical funds tended to be more growth-oriented, and less value-oriented.

Bauer, Derwall and Otten (2007)

Bauer, Derwall and Otten (2007) studied the aggregate performance and investment style of SRI and conventional mutual funds, in order to examine the performance and risk sensitivities of ethical funds in Canada. Their sample data consisted only of funds with domestic equity orientation. Initially the researchers employed the widely used Jensen's alpha and hence the CAPM-based single factor model to examine the mutual fund's performance. They further point to that the 1-factor asset-pricing model is arguably insufficiently able to explain the cross-section of expected stock returns, and therefore additionally employ Carhart's 4-factor model to evaluate performance. The results of the study indicate that ethical funds underperform conventional funds, though the results are not statistically significant.

Cortez, Silva and Areal (2009)

The authors investigated the performance of a comprehensive sample of 88 SRI funds from seven European countries: UK, Austria, Belgium, France, Germany, Italy and the Netherlands. Specifically, they assessed the performance of SRI funds that invest globally and/or in the European market relative to conventional funds and socially responsible benchmark portfolios. They collected monthly data from August 1996 to February 2007, and measured performance based on the well-known Jensen's (1968) alpha that measures the intercept of the CAPM-based regression. The results from the study were that European SRI funds present a comparable performance to that of conventional funds of socially responsible benchmarks. Hence, the results indicated that investors could choose European SRI mutual funds without necessarily sacrificing financial performance.

Fund Management Performance**Gil-Bazo, Ruiz-Verdù and Santos (2010)**

Gil-Bazo, Ruiz-Verdù and Santos (2010) applied the matching estimator methodology to study and compare the performance of 86 US SRI mutual funds to 1761 conventional mutual funds in the period 1997-2005. The results from the study indicated that the SRI funds managed by companies that specialized in SRI performed better than conventional funds with similar characteristics. Although, SRI funds run by companies that did not specialize in SRI underperformed their

matching conventional funds. These findings suggest that investors should take into account management company characteristics, particularly with respect to specialization in SRI, when investing in SRI funds. These results were not statistically significant, although an exception was the fact that SRI funds were cheaper than the conventional funds run by the same management company. The researchers employed Carhart's 4-factor model to estimate risk-adjusted performance.

CSR and Financial Performance

El Ghouli and Karoui (2017)

The researchers used an asset-weighted composite CSR fund score to study the effects of CSR on fund performance. With a final sample of 2,168 US equity domestic funds for the period 2003-2011, they constructed a yearly CSR score at the fund level equal to the sum of weights and CSR score of each individual stock included in the fund. Further, they employed Carhart's 4-factor model to estimate the risk-adjusted performance of each fund. The results from the study indicate that funds with a high CSR score exhibit relatively poor, but persistent performance, and therefore may struggle to attract performance-chasing investors. At the contrary, a low CSR score exhibit higher, but less persistent performance. Thus, El Ghouli and Karoui (2017) conclude that high CSR scores attract social investors that are less sensitive to performance.

5 DATA AND METHOD

5.1 Data

We have been in contact with the library at BI in order to get information on where to find the relevant data. It seems like the appropriate database to use is EIKON, but this is not yet verified. The appropriate market index will also need to be chosen, but this depends on the data we collect and must therefore be set on hold for the time being. Similar studies have used Morningstar for data collection and The Norwegian Pension Fund for information about the negative screening list that will be used to construct the replicating portfolio, and we will have to look into what tools will be appropriate to use. For now, we have developed a list of requirements for the funds that we are going to examine, as to be seen in the

table below. Information about these requirements is also explained explicitly in the following.

Criteria	SRI Funds	Conventional Funds	Replicating Portfolios
Open ended	x	x	x
Min. 75% Equity Holdings	x	x	x
Non-Specific	x	x	x
Actively Managed	x	x	x
International Inv. Universe	x	x	x
SRI Screening	x		x
Marketed/Registered in Norway	x	x	x
Fund Data: 2010 - 2017	x	x	x
Holding Data: 2010 - 2017		x	x

We are going to extract all available information on Norwegian SRI mutual funds, thus the funds need to be marketed in Norway, with an international investment universe. As for the conventional mutual funds, we need the holding data of each fund. If all holding data is available for Norwegian marketed conventional funds, we will extract a list of those funds. If the information is not available on these funds, it will be natural to only extract the Norwegian registered funds. Only the firms that are open ended, hence open to all investors for investment, will be included. Additionally, only equity funds are relevant, hence they must hold at least 75% equity. As fund management is relevant for this thesis, it is a requirement that all funds are actively managed. The firms need to be non-specific in order for them to be comparable to an appropriate market index. The aim is to extract data on all relevant funds, based on the above requirements, from the period of 2010-2017. Further, this data will be divided into two time-series sets: set 1) year 2010-2013 and set 2) year 2014-2017.

5.2 Method

In this section the method for construction replicating portfolios and evaluating the performance of SRI funds, conventional funds and replicating portfolios will be explained in detail. As there are several relevant methods to use for the performance evaluation, we will only here present the relevant alternatives, as we have not yet landed on which method to use.

5.2.1 Constructing replicating portfolios

Based on the holding data of each conventional fund, replicating portfolios will be constructed. Based on the fact that most Norwegian SRI funds use negative screening, this is the natural choice of method to screen the regular funds of unethical companies. Negative screening is also more objective and standardized, and thus more accurate to use when comparing funds. Most likely, the screening list will be extracted from the Norwegian Pension Fund.

5.2.2 Evaluating financial performance

There are multiple different ways to measure funds performance. Jensen (1968) and Carhart (1997) are two of the most commonly applied models among investors today, and have been frequently used in the studies mentioned above. As previously stated we have not yet landed on which method to use, but in the following the two most commonly used models will be presented.

Jensen's alpha

Jensen's Alpha is an absolute measure of performance. It shows excess return earned compared to returns suggested by the CAPM model. This measure of performance is one of the most frequently used among investors (Jensen, 1968). However, it does get criticized for not capturing market-timing ability. This refers to a fund manager's ability to change his holdings based on what he expects will happen in the market (Jensen's Alpha, 2017). Since the beta in the model is constant, it is not able to capture this market-timing ability. The regression model is the following:

$$E(r_p) - r_f = \alpha_p + \beta_p[E(r_M) - r_f]$$

$E(r_p)$ = Expected total portfolio return

r_f = Risk – free rate (return on t – bill)

α_p = Jensen's alpha

β_p = Beta of portfolio

$E(r_M)$ = Expected return of the market portfolio

The alpha, which reflects the excess return of the fund, is found by regressing the excess return of the fund against the excess return of the market. Jensen's alpha can take both positive and negative values. A positive (negative) alpha means that the fund outperforms (underperforms) the market.

Carhart's four-factor model

Mark Carhart wrote a paper in 1997 where he presented a model that can be used to evaluate mutual fund performance. The model is based on Fama and French's three-factor model and Jegadeesh and Titman's (1993) paper. Jegadeesh and Titman found that good and bad performances of stocks tend to be persistent over time, and based on this Carhart added a momentum factor to Fama and French's three-factor model (Carhart, 1997). The regression model obtained was the following:

$$r_i - r_f = \alpha + \beta_{mkt}(r_m - r_f) + \beta_{HML}HML + \beta_{SMB}SMB + \beta_{UMD}UMD + \epsilon$$

r_i = The return on asset i

r_f = Risk – free interest rate (return on t – bill)

α = The intercept of the regression line

r_m = Return on market portfolio

HML (high minus low) = Return on the book – to – market factor

SMB (small minus big) = Return on size factor

UMD = Return on momentum factor (winners minus losers)

ϵ = Residuals of the regression model

β_x = betas for each individual factor

Fama and French (1996) found that when the factors are combined with the beta factor they are able to explain 95% of the return in a diversified stock portfolio. We therefore believe that with Carhart's four-factor model we will be able to capture accurate results concerning fund performance, as he performed the regression with an additional factor, and on funds instead of stocks, which Fama and French used in their paper.

6 Progression Plan

Plan	Deadline
Collect and structure data	February 2018
Test hypotheses	February - March 2018
Structure and interpret results	March 2018
Comment on results	March - April 2018
Theoretical discussion of results	May 2018
First Draft	May 2018
Review and finish thesis	May - September 2018
Deadline	September 2018

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