

ERASMUS UNIVERSITY ROTTERDAM  
Erasmus School of Economics Bachelor Thesis [IBEB]

# Does it pay to be good?

The effect of socially responsible investing on the performance of mutual funds

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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## Abstract

In this paper, the difference in performance between conventional and socially responsible mutual funds is analysed. For this, the Carhart four-factor model, the different market betas and the Jensen alpha during different business cycles are used. Further, this paper will be by adding a fifth 'involvement' factor using a newly developed method, to test if a mutual fund's involvement in controversial industries can improve the performance of the four-factor model. With these methods, evidence has been found suggesting conventional funds have higher excess returns nominally but have significantly lower excess returns if the Jensen alpha is considered. Also, socially responsible funds have a lower market beta when not investing in any controversial industry. However, this effect is negligible for funds that only exclude one specific category of industries. Lastly, this research found evidence that adding involvement in controversial industries as a fifth factor will not improve the performance of the Carhart four-factor model.

## Introduction

Being socially responsible is hot. We want to keep the world from heating up, tobacco is becoming a taboo and trading in weapons is a controversial topic. Yet, petrol cars are still the way to go, supermarkets put most vegetables in plastic packaging, and selling in-game gambling boxes to children is legal because they cannot win anything valuable (Musa, 2019).

This suggests we are environmentalists and care about our health as long as we do not have to face the financial consequences.

However, BlackRock has announced to start disinvesting in their coal-based assets because they expect sustainable energy to be more profitable in the future (abc.net, 2020). Further, every investment fund you visit on the internet has a green and/or ethical fund in which individual investors can invest their money. So maybe, certain problems can be solved by making the right investment decisions.

Portfolio managers are hired to maximize the returns of their respective portfolios. Excluding controversial industries, such as coal mining and the tobacco industry, would mean optimal diversification cannot be reached, resulting in sub-optimal returns. On the contrary, the increasing social awareness among consumers may create vast investment opportunities for socially responsible funds. By analysing the performance and characteristics of various types of mutual funds, this paper will investigate the effect of excluding controversial industries on the returns of mutual funds in developed countries.

First, this paper will focus on all the different concepts and definitions used in this research and the relevance of this topic will be discussed. After these fundamentals, the third part will give an overview of the currently available literature from which three hypotheses are developed. The fourth and fifth part will discuss the data selection and explains how the four-factor model and various other techniques will be used and adapted. The sixth part discusses the obtained results and answers the hypotheses as well as the research question. Lastly, it will be discussed how future research can build on this paper and what can be concluded from this research.

## Conceptualization

To investigate the effect of excluding controversial industries from investment portfolios on returns, it is necessary to clarify what controversial industries include. Of course, a lot of industries can be considered controversial and the reasoning on why an industry is, or should be, controversial varies a lot. To mitigate the variation in reasoning and ideology, this paper uses eleven different industries, sub-divided into four categories: health, animal welfare, energy and arms. Each category contains multiple industries with similar characteristics, as explained in the next paragraph and shown in table 3. These different categories are designed to not only give answer to the research question, but also to find the answer to what categories affect funds more than others. Every mutual fund will be categorized into the right categories in order to find the differences in returns, the effect of business cycles and their responsiveness to market movements.

The first investigated category is the 'health' category, which contains industries that are expected to have a negative effect on the health of their consumers. For a mutual fund to be included in this category, it must have a significant involvement in the alcohol, gambling and/or tobacco industry. The definition of a significant involvement can be found in table 1. The second category is the 'animal welfare' category which contains mutual funds investing in industries or companies involved in animal testing, the production of palm oil and/or pesticides. The third category is the 'energy' category. This category contains funds investing in thermal coal and/or nuclear power. Lastly, we have the 'arms' category. For a mutual fund to be included in this category, it should be involved in the weapon, military contracting and/or small arms industry.

This paper focuses on mutual funds in developed countries. Most large mutual funds will also include investments in countries that are emerging. That is why mutual funds in developed countries is defined as mutual funds operating from developed countries and use said country's currency. The list of developed countries as defined by K.R. French is used to determine which mutual funds to include or not (French, 2019).

Excluding an industry or category is easier said than done. In this paper, exclusion means a mutual fund does not directly invest in the specified category but also does not invest in firms and funds that have these investments. How this is calculated exactly will be explained in the data section. Further, the terms 'conventional' and 'socially responsible' will be used in various paragraphs. The term conventional will be used for mutual funds with no strict policy to ban one of the aforementioned categories. Socially responsible mutual funds on the other hand, are characterized by the fact they have excluded -at least- one of the categories from the investment portfolio.

## Relevance

It is expected that the outcomes of this research will give a better understanding on how a mutual fund can be composed to maximize profits whilst having minimal risk and market exposure. For an investor it is highly important to maximize profit, but the current social climate also asks them to worry about being socially responsible. Knowing how social responsibility can be beneficial when composing an investment portfolio is a big step for mutual funds into becoming future proof whilst answering to the expectation of their owners.

On the macroeconomic side, governments will always have a trade-off between regulating markets and laissez faire. When a political party wants to solve a fundamental problem, various solutions are brought to the table to solve it. In this process, it is often said: 'the market will solve the problem'. By investigating the effect of certain industries on the performance of mutual funds, the outcomes of this research will help to give a better understanding on when markets must be regulated and when the market will solve certain problems by itself.

## Literature Review and Hypothesis Development

Research focussing on the effect of social responsibility on returns is relatively new. Most research has been conducted between 2000 and 2005 and analyses the preceding decades. Interestingly, hardly any big research has been done after 2010, making this paper a good addition to the existing literature.

Multiple researchers have argued there is no significant difference in the returns of conventional and socially responsible mutual funds. (Hammilton et al, 1993) (Bauer et al, 2004). Various reasons are given on why this is the case. Hamilton et al (1993) argue this lack of excess returns for socially responsible funds is because investors tend to underestimate negative news coming from firms with controversial aspects. This would mean that socially responsible funds would outperform conventional funds in the future. About a decade later, Bauer et al (2004) analysed the period of 1990 until 2000, instead of the period 1980 to 1990 used by Hammilton et al (1993). This research found evidence to support that, in contrary to what Hammilton et al (1993) found, socially responsible funds underperformed and then caught up within the time span of 1980 to 1990. For the time period of 1990 to 2000, they claim to find no evidence to support any difference between the returns of conventional and socially responsible mutual funds.

As happens more often in the economic science, solid evidence backing an opposite claim can also be found. Evidence has been found claiming not only certain aspects of social responsible investing can hurt your mutual fund, but returns can only be maximized by leaving out all socially responsible aspects and investing only in conventional firms and funds (Brammer et al, 2006).

An alternative version of this research suggests that indeed, in some countries socially responsible funds underperform. Renneboog et al (2008) found socially responsible funds to underperform by 2.2% to even 6.5% in most countries. However, this paper also gives examples, such as Sweden and Japan, where no evidence for underperformance can be found (Renneboog et al, 2008)

It is commonly known that investors want to maximize their returns. This should mean that investors would make use of a gap in returns if it were to exist. Adding that to the great amount of papers showing evidence against the existence of a gap in returns, this paper will investigate the following hypothesis:

[H1] There is no difference in returns of mutual funds with or without controversial industries.

In later research, analysing the period 2000 to 2011, evidence is found suggesting there is no significant difference in the excess returns of conventional and socially responsible mutual funds in said period (Nofsinger et al, 2014). But when looking into the data they did find that, during 'normal' times, conventional funds outperformed socially responsible funds by 0.65% to 0.97%. However, during the financial crisis in 2009 to 2011, socially responsible funds outperformed conventional funds by 1.61% to 1.70%. The explanation for this phenomenon can be found, according to Nofsinger et al (2014), in the fact that socially responsible mutual funds tend to have less lawsuits and have more stable relationships with the companies they invest in. This gives them a risk advantage, resulting in less bankruptcies during economic downfalls.

This difference in returns during crisis and non-crisis periods suggests socially responsible funds are less affected by market contractions and expansions when comparing to their conventional counterparts. Nofsinger et al. (2014) investigated this using the market beta, which indicates a mutual fund's exposure to market movements, and the four-factor alphas, which indicates the attribution the investor made to the excess returns given a mutual fund's risk and profile. Using these indicators, a mutual fund's market exposure can be measured whilst also accounting for the differences in strategies of the fund managers. This gives a profound picture of the differences in the performance of conventional and socially responsible mutual funds. To investigate this, the following hypothesis will be used:

[H2] During downward business cycles, socially responsible funds have lower market betas and higher four-factor alphas.



Many have tried to add a fifth factor to the four-factor model to improve the precision of the model, including Fama and French themselves. All four factors are based on characteristics of the analysed fund: exposure to the market, the size of the fund, the book-to-market ratio and the momentum of the fund. If socially responsible funds indeed have significantly different market betas and/or the excess returns of these mutual funds are different, this may create an omitted variable bias. Because of this, this paper will investigate if the performance of the four-factor model can be improved by adding a fifth factor based on the involvement in controversial industries. In one of the papers written by Renneboog et al. (2008), an ethical factor is included in the four-factor model. However, this is done by only letting firms with absolutely no involvement in any controversial industry pass the test. This is one of the only attempts of adding such a factor, making it interesting to try and see if it is possible to include such a factor using a different technique. Giving rise to the third hypothesis:

[H3] Adding 'involvement in controversial industries' as a fifth factor to the four-factor model will improve the performance of the model.

## Data

This research uses a freely accessible dataset from Kaggle.com. This dataset is originally used in a different scientific research but fits the criteria for this research perfectly, making it an easy to use set. The dataset is constructed by writing a 'Python web crawler' which tracks all available data on over 49 thousand different mutual funds listed on Morningstar.co.uk. (S. Leone, 2019).

The involvement in a certain industry is calculated by evaluating every investment of every mutual fund. As seen in table 1, if a mutual fund consists of 3 stocks and only company A is involved in alcohol; then the mutual fund will have an Alcohol involvement equal to the weight of company A. When multiple companies are involved in, for example, animal testing then the weights of the involved firms will be added together. Of course, it would not be fair to say 'Yes' to involvement in alcohol when one firm is indirectly involved in alcohol in only 3% of its company. That is why every industry has its own threshold that it must meet before it is considered. For example, a manufacturer has to obtain at least 5% of its revenue from alcohol before being taken into account. This threshold is 25% for distributors and 50% for suppliers. This means that if it turns out company B is a supplier who supplies 20% of its goods to Heineken, then it would not be added as a firm involved in alcohol. Due to legal reasons, it is not possible to show a full overview of thresholds and criteria, therefore a link directing to the right webpage will be added to the footnote of this page<sup>1</sup>.

*Table 1. An example of how involvement is calculated in the used dataset.*

Company name	Weight in fund	Involvement in Alcohol	Involvement in Animal testing
Company A	30%	Yes	No
Company B	40%	No	Yes
Company C	30%	No	Yes
<b>Mutual fund</b>	<b>100%</b>	<b>30%</b>	<b>70%</b>

*Note; the percentages are fiction and used in the example of the paragraph above.*

<sup>1</sup>[https://www.morningstar.com/content/dam/marketing/shared/research/methodology/812380\\_PortofioPro ductInvolvement.pdf](https://www.morningstar.com/content/dam/marketing/shared/research/methodology/812380_PortofioPro ductInvolvement.pdf)

As mentioned before, all mutual funds are sub-divided in four categories. Table 2 shows the criteria for each category, the table also shows ‘not involved’. This shows 274 funds are not involved in any of the categories and 31,633 funds are involved in at least one of the controversial industries.

*Table 2. Division of categories and the amount of funds involved in said category.*

Category	Industries	funds involved	Not involved
Health	Alcohol, gambling and tobacco	23,749	8,158
Animal welfare	Animal testing, palm oil and pesticides	28,821	3,086
Energy	Thermal coal and nuclear power	25,603	6,304
Arms	Controversial weapons, military contracting and small arms	17,593	14,314
<b>Involved</b>	<b>All of the above</b>	<b>31,633</b>	<b>274</b>

*Note: The divisions are made based on the criteria from the ‘conceptualization’ paragraph and table 1.*

## Methodology

This research will be using the 'Fama-French-Garhart four-factor model' (from now on four-factor model). This model has multiple advantages. The first advantage is the comparability, almost every single research paper on this subject uses this model or the similar three-factor model. By using the same model, it will be easier to compare results and to see what has changed over the years. The second advantage is the implementation of the Jensen alpha. To investigate whether socially responsible mutual funds perform different from conventional ones, we need to compare the returns adjusted for the risk and the behaviour of the investment manager. The four-factor model has the possibility to do this by adding a four-factor version of the Jensen alpha. A third reason for the usage of the four-factor model lies in the second hypothesis, for this hypothesis we need the market beta, which is included in the four-factor model.

To account for the differences in business cycles, two different alphas will be used, both with their respective dummy variable. One for the period with a downward business cycle (2010 to 2014) and one for the upward business cycle, being the period after 2014 (European Commission, 2014). By doing this, it will be possible to determine the differences in performances of various funds whilst accounting for the risk factors (Nofsinger et al., 2014). The first alpha will be denoted as  $\alpha_{DBC}$  where DBC stands for 'downward business cycle', the second alpha will be denoted as  $\alpha_{UBC}$  where UBC stands for 'upward business cycle'.

This leads to the following regression:

$$E(R_{MF} - r_f) = \alpha_{DBC}D_{DBC} + \alpha_{UBC}D_{UBC} + \beta_1(R_m - r_f) + \beta_2SMB + \beta_3HML + \beta_4MOM + \varepsilon \quad (1)$$

In this equation, SMB, HML and MOM stand for the various factors.  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$  and  $\beta_4$  denote the loadings of their respective factor. The  $\varepsilon$  stands for the Newey-West standard error which will be used. This standard error is chosen because of its capability to overcome most issues regarding heteroskedasticity and it also account for autocorrelation.

Because of the corona virus, the access to most datasets is limited. Therefore, the annual SMB, HML, MOM and  $R_f$  are obtained from datasets provided by K. French (kennethfrench.com, 2020). The  $R_m$  for mutual funds available on reputable sources are all focused on either the United States or (Western) Europe. Therefore, the market returns will be calculated using all 39,907 mutual funds, which are then compared to the several categories from Morningstar.co.uk. This turned out to be rather precise and supports the reliability of the dataset.

In this paper a fifth factor in addition to the Carhart four-factor model will be introduced, this factor will be a measure denoting the percentage of the mutual funds involved into controversial industries. The only paper with a similar factor is written by Renneboog et al, (2008), this paper used mutual funds without any involvement as a factor and proved this effect to be insignificant. This is why this paper takes an approach more closely to the original four-factor model. The new factor will be named the ‘involvement factor’ (abbreviated as ‘INV’) and will be calculated in the same manner as, amongst others, the HML factor from Fama and French because this is a proven method and it ensures consistency throughout the model. For this, the mutual funds are sorted on the percentage of their investments involved in controversial industries. Then, the annual returns of the lowest quartile (= the funds with the lowest involvement) will be subtracted from the annual returns of the top quartile. This will be done for each year in the dataset. More formally;

$$INV = R_{mf}(25\% \text{ highest involvement}) - R_{mf}(25\% \text{ lowest involvement}) \quad (2)$$

The INV-factor will then be added to the original four-factor model together with an extra beta ( $\beta_5$ ) to express the loading of the INV-factor. Because of this, the four-factor alpha will be replaced for a five-factor alpha. This results in the following regression with Newey-West standard errors;

$$E(R_{MF} - r_f) = \alpha_5 + \beta_1(R_m - r_f) + \beta_2SMB + \beta_3HML + \beta_4MOM + \beta_5INV + \varepsilon \quad (3)$$

## Results

The methodology used in the preceding part gave rise to some interesting and overall very significant results. This paper focussed on whether a difference in returns exist for conventional versus socially responsible funds. Table 4 shows the excess returns of conventional mutual funds are roughly 7.9 and 5.8 percent, depending on the period. Mutual funds, which have excluded every controversial category, tend to have half the annual returns during downward business cycles and a not significantly better or worse performance during upward business cycles. Further, when looking at the exclusion of specific categories rather than excluding all of them, it turns out excluding health or arms does not greatly impact a fund's performance and excluding energy even gives a boost to the annual returns.

However, table 3 presents the four-factor alpha for both periods. This shows a very different image from the nominal excess returns. First, we see conventional mutual funds on average have a negative four-factor alpha. This means they perform almost a percent lower during downward business cycles than you would expect, given their risk, momentum, size and book-to-market ratio. Interestingly, ethical mutual funds do not have an alpha that is significantly different from zero during downward periods, meaning the managers of ethical funds do not perform better than the market but do perform better than their counterparts who invest for conventional funds.

During an upward business cycle, conventional funds still have a significantly negative alpha, although it is less negative when comparing to the other period. Ethical funds show a positive alpha of almost 2.4%, albeit not very significant. For more specific cases, this paper has found some other interesting results. For example, excluding the energy category resulted in the highest excess return but has by far the lowest alpha in both periods. On the contrary, excluding animal welfare resulted in very high alphas although their excess returns are relatively low.

Further, table 3 includes the differences between the alphas during different periods and between conventional funds and the alternative funds within the periods. The results show these differences are all significant at a P-value of <0.01. Interestingly, socially responsible mutual funds significantly outperform conventional funds in both upward and downward business cycles, however this is mostly the case for mutual funds without any controversial investments. Other categories, such as health, suggest excluding controversial industries can hurt the performance of a mutual fund. Excluding the health category decreases the alpha during bad times but increases the alpha during good times. A reason for this might be that governmental policies are often softened during crises, giving the tobacco and gambling industry more chances to work freely (Granados & Rodriguez, 2015).

*Table 3; The Jensen four-factor alpha in both upward and downward business cycles for all types of mutual funds.*

Type mutual fund	Alpha DBC	Alpha UBC	$\Delta$ Alpha (DBC-UBC)	$\Delta$ Alpha DBC (alternative - conventional)	$\Delta$ Alpha UBC (alternative - conventional)
Conventional	-.9937***	-.3661***	0.628***	-	-
No involvement	.3743	2.3907*	2.016***	1.368***	2.757***
Health excluded	-3.5868***	1.2544***	4.841***	-2.593***	1.620***
Arms excluded	1.5599***	1.3777***	-0.182***	2.554***	1.744***
Energy excluded	-6.0641***	-3.9356***	2.128***	-5.070***	-3.570***
Animal Welfare excluded	8.3317***	4.7056***	-3.626***	9.325***	5.072***

*Note: The alphas are presented in percentages; Alpha UBC and DBC are the alphas in upward and downward business cycles;  $\Delta$  alpha equals 'alpha DBC' minus 'alpha UBC';  $\Delta$  Alpha DBC and UBC denote the differences between conventional mutual funds and the alternative mutual fund during an upward or downward business cycle; \* =  $P < 0.1$ , \*\* =  $P < 0.05$ , \*\*\* =  $P < 0.01$*

Table 4; The excess returns in both upward and downward business cycles for all types of mutual funds.

Type mutual fund	Excess Returns DBC	Excess Returns UBC	$\Delta$ Excess Returns
Conventional	7.8960	5.7704	1.5112***
No involvement	3.9083	3.2578	.6504
Health excluded	6.9335	5.7889	1.1446***
Arms excluded	6.6990	5.9613	.7377***
Energy excluded	9.9056	7.3144	2.5911***
Animal Welfare excluded	4.9047	5.1234	-.2186

Note: The excess returns are presented in percentages;  $\Delta$  Excess Returns denotes the excess returns during downward business cycles minus the excess returns during upward business cycles; \* =  $P < 0.1$ , \*\* =  $P < 0.05$ , \*\*\* =  $P < 0.01$

The first hypothesis states the returns of mutual funds are not affected by excluding or including controversial industries. The results as discussed and shown in table 4 suggest otherwise, namely that conventional mutual funds have higher excess returns in both upward and downward business cycles but the results also show the performance of socially responsible funds are on average better for a given fund profile. Because of this, the first hypothesis must be rejected.

The second part of the research focussed on the theory that socially responsible mutual funds react less to changes in the market because of their more loyal investors and better client relationships. Table 5 shows the output of the four-factor model with both the four-factor alpha for the upward and downward business cycle. This output gives evidence arguing conventional mutual funds are hardly affected by their book to market ratio during this period whilst ethical mutual funds benefitted 0.33% annually from having a high book to market ratio. Another interesting result is the differences in market betas ( $\beta_1$ ). The market beta of mutual funds that exclude nuclear and coal investments from their portfolio experience the highest market beta. Meaning these mutual funds react the strongest to changes in the market returns. A reason for this could be that energy consumption and supply is relatively stable,



making coal plants and nuclear plants involatile investments since their customers will never ask for a sudden increase or decrease in electricity. Because of this, the energy industry moves along with the overall economic climate, making its beta very close to one and making mutual funds that exclude this industry more sensitive to changes in the market growth.

In general, Table 5 shows conventional funds have a market beta of 1.1014, whilst socially responsible mutual funds have a market beta of 0.4486. This suggests socially responsible funds are less affected by the market beta. However, the table also shows excluding any controversial category leads to a market beta that is not very different or even higher than the market beta of conventional mutual funds. As discussed before, conventional mutual funds have lower alphas than their socially responsible counterparts when choosing the right type of mutual fund. Therefore, the second hypothesis will not be rejected whilst also emphasising the fact that excluding specific categories of controversial industries will not significantly decrease your market beta or may even increase the market beta.

*Table 5; The outcomes of the four-factor models including Jensen's alpha for both periods and for all types of mutual funds*

Type mutual fund	Alpha DBC $\alpha_{DBC}$	Alpha UBC $\alpha_{UBC}$	$(R_m - r_f)$ $\beta_1$	SMB $\beta_2$	HML $\beta_3$	MOM $\beta_4$
Conventional	-.9937***	-.3661***	1.1014***	-.0578***	-.0165**	.0413***
No involvement	.3743	2.3907*	.4486***	.1229	.3309***	-.2257***
Health excluded	-3.5868***	1.2544***	1.0202***	.0664***	.0444**	-.0384***
Arms excluded	1.5599***	1.3777***	1.1810***	-.0028	-.1772***	-.1289***
Energy excluded	-6.0641***	-3.9356***	1.5481***	-.4113***	-.3497***	.2613***
Animal Welfare excluded	8.3317***	4.7056***	1.0021***	.2787***	-.1354***	-.4697***

*Note; Both alphas are written in percentages;  $\beta_1$  is the market beta;*

*\* =  $P < 0.1$ , \*\* =  $P < 0.05$ , \*\*\* =  $P < 0.01$*

Table 6 shows the results as obtained from adding the extra involvement factor to the Carhart four-factor model, compared to the original version of this model. The first four factors and the alpha of the new five-factor model are virtually the same as the old four-factor model. The coefficients do not significantly differ, and the p-values are also the same. The fifth factor has a coefficient of 0.0041 with a p-value of 0.798, meaning it does not significantly differ from zero. Given these results, it must be concluded that adding a fifth factor in this form is no useful addition to the existing four-factor model.

*Table 6; The four-factor model plus the INV-factor compared to the original four-factor model*

Used model	Alpha $\alpha_{4 \text{ or } 5}$	$(R_m - r_f)$ $\beta_1$	SMB $\beta_2$	HML $\beta_3$	MOM $\beta_4$	INV $\beta_5$
Four-factor model	-.5801***	1.1013***	-.0578***	-.0164**	.0412***	-
Four-factor model plus involvement	-.5675***	1.1007***	-.0565***	-.0170**	.0395***	0.0041

*Note; The four-factor model uses the four-factor alpha; the four-factor model plus involvement uses the five-factor alpha; Alpha are denoted in percentages; \* =  $P < 0.1$ , \*\* =  $P < 0.05$ , \*\*\* =  $P < 0.01$*

## Conclusion and Further Research

This paper focussed on the differences in performances of various types of mutual funds. From this, evidence has been found suggesting conventional and socially responsible mutual funds have very different annual returns. Conventional funds have nominal returns up to twice as high during downwards business cycles. However, this result is misleading because conventional funds also have a negative four-factor alpha during these periods whilst socially responsible ones have an alpha of zero or even a positive alpha during upwards business cycles. Moreover, when choosing the right industries to exclude, a mutual fund can outperform conventional funds, both in nominal returns and the alphas. The first hypotheses which stated there is no difference in returns between conventional and socially returns must therefore be rejected.

The Effect of market betas has also been investigated and it turns out that, perfectly in line with the second hypothesis and the available literature, market betas are lower for socially responsible funds. Interestingly, the results show that cherry picking industries to exclude, which worked well for the four-factor alpha, does not decrease the market beta. Mutual funds that only exclude specific types of controversial funds turn out to have a market beta equal or higher than conventional funds.

Adding a fifth involvement factor to the existing models does not do anything to the functionality of the four-factor model nor does it solve any issues regarding the omitted variable bias, the third hypothesis must thus be rejected.

A suggestion for further research would be to find and empirically test a predictive model for various type of socially responsible mutual funds to see what the right combination of controversial industries is for a mutual fund to have a highest returns and the lowest risks. Also, a research splitting the dataset into multiple sub-sets for various countries and areas can add an interesting dimension to this research because different countries can have very different ideas on what social responsibility means or should mean.

The research question focussed on the effect of excluding certain industries on the performance of mutual funds in developed countries. This research has shown that excluding controversial industries, when chosen right, can have a positive effect on the returns of a mutual funds. Not only that, most types of socially responsible funds score better when the alphas are compared, and conventional funds underperform during downward business cycles whilst socially responsible funds perform according to the model or even better. Further, socially responsible funds, under certain conditions, will have very compatible market betas. All these findings suggest social responsibility can be a great opportunity for the performance of mutual funds and debunks the idea that investors should only care about themselves.

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