In search for the reputational investment factor

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Abstract

This paper looks at corporate reputation and its effect on future firm performance using the Reputation Quotient (RQ) produced by Harris Insights & Analytics as proxy for reputation. The RQ is considered a reliable measure of corporate reputation and is based on a rigorous study employing six dimensions and 20 attributes to obtain the combined view of the most visible American corporations as perceived by the general public. In essence, our thesis aims to discover the possibilities of finding abnormal risk adjusted excess returns (alphas relative to benchmark risk factors) through approaches based on company reputation and to explore if any such phenomena could be explained by extending the benchmark models. In order to investigate this, four investment strategies are constructed with ten companies at a time in each; top10, bottom10, delta top10 and delta bottom10, where the two latter includes the top- and bottom movers between two consecutive years. The portfolio performances from 2001-2018 are measured against the market, the common Fama French factors; size (SMB) and book-to-market (HML), as well as major industry returns. We find that corporate reputation does have predictive power of future firm performance. The investment strategies associated with high reputation show statistically significant abnormal risk-adjusted returns in relation to the market index and when controlling for size and book-to-market. While the top10 portfolio is statistically significant on the 5% level, the delta top10 is only significant on the 10% level. The bottom10 and delta bottom10 portfolios show no statistically significant abnormal returns in either direction. According to our analysis, the additional explanatory power of basing a new risk factor upon corporate reputation seems to be limited, although more data on corporate reputation would be necessary to truly determine the effect of introducing a reputation based factor. Instead, indications point towards frictions and possibly behavioural biases being explanations on why alphas occur among highly reputable firms.

Keywords: Factor investing, smart beta investing, corporate reputation, performance forecast, risk-adjusted returns

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1. Introduction

In 1976 originated the Arbitrage Pricing Theory model which argued that security returns are best explained by multiple factors. Since then, many factors have been presented in academic research to explain differences in stock returns. Factor investing has become a prominent investing strategy which historically has delivered average yearly returns above the market index. Each factor has a specific property which corresponds to the way the investment portfolio is tilted. For example, the value factor is a portfolio consisting of stocks with relatively high book-to-market value, while the small size factor is invested in the smallest tradable companies. Each factor does not only have a specific algorithm on how to rebalance the portfolio after each period, they also have an economic rationale considering why their specific investment strategy should render above market returns and compensate the investor. For example, small stocks are undervalued and growth stocks tend to disappoint compared to value stocks. In recent years, passive "smart beta" investment strategies, which is closely related to factor investing, has received increased interest in the asset management industry. Factor investing is a continuously relevant field of study and the motivation for this paper is to contribute to the search for new factor/smart beta investing strategies.

A key aspect of factor investing is to use a quantitative approach based on observable data rather than speculations and opinions. The properties which most factors are based upon relies on financial metrics such as market capitalization, book value, stock returns and volatility. Based on this notion, we found it interesting to explore whether it could be possible to construct portfolios based on the less tangible metric of reputation, which still has an underlying economic rationale. Company reputation could be argued is a driver of future revenues and a sign of competitive advantage. Hence, our thesis aims to discover the possibility of creating smart beta strategies/investment factors based on company reputation and to see if the strategies can earn excess returns given its exposure vis à vis common benchmark risk factors. In a first stage, we aim to find strategies which can achieve risk adjusted abnormal returns with respect to risk factors. Thereafter, we look at the possibilities to enrich current expected return models with an added corporate reputation based factor to see if it brings additional explanatory value.

The topic of this thesis could potentially discover a competitive investment factor which currently has not been widely recognized. Moreover, it could also be a starting point for an increased interest in qualitative metrics to develop investing strategies. If proven to be explanatory of stock returns, a reputational-based investment factor could be a useful tool for both institutional and private investors when allocating portfolios. The steadily increasing interest in sustainability further makes this study topical and relevant. Corporations with a solid reputation can reap benefits

by attracting talent and customers as well as to be considered a good company for society and qualify as an investment for institutions with ethical investment criteria. With more attention towards sustainability, there is amplified pressure on large intuitional investors to invest ethically, potentially leading to a premium for sustainable companies with good reputation.

The intention of this paper is to contribute to- and extend previous research on factor investing/smart beta. Among the most relevant references to this study is "The cross section of expected returns" (Fama and French, 1992), which shows that small stocks and value stocks tend to earn higher excess returns than large-cap stocks and growth stocks respectively, which in turn paves the way for factor investing. Since this thesis is partially about exploring the existence of other factors, this paper would provide the basis on how the pioneers of factor investing discovered their factors. Other relevant studies include "Corporate reputation and financial performance" (Brammer et al., 2015) which explored company reputation and its link to financial performance, "Industry Costs of Equity" by Fama and French (1997) and "Impact on the Reputation Quotient on Investment Performance" (Krueger, 2016). Based on previous results in this field, we postulate the notion that reputation does have predictive power of future firm performance and consequently assert six hypotheses. We explore whether any statistically significant abnormal returns could be the basis for a new factor based on reputation to be added to current factor investment strategies. This outcome relies on the ability to quantitatively demonstrate an added value by the reputation factor to current factor investing models.

As a reputation proxy, we use the Harris Poll Reputational Quotient which is widely considered to be a reliable measure of corporate reputation, covering up to 100 of the most visible companies in America. We form four different portfolios on subsets of the listed companies in the ranking and then measure their historical performance against the market index, the Fama French factors as well as major industry portfolios. The portfolios are rebalanced once every year on the same day a new ranking is published. The RQ rankings have been conducted yearly for almost 20 years and our study investigates the stock performances during the period of 2001-2018, providing an interesting scope of pre- and post-crisis development. Once the results are extracted, a detailed analysis of the return and risk properties are conducted and any underlying reasons for above, below or average performance are discussed, as well as which sectors are over- or under represented among the different portfolio strategies. The results are ultimately discussed in the context of finding possible investing strategies and the feasibility to add the reputation factor to current factor investing models.

2. Literature Review

In this section, an overview of the most relevant prior research on the link between corporate reputation and financial performance is presented. The varying methods, theoretical frameworks and results of earlier studies illustrates the inconclusiveness of the academic opinion on how to measure corporate reputation and its possible relationship to financial performance.

2.1 Corporate reputation as a driver of financial performance

So far, the research which has been done regarding the link between corporate reputation and financial performance can either be categorized as qualitative investigations on why corporate reputation should be regarded as an important asset or quantitative studies which use proxies of corporate reputation to link it to financial performance.

2.1.1 Qualitative investigations on corporate reputation as an asset

In management literature, some academics (Prahalad and Hamel, 1990; Sanchez & Heene, 1997) highlight perceived quality of core activities as being an indicator of subsequent improved financial performance. Research within the field presents numerous explanations on why high reputation could be a contributing factor to future financial performance. Both tangible and intangible benefits are believed to result from good corporate reputation and most explanations refer to improved perceptions and attitudes towards the company among its different stakeholders. The reasoning is based upon the necessity of sustainable bonds with various stakeholders in order to succeed and survive as a firm. Hence, corporate reputation improves the perception among the stakeholders which in turn can lead to improved financials for the company.

Not only do different studies suggest that corporate reputation influences the sentiments and practices of investors, but also other stakeholders like customers and staff (Helm, 2007; McMillan-Capehart et al., 2010). From a client perspective, corporate reputation can be a way to differentiate between alternatives, make customers more confident about their choices and increase the willingness to accept paying a premium (Graham and Bansal, 2007; Caruana and Ewing, 2010; Rindova, Williamson, Petkova, and Sever, 2005). Some aspects of corporate reputation such as perceived social responsibility have been linked to the level of appreciation for new product offerings among customers (Brown and Dacin 1997). Another intangible benefit from high corporate reputation is the increased likelihood of attracting and retaining employees with key competences (Swider et al., 2011; Carmeli and Freund, 2002).

Through showcasing trustworthiness and credibility, companies can reduce the perceived uncertainty among stakeholders and reduce the worries about asymmetric information. Thereby, companies can be regarded as less unpredictable and opportunistic in the context of a business relationship or cooperation. As the need for monitoring and incentive alignment reduces, the ease of doing business with such a partner ameliorates which will increase the appropriateness as a business partner and improve the conditions to achieve better financial performance (Fombrun, 1996; Fombrun & Van Riel, 2004; Mishina et al. 2012). Moreover, if companies can showcase an ability to both meet social norms and a high capability of delivering results, it becomes easier for them to get institutional support, moral validity and backing from business partners (Handelman and Arnold 1999, p. 34; Scott 1987).

2.1.2 Quantitative studies on the link between corporate reputation and financial performance

Most of the literature regarding the link between corporate reputation and future financial performance are based on a stock-return perspective rather than accounting-based measurements of financial performance. As a large portion of the companies at the upper end of reputation rankings are publically traded firms, this choice of perspective is not an impeding factor for investigating this link. For obvious reasons, it is also the most adequate way for looking at corporate reputation from an investor perspective.

According to Barber & Odean (2008), there is proof that the broader investing community regards "good firms" as being "good for investors". This perspective may be caused by the suggested impact a good reputation can have on lowering companies' cost of capital and thereby increasing the equity value (Cahan et al., 2014; Shamma, 2012; Kim and Cha, 2013).

As corporate reputation is an intangible resource, it is difficult to determine the relative amount of reputation which each firm possess. Hence, researchers have used different kinds of methods and proxies to investigate its link to financial performance. Even though the findings are inconclusive, most empirical studies have shown a positive relationship between corporate reputation and financial performance.

Antunovich and Laster (1998) investigated the financial performance of American corporations in the Fortune reputation rankings and found that corporate reputation is directly linked to risk adjusted abnormal stock returns after the publication of the rankings. In general, the favourably ranked companies over-performed while the less admired firms had disappointing performance, especially during the three upcoming quarters after reputation ranking publication. A few years later, the same researchers (2000) conducted a similar study on deciles of "America's most admired companies" and concluded that the top decile yielded average annual returns of 5.2%

more than the bottom decile during the upcoming year after the publication of the ranking. In their method, they accounted for standard risk factors including value and size but not sector performance. The superior performance of the top decile could not be explained by higher systematic risk.

In 2007, Krueger and Wrolstad studied the returns of companies in the Harris Poll which measures a metric called "reputation quotient" or RQ. Although they showed that portfolios with high RQ ratings performed better on a stock return basis (both on the publication date and during the subsequent year) than those with low RQ rating, the results were not statistically significant. However, in 2016 Krueger and Wrolstad used a bigger sample size of the same ranking and could showcase statistically significant risk adjusted superior ex post returns among highly ranked companies vis à vis companies at the lower end of the ranking. Filbeck and Preece (2003) study both immediate price reactions as well as and buy-and-hold abnormal returns. They show that companies having good reputation tend to have above average risk adjusted returns and significant alphas. These findings go in line with other studies regarding the link between reputation and financial performance (e.g. Roberts and Dowling, 2002; Sabate and Puente, 2003).

Contrary to the abovementioned research, Brammer (2006) estimated the abnormal return to be negative when holding a portfolio of the 10 most admired companies in Management Today's ranking between 1994 and 2003. Brammer believes that the below market performance was mainly due to the high level of idiosyncratic risk from holding a portfolio of 10 companies, manifested e.g. through a yearly drop in one of the holdings by 36% in 1998-1999. Nonetheless, Brammer also concluded that a portfolio consisting of the top 50 firms had an average abnormal return of 3,4% during the same period.

Not all studies have showcased strong results, as an example, Agarwal et al. (2005) also used data from the rankings of Management Today but could not conclude that high reputation scores are linked to higher returns after the publication of the rankings. These findings are consistent with the research by Wade et al. (2006) and Malmendier & Tate (2005). Moreover, Chung et al. (1999) noticed indications of superior returns for companies with good reputation, but the abnormal return was insignificant when adjusting for risk. As Brammer (2006) notes; the differences in the methods and techniques of portfolio construction employed to detect abnormal returns may be the root cause of the inconsistent results.

The different studies are not only inconclusive regarding the performance of companies at the top and bottom of the rankings. Additionally, studies on the returns of companies which have risen or fallen substantially in the rankings from year to year draw a complicated picture. In 2009 Krueger found out that the companies which had experienced substantial decreases in RQ also had

abnormal risk adjusted stock returns the upcoming year, while the ones which had the highest increases in RQ got negative abnormal returns. Brammer (2006) found that abnormal returns can be achieved by investing in both the stocks of the companies whose score had risen and fallen substantially. He also found that a zero-cost portfolio of longing the most rising companies and shorting the ones who fell the most renders an average annual return of 3,5%.

2.2 Risk factors

All stock return performances must be analyzed in relation to the incumbent risk, something which also has been taken into consideration in prior studies. Not only is it important to determine the general volatility of an investment strategy, but also to analyze how the portfolio of the chosen strategy behaves in relation to well known risk factors. From a traditional financial theory standpoint, continuous abnormal returns cannot be gained from investing in companies with a specific reputation characteristic if the returns are adjusted for risk factors. The most common risk factor is the market beta which is the only risk factor in the CAPM model. Furthermore, factors such as size, book to market value, momentum and sector performance might be related to the behaviour of reputation based models. Keeping close attention to what risk factors to include in the analysis is paramount to determining the validity of the results. As an example, the abnormal returns of rising/falling companies in Brammer's (2006) study diminished when more sophisticated comparators like value, size and momentum were included.

Regarding the link between corporate reputation and common risk measures, there is once more inconclusive findings. In 2010, Pfarrer et al. showcased that stocks of companies with higher reputation scores possess interesting skewness proprieties as companies with a good reputation got higher stock returns due to positive surprises as well as lower price decreases for negative surprises. In two of Krueger and Wrolstad's studies (2007 & 2016), the portfolios consisting of stocks of companies with high reputation had both relatively low volatility and market beta, which in combination with high returns contributed to attractive risk adjusted abnormal returns. Moreover, Krueger and Wrolstad (2010) also found that companies which experienced a significant increase in RQ had higher market betas. On the other hand, Brammer (2006) found that the volatilities of all studied portfolio strategies (top, bottom, rising and falling reputation) showcased similar levels as the market index. Regarding firm size, Chung (1999) found that larger firms generally have higher corporate reputation rankings than smaller firms which would indicate a negative correlation to the SMB factor.

2.3 How to measure corporate reputation

As corporate reputation is not directly observable, the empirical research on investment returns are limited to using different proxies to assess the reputation. Money & Hillenbrand (2006) notes that there is truly no consensus on how to measure corporate reputation. True for all different proxies is the lack of long historical data and the limited number of covered companies. Adding to that are methodical constraints and differences in practices which makes it even more complicated (Ponzi et al., 2011; Walker, 2010; Dowling and Gardberg, 2012). Moreover, there are also differences in the meaning of corporate reputation and how to break it down into smaller components. (Brammer et al., 2015) and (Mishina, 2012) make distinctions between different types of reputation (character and capability reputation), while methods like the Harris poll break reputation down into six different subcategories which aggregates into a general reputation score. However, in most studies reputation is regarded as in terms of general favourableness (Rindova, Williamson, Petkova, and Sever, 2005).

Some metrics used in reputation ranking have been subject to critique from researchers as the methods permit "halo effects". This can take the form of chosen assessors who give biased views depending on specific information regarding financial performance etc. It can also arise from having a firm view on a specific aspect which affects the views of other aspects as well (Flanagan, O'Shaughnessy and Palmer, 2011; Highhouse, Broadfoot, Yugo, and Devendorf, 2009). A possible example of "halo effects" is the relationship between financial performance during the survey period and upcoming reputation rankings which Chung et al (1999) noticed in their study.

Most approaches to measure corporate reputation are based on interviews and surveys. Rankings made by Fortune Magazine, The Economist, Forbes, Management Today etc. put an emphasis on the opinions of people inside the industries such as CEOs, sector analysts among others. As an example, Management Today ask respondents to rate each company within their industry based on nine indicators whose average score constitutes the overall reputation score (Brammer 2016).

Another important approach is the Reputation Quotient developed by Charles Fombrun (2001) together with Harris Insights & Analytics. This approach is used to assemble the yearly Harris Poll ranking on the most visible companies and their respective RQ. An important feature of the RQ approach is that the opinion of the general public is taken into consideration by picking a large sample of respondents which are representative of the overall American population. The process is divided into two phases where respondents in the nomination phase are asked to mention two companies which they think have a good reputation and two companies with a bad reputation. This open-ended approach is conducted to determine which companies are the most

visible ones. In the subsequent ratings phase, each respondent is asked to rate two companies familiar to the respondent. Last year each company received at least 300 ratings. The analysis is based on six components of corporate reputation which are; "products & services", "vision and leadership", "emotional appeal", "workplace environment", "financial performance", and "social responsibility". Once the ratings are in, the ranking is determined on a scale between 0 and 100. Since 1999, the rankings have been conducted and are published yearly (most often in the first quarter, although the publication date varies) (Harris Insights & Analytics 2018).

2.4 Motivation and Hypotheses

The increasing emphasis on ethical investing are shaping the way in which many institutional and personal investors allocate their funds. Numerous are the recent instances of funds who actively decide to abstain from investing in certain companies due to various reasons which all are related to company reputation. Hence, it is becoming increasingly important to be aware of the general characteristics of financial performance among firms with good reputation and firms with bad reputation. In that way, investors can have clearer picture of the general consequences of investing or not in companies with a certain type of reputation.

Additionally, it is not only interesting to assess certain investments in respect to their reputation. It could also be interesting to create and analyze pure reputation based investment strategies to see whether they render any abnormal returns in respect to their exposure to risk factors. This could be an interesting compliment to the already existing smart beta/factor investment strategies which are most often based upon more tangible metrics such as book value, market capitalization etc. Hence, it is crucial to compare the returns along with the similarities of the risk characteristics between the reputation based strategies and other well established investment strategies.

We believe that this study will contribute to the existing research in many ways. Firstly, we have more data since the amount of available data has increased with the passing of time. We note that many of the first studies had around 10 years of data (Chung et al 1999, Brammer 2006 etc.) while we can rely on more than 15 years of data which might lead to an increased validity of our results. Moreover, we aim to measure the financial performance not only in relation to the most standard risk metrics such as standard deviation and the behaviour of the market index (Krueger 2016), but also in relation to other risk metrics including Fama French three factors and industry sector portfolios. This will not only contribute to the discussion whether strategies based on corporate reputation can render abnormal risk adjusted returns, but also provide an interesting view on how to assess reputation based investment strategies from a risk perspective.

In addition to investigating investment strategies based on ranking placement, we will also analyze strategies based on verifiable changes in corporate reputation. This will allow us to both analyze the characteristics of financial performance from having a certain kind of reputation and if there are effects on financial performance when a corporate reputation reverts or deviates from its normative level.

Based on the literature review and our motivation for conducting this study, we assert the following hypotheses;

H1: A stock portfolio with holdings in companies having relatively high reputation is likely to achieve positive abnormal returns relative to their benchmark risk factor model.
H2: Reversely, a stock portfolio with holdings in companies having relatively low reputation is likely to achieve negative abnormal returns relative to their benchmark risk factor model.
H3: A portfolio of holdings in companies experiencing a significant rise in reputation is likely to achieve positive abnormal returns relative to their benchmark risk factor model.
H4: Reversely a portfolio of holdings in companies experiencing a significant decline in reputation is likely to achieve negative abnormal returns relative to their benchmark risk factor model.

The cornerstone of these four hypotheses is that having or gaining high corporate reputation is associated with getting alphas above the return which is expected from the portfolios exposure to risk factors. However, it is beyond the scope of this thesis to exactly determine why any such alpha would occur. Nonetheless, a discussion regarding the possible explanations of the results will follow. Our hypotheses do not necessarily imply that higher corporate reputation should be associated with high stock returns, as their expected returns might be lower than for companies with low reputation. Instead the suggested link is between high/low corporate reputation and risk adjusted superior/inferior returns in the form of Jensen's alpha.

Furthermore, we state a fifth hypothesis concerning risk profile;

H5: Portfolios consisting of holdings in companies with high/low corporate reputation will have significantly different risk profiles in relation to well known risk factors.

This hypothesis is based on the perception of unequal sector adherence among the different reputation segmented groups.

Lastly, we assert a sixth hypothesis based on the four aforementioned hypotheses which considers reputation as a factor to add explanatory value to current risk factor models:

H6: Should statistically significant results be obtained in regard to the abovementioned hypotheses, a complementary risk factor based on reputation could be added to existing factor risk models and contribute with additional explanatory value.

3. Data & Methodology

This chapter outlines the methodology undertaken to conduct this research and is divided into eight parts. The first part explains the Harris Poll Reputation Quotient which is used as proxy for reputation. The second part describes the sample and includes the data collection process, sample size and portfolio structure. After this, time-period considerations regarding scope is presented. The following part defines the performance measures which includes returns vs. earnings, total returns including dividends reinvested, transaction costs and portfolio rebalancing. The fifth part defines the benchmarks and includes the risk-free rate, market beta, value vs growth and size while the sixth part explains the performance ratios used to evaluate the risk-adjusted abnormal returns relative to benchmark risk factors. Finally, the approach on how to test a reputation-based risk factor is presented, followed by a section on the robustness of our approach.

3.1 Proxy

The Harris Poll Reputation Quotient is used as proxy for reputation and delivers a robust measurement of corporate reputation of America's most visible companies. The poll is conducted by American analytics firm Harris Insights & Analytics since 2000 and is published on an annual basis. This qualitative study is considered to be a reliable and credible source of corporate reputation in the US and has proved to be a useful tool for managing reputations and identifying market risks and opportunities. The study measures the reputation of the 100 most visible companies in the US, as perceived by the general public. Over 25,000 people (2018) are interviewed and each company is rated by at least 300 people. The poll is built on a framework of six dimensions including social responsibility, product & services, emotional appeal, vision & leadership, financial performance and workplace environment. Within the six dimensions are 20 attributes and the responses are summed to a reputation score, as follows:

$$[(Sum\ of\ ratings\ of\ each\ of\ the\ 20\ attributes)/(\#\ of\ attributes\ answered\ x\ 7)]\ x100$$

Formula 1. Calculation of RQ score

The maximum RQ score is 100. The RQ performance thresholds are:
80 & above: Excellent | 75-79: Very Good | 70-74: Good | 65-69: Fair | 55-64: Poor | 50-54: Very Poor | Below 50: Critical

Besides being a very rigorous study, the Harris Poll enjoys several benefits compared to other surveys. The Harris poll includes low performing firms, making it more useful for academic

purposes. Furthermore, the poll constitutes the perspective of the general public as compared to conducting surveys among respondents working in a certain industry or corporation.

3.2 Sample

3.2.1 Data Collection process

Daily returns data on all 135 companies which were part of one or more sample portfolios as well as for relevant indices during the period of 2001-2018 was collected from the database of Thomson Reuters. Data on the control variables size and book-to-market, as well as for major industry returns was collected from the database of Kenneth R. French.

3.2.2 Size

The number of firms in the Harris Poll obviously confines the sample size. The poll includes 45 firms in 2001, 60 firms during the years 2002-2013 and 100 firms since. There is an inherent risk of being either too idiosyncratic by including too few firms versus being too general by including too many in the relevant population. For above-mentioned reasons, the top- and bottom10 firms each year are used to construct portfolios. An alternative approach would be to set a threshold of ranking but looking singlehandedly at a particular score could result in including too many or too few firms each year. Furthermore, since the poll constitutes only 45 firms in the outset, choosing a larger sample would imply that the reputational differences between portfolios are less substantial. Lastly, other studies in the field have used top10 and bottom10 which makes this study comparable.

3.2.3 Portfolios

Four portfolios are created based on data from the polls between 2001-2018; top10, bottom10, delta top10 and delta bottom10. The top- and bottom10 portfolios consist simply of the top and bottom ranked firms each year, regardless of actual score. The delta top- and bottom10 portfolios consist of firms experiencing the largest change in RQ score between two publications, not necessarily in consecutive years. Choosing the most recent publication instead of only using firms which are included in the poll in sequel years is motivated by an expected consistency in reputation. A returning firm having been absent from the poll is likely to have retained their reputation, all else equal. In this study, a firm retains its reputation point of reference up to three years back in time if it was absent in the two earlier studies. A significant change in score suggests that the firm has engaged in beneficial or destructive behaviour affecting reputation, and should thus be a subject of study.

Hence, the approach to construct a delta RQ portfolio is to look at all the listed companies which are on the current Harris poll RQ list, and then see what their score was last time they were on the list (looking back up to three years). The 10 companies that have seen the highest increase (decrease) in RQ score (absolute values, not percentage change) will be part of the delta top10 (delta bottom10) portfolio.

Any abnormal returns exhibited by the portfolios in comparison to the market and the control variables are investigated in accordance with the hypotheses. Equal dollar amounts are invested in each firm and the equally weighted returns are summed to compute portfolio returns. The reason for using equally weighted portfolios instead of e.g. value weighted portfolios is to decrease idiosyncratic risk as the number of companies in each portfolio is only 10 at a time.

3.3 Scope

The Harris Poll commenced in 2000 and the obvious ambition is to include as many years as possible to get more statistically viable results. Nonetheless, the period 2001-2018 is the most suitable due to two reasons. Firstly, the Poll had only 40 firms in the outset of the year 2000, making reputational differences between top- and bottom10 less significant. Secondly, since the delta top- and bottom10 portfolios require at least two consecutive years of data in order to obtain results, 2001 is the first year enabling the creation of a delta reputation portfolio. Thus choosing the release date of the RQ rating in 2001 (January 8th) as starting date makes all four portfolios fully comparable. The ending date for the scope is April 30th, 2018 as it represents the last day for which Fama French factors were available at the start of our quantitative analysis.

The time period of 2001-2018 is characterized by different economic circumstances, commencing with the aftermath of the dotcom-bubble with strong markets leading up to the financial crisis and market crash in 2008, and subsequently experiencing almost a decade of a strong markets again. This provides for an interesting comparison of portfolio development for the time periods of pre- and post the financial crisis.

The Harris Poll occasionally includes firms which subsequently fall into bankruptcy, is acquired or merged, before the next survey. Other studies have excluded such firms to avoid extreme values. However, we retain such firms in the portfolios with the argument of it being a more appropriate approach. For example, a bankrupt firm would likely correlate with being low rated and included in the bottom10 portfolio and excluding such firms would cause the risk-adjusted returns of the bottom10 portfolio to be misleading as it does not reflect the bankruptcy risk. If a company within a portfolio is acquired, the value of the holding is reinvested in the acquiring company and held during the remainder of the period.

3.4 Performance measures

3.4.1 Returns metric

Significant results from this study could lead to predictability of abnormal returns and thus pave way for new smart beta/factor investment strategies. Therefore, we take the investor point of view in deciding performance measures. We make the assumption that reputation is relatively persistent, whilst accounting metrics such as short-term quarterly earnings is often mannered by analysts' pressure. Stock prices should capture all the eternal future expectations of the firm, thereby assuming returns should capture reputational effects as well. In consideration, returns are deemed more suitable than earnings as performance metric. Moreover, returns data are more readily available than earnings and available in much shorter time intervals.

Total return including reinvested dividends is employed as return metric. From a first glance perspective, there might be differences between the top- and bottom10 portfolios with respect to dividends, suspecting that top10 firms tend to have a more restricted dividend policy (due to higher exposure to tech companies, while the bottom10 strategy has more exposure to the financial sector). Utilizing total returns including dividends provides for an accurate and easily measured performance while mitigating potential discrepancies between our portfolios and avoids potentially misleading results.

3.4.2 Portfolio rebalancing & Transaction costs

The portfolios are rebalanced once each year when the Harris poll is published which represents the latest available information of the firms' reputation. Alternatively, the portfolios could be rebalanced in shorter time intervals to always keep a 10% weighting in every company. However, more short-term trading would increase transaction costs and thus affect returns negatively.

Transaction costs are assumed to be negligible since the portfolio rebalancing occurs only once each year. In addition to this, transaction costs have continued to drop to quite modest levels during the years of our study.

3.5 Regression equation

The traditional CAPM model only uses the one variable beta to describe a stock- or portfolio's return in comparison with the market as a whole. The Fama French three factor model includes the two additional factors size (SMB) and book-to-market (HML) to reflect the portfolio's exposure to these two classes as well. In the realm of factor investing, the Fama French three factor

model possesses increased explanatory value beyond the CAMP and is consequently used for assessing the portfolio returns.

$$R_{it} - R_{rf} = \alpha_i + \beta(R_{mt} - R_{rf}) + \beta_{is}SMB_t + \beta_{ih}HML_t + \varepsilon_{it}$$

Formula 2. Fama French 3 factor excess return formula

R_{it} is the portfolio return measure and constitutes the total return including dividends reinvested between two consecutive RQ poll publications. Paired t-tests are subsequently run to compare the estimated risk-adjusted returns for the different portfolios.

3.5.1 Alpha & Beta

Any significant intercept from the regressions is revealed in the form of alpha. The Jensen's alpha is used to define the excess return of a holding, adjusted for the risk-free rate and its benchmark risk factors. In addition to this, regressions are run to ensure that any contingent alpha still holds while controlling for the Fama French variables. The following formula corresponds to alpha for the CAPM model.

$$\text{Jensen's alpha} = R_i - R_{rf} - \beta(R_m - R_{rf})$$

Formula 3. Jensen's alpha formula in the CAPM model

The beta (β) is systematic risk, which together with the corresponding coefficients for size (β_{is}) and book-to-market (β_{ih}) are determined by running linear regressions.

3.5.2 Risk-free rate & Market return

R_{rf} is the risk-free return rate and is represented by the US one-year Treasury bill. Since the Harris Poll is published on an annual basis and the portfolios are rebalanced once each year, the one-year bill coincides with the investment horizon.

R_m represents the return of the S&P500 index which is appropriate considering that the portfolios consist of mainly American firms. In addition to this, the S&P500 has outperformed global market indexes such as the MSCI during the sample period, making any significant results more robust.

3.5.3 Fama French factors Size (SMB) & Value vs. Growth (HML)

The fact that small cap stocks historically have outperformed large cap stocks is captured by the second variable (SMB) in the Fama French three factor model. The last variable (HML) uncovers the returns of value stocks versus growth stocks. Firms with relatively high book-to-market value have historically outperformed growth stocks with lower book-to-market ratio. Controlling for size and value discloses the robustness of any alpha obtained by using only the CAPM. Moreover, controlling for size and value also provides for an easier comparison to other studies in this field which have included these factors.

3.5.4 Industry benchmark

We benchmark our portfolio returns against major sector returns in order to discover any correlations and thus revealing if any of the portfolios are weighted especially against a certain industry. We also conduct an analysis to see if any of the industry portfolios could out- or underperform any investment strategy with statistically significant returns in terms of return measures and risk exposures.

3.6 Performance ratios

Three performance ratios are used to evaluate returns. The purpose of measuring these ratios is to determine if any abnormal results are explained by increased risk-taking or still holds after risk-adjusting. The traditional Sharpe ratio measures returns in excess of the risk-free rate per unit of total risk.

$$Sharpe\ ratio = \frac{(R_i - R_{rf})}{\sigma_i}$$

The Treynor ratio is similar to the Sharpe ratio but measures return in excess of the risk-free rate per unit of systematic risk.

$$Treynor\ ratio = \frac{(R_i - R_{rf})}{\beta}$$

Lastly, the Information ratio measures returns in excess of a benchmark (S&P500) divided by the amount of risk inherent in the benchmark. The denominator is the standard deviation of the excess returns above the S&P500.

$$Information\ ratio = \frac{(R_i - R_b)}{\sigma_{ib}}$$

Results from these performance ratios together with any discovered alpha offers an exhaustive explanation of any abnormal returns and are useful for comparative purposes.

3.7 Reputation-based test factor

If any investment strategy should show significant results, positive or negative, the investment strategy will be used to create a reputation based test factor by adding it to other market models to see how well it does to explain stock returns. This approach is similar to how Fama and French (1997) tested their three factor model against different segment portfolios. The approach is to measure if the addition of the new risk factor can contribute to decrease the mean absolute value of the industry alphas and the number of statistically significant alphas. An ideal market model aims to minimize the mean absolute value of the alphas to show that portfolio returns are mostly due to risk factor exposures. The approach will be to add any possible reputation-based test factor to the CAPM or Fama French three factor model and see if it adds explanatory power to the industry returns.

$$R_{it} - R_{rf} = \alpha_i + \beta(R_{mt} - R_{rf}) + \beta_{is}SMB_t + \beta_{ih}HML_t + \beta_{ir}REP_t + \varepsilon_{it}$$

Formula 4. Extended market model including reputation based factor

3.8 Robustness check

Certain choices are made to ensure robustness in the results. Firstly, the for the sample period relatively outperforming S&P500 is used as the market index which increases robustness compared to using relatively underperforming MSCI world market index. Secondly, any returns are interpreted with regards to the underlying economic environment prevailing at the time. The results are displayed in a pre- and post financial crisis manner to see if any significant results are contingent on the economic environment or if the results hold throughout the whole sample period. Another important way to assess the robustness of our findings is to carry out the quantitative analysis by using value weighted portfolios instead of equally weighted portfolios. This is done by allocating the portfolios in proportion to the market capitalization of each company in the portfolios on the day of RQ publication. This tilts the portfolios more towards the bigger companies and less towards the smaller ones and therefore increases idiosyncratic risk.

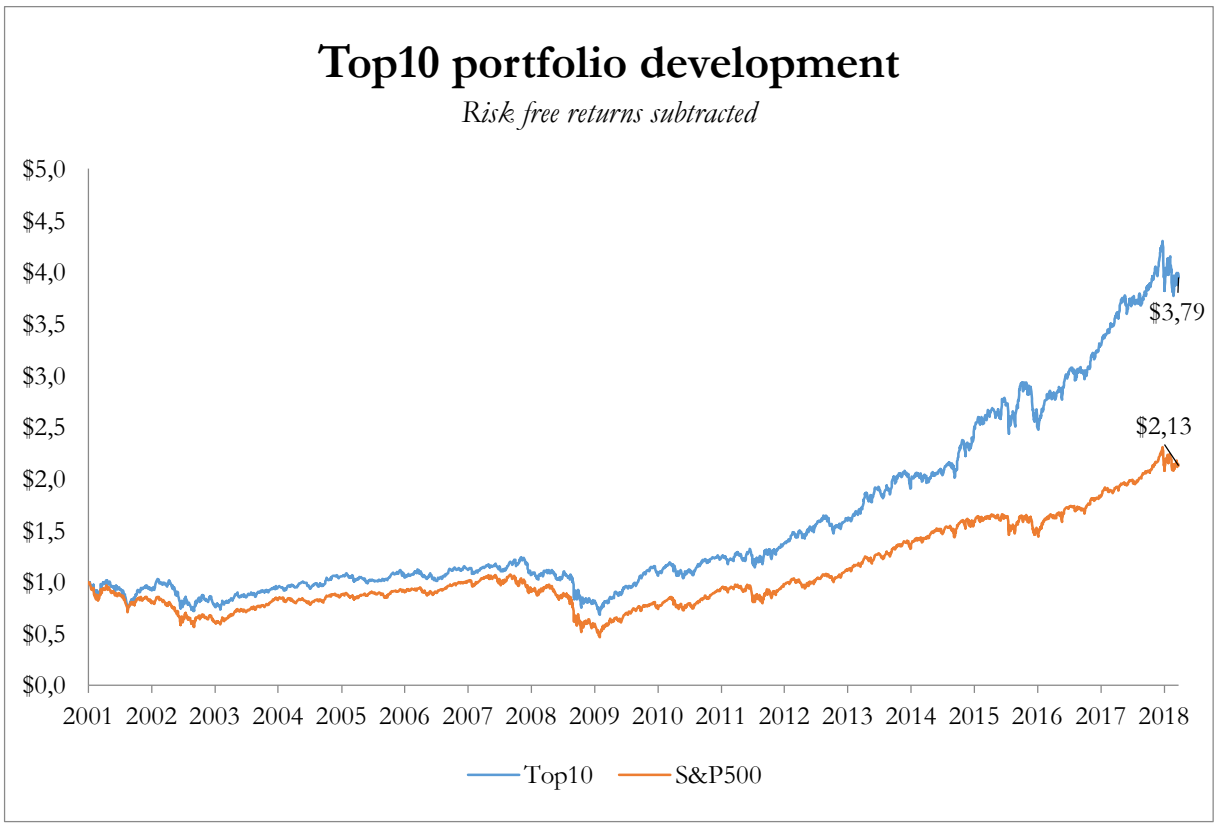
4. Results

In the following section, results and analysis regarding the performance of our reputation-based portfolios are presented. Each portfolio is discussed separately in relation to the market and the Fama French factors. Thereafter, an analysis covering their performance from an industry weighting perspective is displayed. The section also covers a robustness check and the testing of a reputation based factor.

4.1 Portfolio development

4.2.1 Top10 portfolio

The development of a portfolio following the top10 strategy in relation to the S&P 500 index during the 17-year estimation window can be broken down into three phases. During the initial phase, the portfolio had similar returns as the S&P500 index until a breakthrough by the end of the dot-com bubble burst where the top10 portfolio bumped back stronger. During the second phase from 2002 until the financial crisis in 2008, the two strategies appreciated almost in lockstep in regard to each other with only some short periods of a narrowing gap during the mortgage crisis. The third period starts by the bottom mark in early 2009 and stretches until today where the top10 has had a stable stronger development than the S&P500. The rise in value is due to a broadly distributed price appreciation among the constituents of the portfolio (median holding price appreciations ranging from -3% to 39% during the latter half of sample period), although it is accelerated by Amazon which is part of the portfolio in each study since the one conducted in 2008. Amazon's stock price has appreciated c. 23x since the publication of the 2008 study, although the top10 strategy does not capture the whole value appreciation since the holding in Amazon is rescaled back to 10% at the publication of each RQ study.



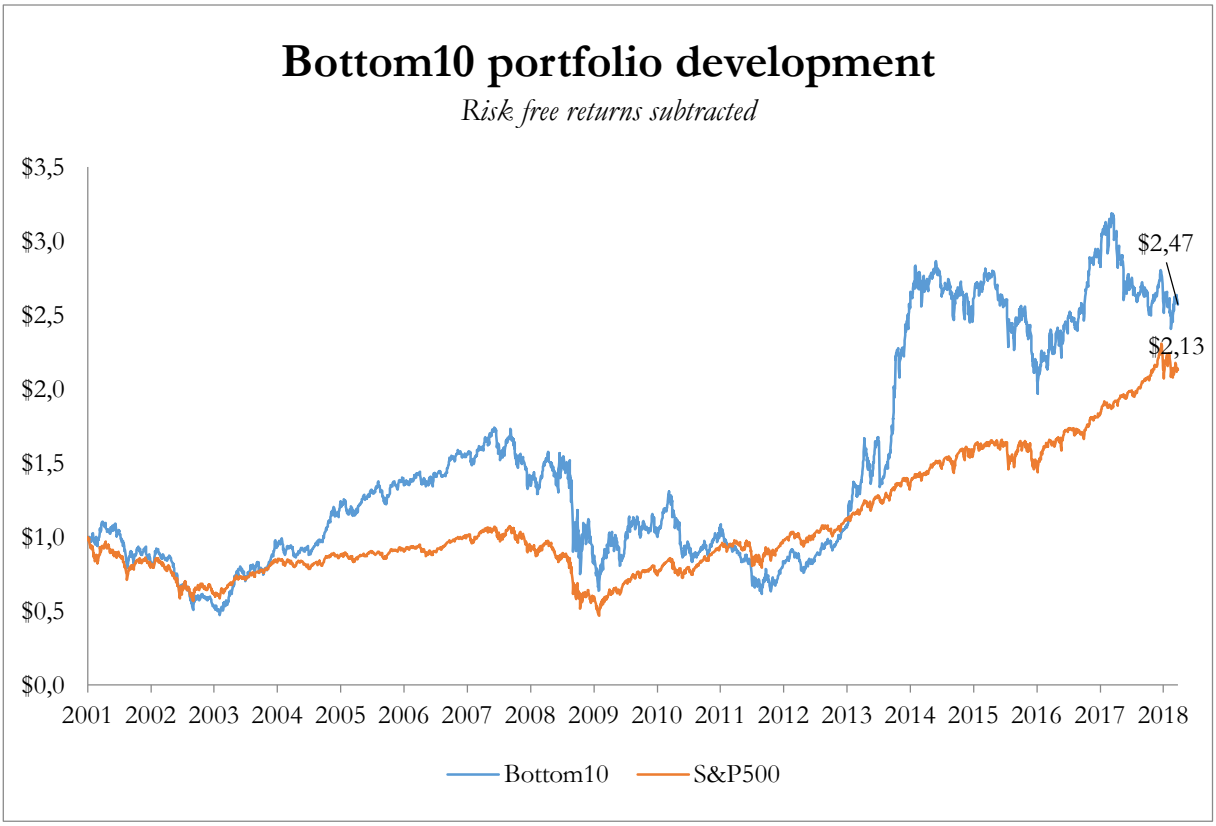
Graph 1. Top10 portfolio development above risk free return

From the regression analysis (see table 1.), it can be noticed that the top10 strategy has a risk-adjusted excessive return amounting to 4.54% on an annual basis on a 5% significance level. The market beta is around 0.75 which signifies that the top10 portfolio strategy has a below-average market risk. Additionally, the skewness of the top10 return distribution is remarkably higher than the one of the market, and the only portfolio having a positive skewness for the whole period. An average yearly return of 9.52% above the risk-free rate along with a yearly standard deviation of 0.16 gives a Sharpe ratio of 0.58 which is far above 0.34 of the market index. The superior performance of the top10 portfolio can also be showcased by a Treynor ratio almost double the size of the market return above the risk-free rate and through an information ratio of 0.33.

By introducing two additional factors according to the Fama French three factor model, the alpha becomes even more significant and larger (see table 2.). This is possible due to the negative betas which the top10 portfolio has in regard to the SMB and HML factors. All factors add explanatory power to the portfolio development as they are all significant on the 1% level and R2 increases to 0.78 from 0.76.

4.1.2 Bottom10 portfolio

By observing the portfolio development of the bottom10 portfolio, it can easily be concluded that it has higher volatility than the market index as it both rises (notably in 2013 due to the holding of AMR, see delta bottom10 portfolio below) more sharply and falls more steeply than the market index. But as the bottom10 portfolio has also appreciated more than the market index, its riskier profile seems to be rewarded.



Graph 2. Bottom10 portfolio development above risk free return

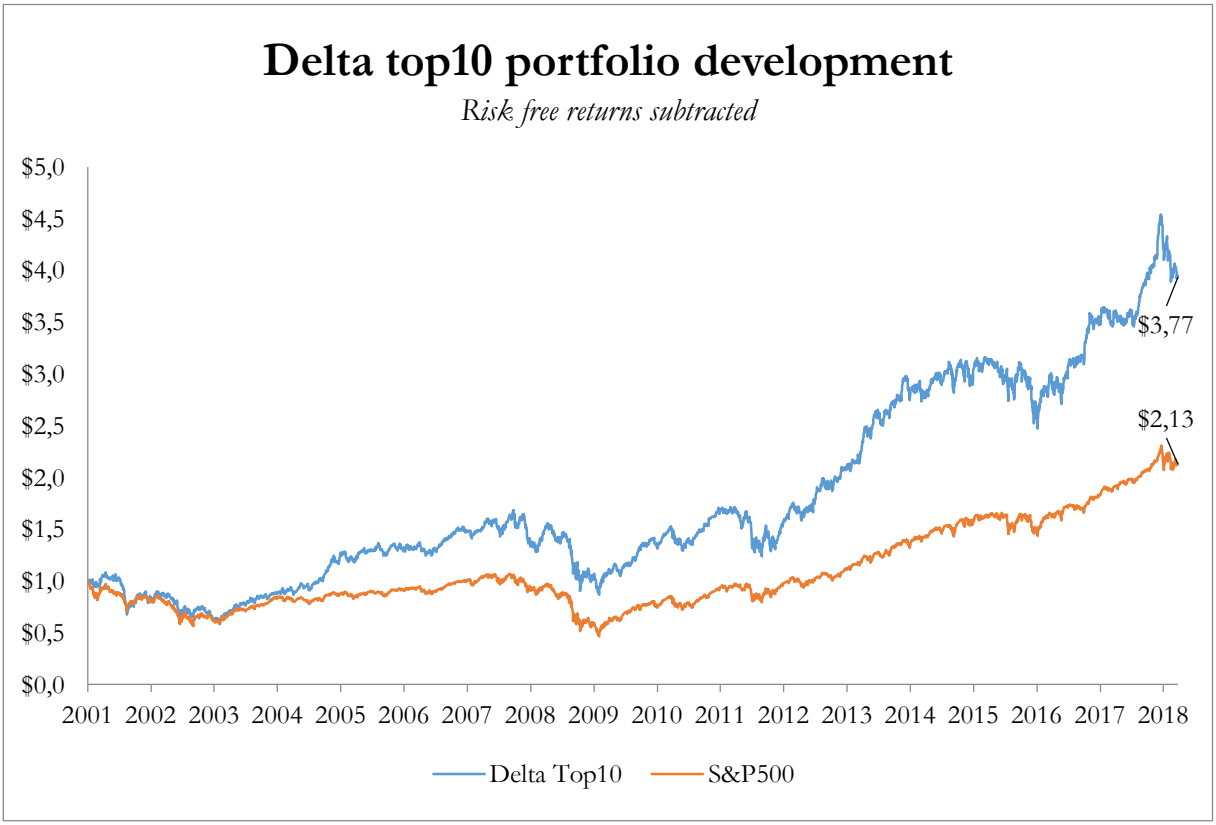
Although the bottom10 portfolio has a Treynor ratio above the S&P500 average return, and a positive information ratio of 0.18, the bottom10 portfolio has no proven reward in relation to its riskiness (see table 1.). The Jensen's alpha at 2.0% annually is far from statistically significant and its Sharpe ratio is only slightly higher than that of the S&P500. The skewness of the bottom10 portfolio is more than twice as low as that of the market portfolio. As suspected from the above graph the market beta is above 1 at 1.13, although the market index only account for a R2 of 0.63.

With the additional two Fama French factors introduced, the abnormal return shrinks and slides even further away from any important level of significance (see table 2.). Interestingly, the two additional betas add explanation to the risk profile of the bottom10 portfolio as it is positively

exposed to both the SMB and HML factors. R2 is still below 0.70 but up a bit from only looking at the market index.

4.1.3 Delta top10 portfolio

The portfolio development of the delta top10 portfolio can be described as shifting periods of similar movement as the S&P500 index coupled with some periods of stronger growth and occasional steeper falls. But all in all, the delta top10 portfolio has performed better than the S&P500 index during the estimation period.



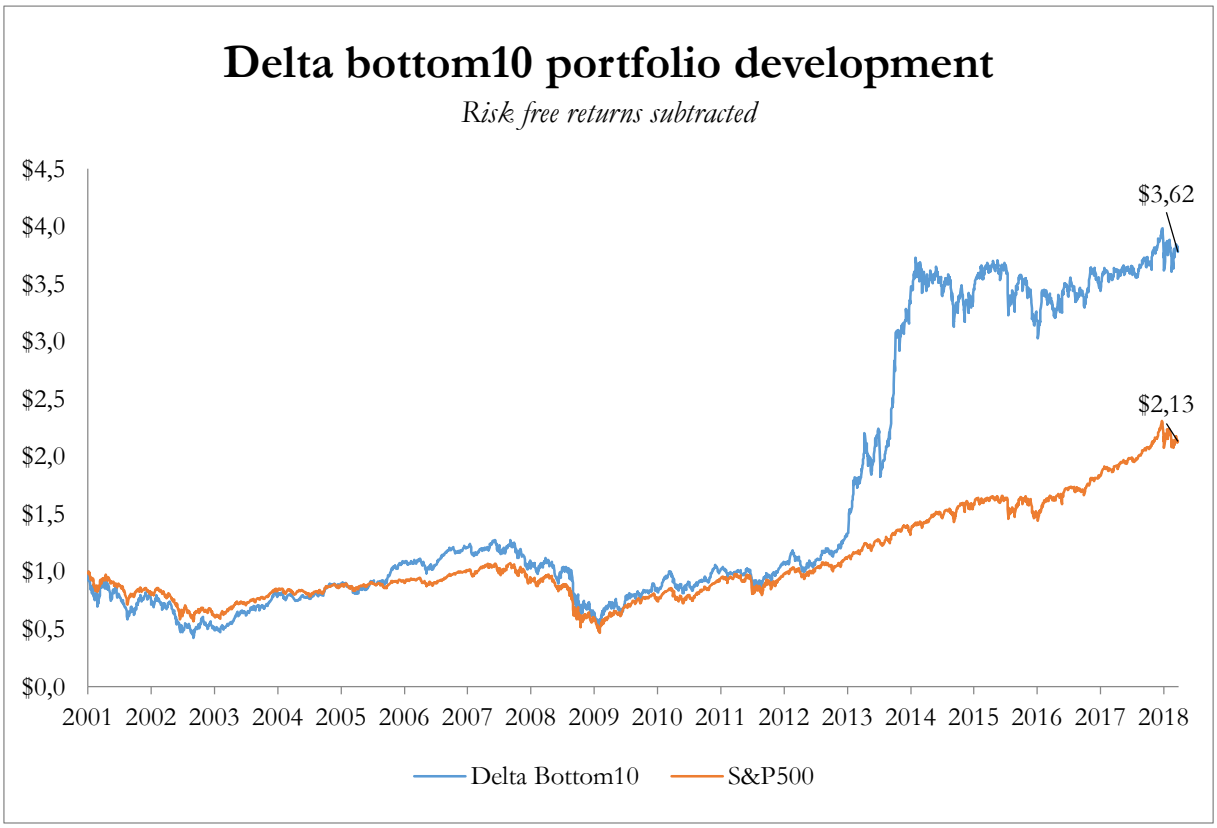
Graph 3. Delta top10 portfolio development above risk free return

The Jensen's alpha of the Delta top10 portfolio is at an annual level of 4.3% and makes it to the 10% significance level but not the 5% level (see table1.). With a market beta of 0.87, it has less market risk than the market as a whole, contributing to a Treynor ratio almost twice the size of the average market return. With an average yearly return of 10.08% the delta top10 portfolio has a Sharpe ratio far above the one of the S&P500 and an Information ratio of 0.36. However, the skewness of the delta top10 portfolio is significantly lower than for the market portfolio and the lowest for the whole period among all portfolios. One partial explanation for the low skewness could be the high average return of the portfolio.

With two additional risk factors the alpha decreases and does not make it to the 10% significance level. The explanatory power manifested by R2 only increases marginally, although one can observe that the risk profile of the delta top10 portfolio also can be explained by a positive exposure to foremost the SMB factor but also to the HML factor.

4.1.4 Delta bottom10 portfolio

During most of the estimation period the delta bottom10 portfolio moved in lockstep with the S&P500 index, showing signs of slightly higher volatility. But during 2013, the portfolio hit the jackpot and more than tripled in value. The remarkable spike in 2013 was mainly due to the holding in American Airlines who announced its merger with US Airways only two days after the publication of the 2012 RQ study. AMR, the holding company of American Airlines was under chapter11 bankruptcy at the time, but as part of the restructuring deal the shareholders of AMR would have an ownership stake in the new entity, saving shareholders from losing their money (Reuters, 2013). The holding in AMR appreciated c. 13x during the period. Other holdings which appreciated strongly following the release of the 2012 RQ study was Facebook and HP whose prices doubled before the publication of the 2013 RQ study. Since then, no major breakthrough upwards or downwards has been observed.



Graph 4. Delta bottom10 portfolio development above risk free return

Even though the delta bottom10 portfolio has a high annual return, a Sharpe ratio well above the market index and other signs of abnormal excessive risk adjusted returns, Jensen's alpha does not reach any important levels of significance (see table1.). Despite having a beta close to 1, the portfolio can still be regarded as less risky than the market due to its skewness being closer to zero than for the market portfolio.

Neither by adding the additional Fama French factors, the delta bottom10 portfolio cannot prove any abnormal return at any important significance level (see table2.). Even though the R2 does not increase much, it can be noted that both the SMB and HML are positively related to the development of the delta bottom10 portfolio.

4.2 Pre- and post crisis analysis

The analysis has also been done on two separate subsets of the complete period, before and including the financial crisis in 2008 and afterwards. The division between the two periods has been set at the publication of the survey made in 2008, i.e. Monday 18/05/2009, in order to capture the opinions of corporate reputation held during the crisis.

4.2.1 Top10 portfolio – 2001-2009 study

The top10 strategy, which had statistically significant alpha measurements for the whole period, cannot be regarded as having significantly higher returns than the index during the period before and during the 2008 financial crisis. Its alpha, although positive, is far from significant either by comparing to the market index alone or at all three Fama French factors (see table3.). However, it can be noted that the portfolios negative SMB and HML betas play a role in the portfolio's comparatively higher Fama French 3 alpha (see table4.).

4.2.2 Top10 portfolio – post-crisis study

During this period, the top10 strategy is proved to have a statistically significant superior return in comparison with both market models (see table 5. and 6.). Due to the lower alphas from the earlier period, the alphas for the post crisis are higher than for the combined period. Moreover, it can be noted that the market betas are slightly higher in the late period in comparison with the early period. The pattern of having lower betas in down markets while higher in upmarket is a desirable feature of a stock portfolio.

4.2.3 Bottom10 portfolio – 2001-2009 study

Although the alphas in the early period are not statistically significant just as for the whole period, they are relatively high, exceeding 7% for the CAPM model (see table 3.). However, the highest level of return standard deviation in this study keeps the P-value above any level of important statistical significance.

4.2.4 Bottom10 portfolio – post-crisis study

In contrast to the early period, the bottom10 strategy has negative alphas for both market models during the late period. Among all alpha measures in this study, the lowest ones are for the bottom10 portfolio in the late period (see table 5.).

4.2.5 Delta top10 portfolio – 2001-2009 study

The delta top10 strategy has high alpha measures for both market models in the early period (see table 3. and 4.). However, the return standard deviation is high enough to keep the P-value above, but not far above, the 10% threshold.

4.2.6 Delta top10 portfolio – post-crisis study

During the late period, the delta top10 portfolio does not have any statistically significant alpha, with P-values far above any important level of significance (see table 5. and 6.). The low standard deviation is the reason for why the strategy has statistically significant superior returns during the whole period at a 10% level.

4.2.7 Delta bottom10 portfolio – 2001-2009 study

Although the alphas are positive for both market models, the delta bottom10 portfolios does not provide statistically significant alphas for the early period (see table 3. and 4.). Furthermore, the market betas are higher during this period than for the whole period.

4.2.8 Delta bottom10 portfolio – post-crisis study

Interestingly, the delta bottom10 strategy renders statistically significant alphas at the 10% level for both market models (almost at the 5% level for the Fama French 3 factor model). This is due to the alphas which are the highest alpha measured in this study (see table 5. and 6.).

4.3 Regression Tables

Regression 2001-2018	Top10	Bottom10	Delta top10	Delta bottom10
Jensen's alpha - daily	0.02%	0.01%	0.02%	0.02%
Jensen's alpha - yearly	4.54%	1.97%	4.27%	4.11%
Robustness (P-Value)	5% level (0.022)	Not robust (0.627)	10% level (0.080)	Not robust (0.225)
Market beta	0.75	1.13	0.87	1.01
Robustness P-Value	1% level (0.000)	1% level (0.000)	1% level (0.000)	1% level (0.000)
Average yearly return	9.52%	9.35%	10.08%	10.81%
Yearly standard deviation	0.16	0.27	0.19	0.24
Skewness	0.078	(0.083)	(0.285)	(0.018)
Market skewness	(0.041)			
Sharpe ratio	0.58	0.34	0.52	0.46
Market Sharpe ratio	0.34			
Treynor ratio	0.13	0.08	0.12	0.11
Information ratio	0.33	0.18	0.36	0.32
R2	0.76	0.63	0.74	0.66
Adjusted R2	0.76	0.63	0.74	0.66
N	4332			

Table1. Regressions against S&P 500 and risk/return measures for all reputational based investment strategies during the complete period

Regression 2001-2018	Top10	Bottom10	Delta top10	Delta bottom10
Alpha - daily	0.02%	0.00%	0.02%	0.01%
Alpha - yearly	5.16%	0.46%	3.87%	3.75%
Robustness (P-Value)	1% (0.006)	Not robust (0.903)	Not robust (0.110)	Not robust (0.266)
Market beta	0.78	1.06	0.87	0.99
Robustness P-Value	1% (0.000)	1% (0.000)	1% level (0.000)	1% level (0.000)
SMB beta	-0.07	0.17	0.12	0.07
Robustness P-Value	1% (0.000)	1% (0.000)	1% level (0.000)	1% level (0.003)
HML beta	-0.25	0.62	0.03	0.09
Robustness P-Value	1% (0.000)	1% (0.000)	10% level (0.079)	1% level (0.000)
R2	0.78	0.67	0.74	0.66
Adjusted R2	0.78	0.67	0.74	0.66
N	4332			

Table 2. Regressions against Fama French 3 factor model for all reputational based investment strategies during the complete period

Regression 2001-2009	Top10	Bottom10	Delta top10	Delta bottom10
Jensen's alpha - daily	0.01%	0.03%	0.02%	0.01%
Jensen's alpha - yearly	1.88%	7.43%	6.04%	2.63%
Robustness (P-Value)	Not robust (0.545)	Not robust (0.216)	Not robust (0.126)	Not robust (0.591)
Market beta	0.73	1.09	0.83	1.07
Robustness P-Value	1% level (0.000)	1% level (0.000)	1% level (0.000)	1% level (0.000)
Average yearly return	-0.62%	3.50%	3.06%	-1.06%
Yearly standard deviation	0.19	0.30	0.22	0.28
Skewness	0.294	0.111	(0.222)	0.126
Market skewness	0.125			
Sharpe ratio	Nm.	0.12	0.14	Nm.
Market Sharpe ratio	Nm.			
Treynor ratio	Nm.	0.03	0.04	Nm.
Information ratio	0.25	0.41	0.55	0.17
R2	0.77	0.68	0.74	0.75
Adjusted R2	0.77	0.68	0.74	0.75
N	2078	2078	2078	2078

Table3. Regressions against S&P 500 and risk/return measures for all reputational based investment strategies during the initial period ending in 2009

Regression 2001-2009	Top10	Bottom10	Delta top10	Delta bottom10
Alpha - daily	0.01%	0.02%	0.02%	0.01%
Alpha - yearly	3.44%	3.71%	5.90%	1.99%
Robustness (P-Value)	Not robust (0.252)	Not robust (0.498)	Not robust (0.134)	Not robust (0.683)
Market beta	0.74	1.05	0.84	1.07
Robustness P-Value	1% (0.000)	1% (0.000)	1% (0.000)	1% (0.000)
SMB beta	-0.07	0.14	0.08	0.11
Robustness P-Value	1% (0.000)	1% (0.000)	1% (0.001)	1% (0.000)
HML beta	-0.23	0.56	-0.04	0.03
Robustness P-Value	1% (0.000)	1% (0.000)	10% (0.068)	10% (0.290)
R2	0.79	0.73	0.74	0.75
Adjusted R2	0.79	0.73	0.74	0.75
N	2078	2078	2078	2078

Table 4. Regressions against Fama French 3 factor model for all reputational based investment strategies during the initial period ending in 2009

Regression Post-crisis	Top10	Bottom10	Delta top10	Delta bottom10
Jensen's alpha - daily	0.02%	(0.02%)	0.00%	0.03%
Jensen's alpha - yearly	6.24%	(4.07%)	1.17%	7.78%
Robustness (P-Value)	5% level (0.011)	Not robust (0.454)	Not robust (0.687)	10% level (0.096)
Market beta	0.79	1.20	0.96	0.88
Robustness P-Value	1% level (0.000)	1% level (0.000)	1% level (0.000)	1% level (0.000)
Average yearly return	19.78%	15.04%	16.98%	23.01%
Yearly standard deviation	0.14	0.25	0.17	0.19
Skewness	(0.305)	(0.373)	(0.346)	(0.315)
Market skewness	(0.391)			
Sharpe ratio	1.41	0.61	1.00	1.22
Market Sharpe ratio	1.07			
Treynor ratio	0.25	0.12	0.18	0.26
Information ratio	0.45	(0.07)	0.08	0.50
R2	0.74	0.55	0.74	0.50
Adjusted R2	0.74	0.55	0.74	0.50
N	2254	2254	2254	2254

Table5. Regressions against S&P 500 and risk/return measures for all reputational based investment strategies during the late period beginning in 2009

Regression Post-crisis	Top10	Bottom10	Delta top10	Delta bottom10
Alpha - daily	0.02%	(0.01%)	0.02%	0.03%
Alpha - yearly	5.37%	(2.26%)	1.58%	8.53%
Robustness (P-Value)	5% level (0.018)	Not robust (0.660)	Not robust (0.581)	10% level (0.065)
Market beta	0.86	1.06	0.92	0.82
Robustness P-Value	1% (0.000)	1% (0.000)	1% (0.000)	1% (0.000)
SMB beta	-0.10	0.19	0.12	0.12
Robustness P-Value	1% (0.000)	1% (0.000)	1% (0.001)	1% (0.001)
HML beta	-0.32	0.74	0.14	0.03
Robustness P-Value	1% (0.000)	1% (0.000)	1% (0.000)	1% (0.000)
R2	0.78	0.60	0.75	0.51
Adjusted R2	0.78	0.60	0.75	0.51
N	2254	2254	2254	2254

Table 6. Regressions against Fama French 3 factor model for all reputational based investment strategies during the late period beginning in 2009

4.4 Industry analysis

The strategies were exposed to different industry sectors to a varying extent. The top10 strategy had its highest correlation to the Business Equipment sector which includes software and computer companies (see table 7.). This is not surprising given the high reputational ranking of tech companies like Microsoft, Sony, Dell, Samsung and Apple etc. On the other end, the energy sector has a weak correlation to the top10 strategy as energy companies rarely score at the top of these rankings. Regarding the bottom10 strategy, it had its highest correlation with the finance industry which probably is caused by the consistent low reputational rankings of banks during and after the financial crisis in 2008. Utilities had the lowest correlation to the bottom10 strategy which is true for the delta portfolios as well, which might be caused by utility companies having low general visibility and not appearing in the rankings. Both delta portfolios had high correlations with the "Others" segment comprising a diverse set of companies including transportation and construction companies along with entertainment businesses. It is more difficult to have an intuition of which kind of sectors should be more closely related (or less) to the delta portfolios, as these capture a wide variety of companies having big increases or decreases in reputation. Moreover, some companies appearing in one delta-reputation portfolio might end up in the opposite another year.

Correlation	Top10	Bottom10	Delta Top10	Delta Bottom10
Consumer NonDurables	78.0%	66.7%	72.5%	64.9%
Consumer Durables	76.1%	75.9%	80.2%	74.4%
Manufacturing	81.0%	76.4%	83.5%	76.4%
Energy	60.2%	63.4%	64.8%	56.5%
Chemicals	77.8%	70.1%	77.2%	68.7%
Business Equipment	83.3%	65.6%	77.9%	77.8%
Telephone and TV Transmission	77.0%	72.8%	77.5%	75.2%
Utilities	61.2%	55.1%	59.0%	54.9%
Retail Wholesale	80.9%	69.3%	80.8%	74.6%
Healthcare Pharma	72.6%	61.7%	67.9%	61.4%
Finance	71.7%	77.2%	76.1%	73.4%
Others	81.9%	77.0%	83.7%	77.5%

Table 7. Correlation between investment strategies and different industry portfolios

To see if any industrial portfolio can match the performance of our top10 investment strategy, a first litmus test is to see which industrial portfolios have a statistically significant alpha at conventional levels. By both making regressions against CAPM and Fama and French factors, it was determined that only Consumer NonDurables (CND) portfolio had a statistically significant alpha at the 5% level (see table 8.). Hence, CND was compared with the top10 strategy and their results are not far apart. The top10 portfolio is however advantageous by most means of comparison although CND has lower volatility and beta and slightly higher Sharpe ratio.

Regression 2001-2018	Top10	CND
Jensen's alpha - daily	0.02%	0.02%
Jensen's alpha - yearly	4.54%	4.32%
Robustness (P-Value)	5% level (0.022)	5% level (0.022)
Market beta	0.75	0.64
Robustness P-Value	1% level (0.000)	1% level (0.000)
Average yearly return	9.52%	8.54%
Yearly standard deviation	0.16	0.14
Skewness	0.078	0.003
Market skewness	(0.041)	
Sharpe ratio	0.58	0.59
Market Sharpe ratio	0.34	
Treynor ratio	0.13	0.13
Information ratio	0.33	0.21
R2	0.76	0.72
Adjusted R2	0.76	0.72
N	4332	4332

Table8. Regressions against S&P 500 and risk/return measures for the Top10 investment strategy and the consumer non-durables industry portfolio during the complete period

Regression 2001-2018	Top10	CND
Alpha - daily	0.02%	0.02%
Alpha - yearly	5.16%	4.45%
Robustness (P-Value)	1% (0.006)	5% (0.018)
Market beta	0.78	0.65
Robustness P-Value	1% (0.000)	1% (0.000)
SMB beta	-0.07	-0.01
Robustness P-Value	1% (0.000)	Not significant (0.685)
HML beta	-0.25	-0.07
Robustness P-Value	1% (0.000)	1% (0.000)
R2	0.78	0.72
Adjusted R2	0.78	0.72
N	4332	4332

Table9. Regressions against Fama French 3 factor model for the Top10 investment strategy and the consumer non-durables industry portfolio during the complete period

4.5 Overlap

4.5.1 Holding overlap between portfolio strategies

To make sure that any similarities between the return characteristics of our different portfolio strategies are not the result of similar portfolio constituents, an overlap analysis is also conducted. By definition, the top- and bottom10 strategies are symmetrical opposites and does not share any portfolio stock at any given time. The same goes for the top positive RQ mover portfolio in respect to the top negative RQ mover portfolio. However, there could be similar holdings in all other portfolios which are not the symmetrical opposites. The following table shows the average overlap and the number of instances. A full list of every case of overlapping holdings for all strategies can be found in appendix.

Overlap across portfolios	Instances	Average overlap in %
Top10 – Delta top10	26	15%
Top10 – Delta bottom10	1	1%
Bottom10 – Delta top10	37	22%
Bottom10 – Delta bottom10	45	26%

Table10. Overlap across portfolios

Since the general distribution of RQ seems to have a longer tail at the relative bottom of the ranking, it allows for the holdings of the rising RQ stocks to also coincide with the holdings of the bottom10 stocks. Surprisingly, there is even a higher average overlap among the rising RQ stocks and the bottom10 portfolio than between the rising RQ portfolio and the top10 portfolio. This can also be explained by the fact that the top RQ portfolio is to a higher extent made up of a group of companies with consistently high and stable RQ scores, while the bottom RQ companies tend to have more volatile RQ scores. This also explains why there is practically no overlap between the falling RQ portfolio and the top10 portfolio.

4.5.2 Overlapping holdings through time

Another interesting feature is to analyze to what extent the portfolios contain stocks of the same companies throughout time, as it can be regarded as a measure of the level of idiosyncratic risk. If the same company reoccurs consistently throughout the measurement period, the portfolio performance might not only reflect the imbedded strategy but also a result of lucky/unlucky stock picks. The average overlap of portfolio constituents between different rebalancing moments is presented in the following table. A complete list can be found in appendix.

Overlap across time	Average overlap of portfolio holdings YoY
Top10	66%
Bottom10	66%
Delta top10	13%
Delta bottom10	11%

Table 11. Average overlap of portfolio holdings YoY

Hence, it can be noted that both the top- and bottom10 portfolios seem to change only a third of the portfolio constituents on average during a rebalancing event. Although a rebalancing occurs also for the portfolio constituents which are the same YoY, there could potentially be an important factor of idiosyncratic risk playing a part. For the delta RQ portfolios, almost 9 out of 10 holdings are replaced on average at each rebalancing event. Therefore, the idiosyncratic concerns should be lesser for them.

4.6 Robustness check: Value weighted portfolios

By using value weighted portfolios instead of equally weighted portfolios, the robustness of the findings can be assessed more thoroughly. When using value weighted portfolio allocations, the alphas of the top10 portfolio decreased in significance leading to not being significant according to the CAPM model, while being significant at the 5% level for the Fama French 3 factor model. All return measures declined when using the value weighted approach just as the riskiness increased except for the skewness of daily returns which increased remarkably to 0.307. The betas increased in both model, while the SMB and HML betas became more negative. These findings do not come as a surprise as the portfolios are more idiosyncratic when being value weighted (largest shareholding ranging between 21-35% of the stock portfolio), leading to increased riskiness through higher volatility and market beta. As many of the largest highly reputable companies such as Amazon and Google are asset light in comparison to their market value, the lowered SMB and HML betas can be explained by the increased exposure to such companies.

Regression 2001-2018	Top10-EqW	Top10-VW
Jensen's alpha - daily	0.02%	0.01%
Jensen's alpha - yearly	4.54%	3.22%
Robustness (P-Value)	5% level (0.022)	Not significant (0.163)
Market beta	0.75	0.82
Robustness P-Value	1% level (0.000)	1% level (0.000)
Average yearly return	9.52%	8.64%
Yearly standard deviation	0.16	0.18
Skewness	0.078	0.307
Market skewness	(0.041)	
Sharpe ratio	0.58	0.47
Market Sharpe ratio	0.34	
Treynor ratio	0.13	0.10
Information ratio	0.33	0.22
R2	0.76	0.74
Adjusted R2	0.76	0.73
N	4332	4332

Table12. Regressions against S&P 500 and risk/return measures for the Top10 investment strategy (both equally and value weighted) during the complete period

Regression 2001-2018	Top10-EqW	Top10-VW
Alpha - daily	0.02%	0.02%
Alpha - yearly	5.16%	4.23%
Robustness (P-Value)	1% (0.006)	5% (0.045)
Market beta	0.78	0.87
Robustness P-Value	1% (0.000)	1% (0.000)
SMB beta	-0.07	-0.12
Robustness P-Value	1% (0.000)	1% (0.000)
HML beta	-0.25	-0.40
Robustness P-Value	1% (0.000)	1% (0.000)
R2	0.78	0.78
Adjusted R2	0.78	0.78
N	4332	4332

Table13. Regressions against Fama French 3 factor model for the Top10 investment strategy (both equally and value weighted) during the complete period

Less significant alphas and similar changes in risk measures was also noticed for the other portfolios when they were value weighted.

4.7 Factor analysis

From the results of the investment strategies, the most credible anomaly which could potentially be the basis of a new factor, is the superior performance of highly reputable companies to the overall market. As all described investment strategies had superior average returns than the market (although not statistically significantly for each), shorting another strategy could wipe out the returns of the factor. Hence, the reputational based risk-factor is constructed by taking the excess return of the top10 strategy to the market portfolio and will be tested as an addition to the CAPM and Fama French factors. The aim is to see whether adding the reputational factor can reduce the number of statistically significant alphas and their absolute values among different market segments. The results show that adding the reputational factor to the factor risk models contributes marginally to increasing R2 for both the CAPM and the Fama French factor model, however the medium absolute value of alpha increases in both cases by almost 0.3 percent (see table 14-18.). When it comes to statistically significant alphas, the S&P 500 CAPM method renders one statistically significant alpha at the 5%-level and three at the 10%-level, while there is no alpha at the 5%-level by adding the reputational factor (but still three at the 10% level). By having the Fama French factors as a market model, only one portfolio each is at the 10%- and 5%-levels respectively, while Consumer NonDurables at the 5%-level is the only statistically significant industrial portfolio when the reputational factor is added to the Fama French factors. In the model where the reputational factor was added to CAPM, the reputational factor was a statistically significant factor in only seven out of twelve cases, while coupled with the Fama French factors it was significant in nine out of twelve cases, which was as many times as the HML factor and only one time less than the SMB factor. Interestingly, the reputational factor was the only factor apart from the market factor which was statistically significant in regards to the energy portfolio with a staggering beta of -0.41.

CAPM-S&P 500	Yearly Alpha	- Significance	Beta	- Significance
Consumer NonDurables	4.32%	5% (0.022)	0.64	1% (0.000)
Consumer Durables	-1.10%	Not (0.721)	1.20	1% (0.000)
Manufacturing	3.40%	10% (0.067)	1.08	1% (0.000)
Energy	2.63%	Not (0.533)	1.06	1% (0.000)
Chemicals	3.60%	10% (0.072)	0.82	1% (0.000)
Business Equipment	-0.03%	Not (0.992)	1.13	1% (0.000)
Telephone and TV Transmission	-1.89%	Not (0.427)	0.97	1% (0.000)
Utilities	3.22%	Not (0.294)	0.70	1% (0.000)
Retail Wholesale	3.72%	10% (0.077)	0.86	1% (0.000)
Healthcare Pharma	1.96%	Not (0.410)	0.75	1% (0.000)
Finance	-0.66%	Not (0.819)	1.27	1% (0.000)
Others	-0.46%	Not (0.796)	1.05	1% (0.000)
MAV Alpha	**2.25%**			
Mean R2	**74.61**			

Table14. Results from testing the CAPM model with industry portfolios

CAPM + Rep	Yearly Alpha	- Significance	Beta	- Significance	Rep Beta	- Significance
Consumer NonDurables	3.60%	10% (0.053)	0.68	1% (0.000)	0.16	1% (0.000)
Consumer Durables	-1.15%	Not (0.711)	1.20	1% (0.000)	0.01	Not (0.691)
Manufacturing	3.63%	10% (0.050)	1.07	1% (0.000)	-0.05	1% (0.000)
Energy	4.56%	Not (0.274)	0.96	1% (0.000)	-0.42	1% (0.000)
Chemicals	3.50%	10% (0.080)	0.82	1% (0.000)	0.02	Not (0.184)
Business Equipment	-1.78%	Not (0.501)	1.23	1% (0.000)	0.40	1% (0.000)
Telephone and TV Transmission	-1.95%	Not (0.415)	0.97	1% (0.000)	0.01	Not (0.521)
Utilities	3.76%	Not (0.220)	0.67	1% (0.000)	-0.12	1% (0.000)
Retail Wholesale	2.94%	Not (0.156)	0.90	1% (0.000)	0.17	1% (0.000)
Healthcare Pharma	1.83%	Not (0.441)	0.76	1% (0.000)	0.03	Not (0.120)
Finance	1.34%	Not (0.631)	1.16	1% (0.000)	-0.45	1% (0.000)
Others	-0.45%	Not (0.800)	1.05	1% (0.000)	-0.00	Not (0.901)
MAV Alpha	**2.54%**					
Mean R2	**75.17**					

Table15. Results from testing the CAPM model extended by a reputational based factor with industry portfolios

FF-3	Yearly Alpha (P-value)	Market beta (P-value)	SMB beta (P-value)	HML beta (P-value)
Consumer NonDurables	4.45% (0.018)	0.65 (0.000)	-0.01 (0.685)	-0.07 (0.000)
Consumer Durables	-3.23% (0.237)	1.15 (0.000)	0.56 (0.000)	0.36 (0.000)
Manufacturing	2.19% (0.185)	1.07 (0.000)	0.37 (0.000)	0.08 (0.000)
Energy	2.27% (0.588)	1.05 (0.000)	0.05 (0.078)	0.12 (0.000)
Chemicals	3.39% (0.090)	0.82 (0.000)	0.07 (0.000)	-0.00 (0.934)
Business Equipment	0.17% (0.943)	1.18 (0.000)	0.24 (0.000)	-0.54 (0.000)
Telephone and TV Transmission	-1.65% (0.488)	0.97 (0.000)	-0.11 (0.000)	0.04 (0.013)
Utilities	3.44% (0.262)	0.70 (0.000)	-0.08 (0.000)	0.01 (0.495)
Retail Wholesale	3.29% (0.108)	0.86 (0.000)	0.20 (0.000)	-0.08 (0.000)
Healthcare Pharma	2.27% (0.316)	0.78 (0.000)	0.07 (0.000)	-0.31 (0.000)
Finance	-2.43% (0.211)	1.17 (0.000)	0.11 (0.000)	0.92 (0.000)
Others	-1.42% (0.387)	1.03 (0.000)	0.27 (0.000)	0.14 (0.000)
MAV Alpha	**2.52%**			
Mean R2	**77.16%**			

Table16. Results from testing the Fama French 3 model with industry portfolios

FF-3 + Rep	Yearly Alpha (P-value)	Market beta (P-value)	SMB beta (P-value)	HML beta (P-value)	Rep Beta (P-value
Consumer NonDurables	3.71% (0.046)	0.68 (0.000)	0.00 (0.746)	-0.04 (0.004)	0.14 (0.000)
Consumer Durables	-4.12% (0.127)	1.19 (0.000)	0.57 (0.000)	0.41 (0.000)	0.19 (0.000)
Manufacturing	2.20% (0.183)	1.07 (0.000)	0.37 (0.000)	0.08 (0.000)	-0.00 (0.871)
Energy	4.42% (0.290)	0.96 (0.000)	0.02 (0.402)	0.02 (0.480)	-0.41 (0.000)
Chemicals	3.25% (0.103)	0.82 (0.000)	0.07 (0.000)	0.01 (0.679)	0.03 (0.103)
Business Equipment	-1.04% (0.657)	1.23 (0.000)	0.26 (0.000)	-0.48 (0.000)	0.24 (0.000)
Telephone and TV Transmission	-1.76% (0.459)	0.97 (0.000)	-0.11 (0.000)	0.04 (0.007)	0.02 (0.257)
Utilities	4.12% (0.180)	0.67 (0.000)	-0.09 (0.000)	-0.02 (0.355)	-0.13 (0.000)
Retail Wholesale	2.43% (0.228)	0.90 (0.000)	0.21 (0.000)	-0.04 (0.003)	0.17 (0.000)
Healthcare Pharma	2.71% (0.233)	0.76 (0.000)	0.06 (0.000)	-0.33 (0.000)	-0.08 (0.000)
Finance	-1.80% (0.353)	1.14 (0.000)	0.10 (0.000)	0.89 (0.000)	-0.13 (0.000)
Others	-1.75% (0.285)	1.04 (0.000)	0.27 (0.000)	0.15 (0.000)	0.07 (0.000)
MAV Alpha	**2.78%**				
Mean R2	**77.49%**				

Table17. Results from testing the Fama French 3 model extended by a reputational based factor with industry portfolios

5. Discussion

Our findings regarding the link between the highly reputable companies and their abnormal excess returns in relation to their risk factor exposure are in line with earlier studies which investigate the link between corporate reputation and stock returns, such as Antunovich and Laster (1998 & 2000), Roberts and Dowling (2002), Sabate and Puente (2003), and notably Krueger and Wrolstad (2016), the latter using the same reputation measurement as in this study. As previous research in this field has showcased varying results, the findings regarding the positive performance of reputable companies show an opposite picture compared to the findings of Brammer (2006). The positive performance stems from a broad selection of highly reputable companies, although Amazon stands out by fuelling the performance during the latter half of the sample period.

However, the positive relationship is more concentrated at the end of the measured period while it is insignificant for the first half of the sample period. This should not be a surprise as Krueger and Wrolstad (2007) did not find a significant relationship using roughly the same portfolio companies and a time-period corresponding to the early half of our return series. For the robustness of the findings in this thesis, it is still more important that the positive relationship is prevalent in the latter period as it has more relevance today and due to the assumed improvement in measurement of reputation as time goes by. Although reputation is a qualitative metric which is notoriously hard to put numbers on, there continues to be more readily available data to base reputation on and this trend will most certainly continue. Moreover, there have been habitual changes in society which enables and simplifies the assessment of reputation which also are likely to persist, customer reviews and ratings being apparent examples. Therefore, analyzing digital footprints by customers and other stakeholders to uncover the underlying reputation, as well as using qualitative studies like the Harris Poll, will likely improve the precision of reputation going forward. This paves way for additional research in this field with several proxies might becoming significant enough for investing strategies to be relied upon.

A minor disclaimer about practicalities should be expressed; No guarantee can be made as to whether these results would still hold true if the methodology of this study would have been carried out IRL during the sample period. The main reason for this is the timing of portfolio rebalancing. In this study, the portfolios are reallocated on the day of the Harris RQ publication. Although trades are carried out only once each year, major intra-day stock movements and liquidity constraints (especially for OTC-traded stocks in bankruptcy) could affect the acquisition value causing discrepancies from our theoretical results. Important to note is that these discrepancies between our theoretical approach and a real-life application could affect the result both upwards and downwards.

Concerning the link between abnormal stock performance and low company reputation, no significant finding could be put forth. By looking at the different subsets of the period, it is not clear whether such a relationship, if proven, would imply higher or lower returns. However, for the whole period, the relationship between stock market return and low corporate reputation leans more in the opposing direction from the findings of Antunovich and Laster (1998), as well as the related hypothesis in this thesis. As the Harris poll portrays the worst reputable firms once a year, there is a possibility that these firms have seen their share prices fall disproportionally at the time of the survey. Studies in other fields have shown there is a tendency among investors and people in general to over-react to bad news, and thus they might over-react when setting a reputational score. One could argue for the reasonableness of investors being rewarded for the risk in investing in low reputable firms, a risk which in our study seems to be proportionally rewarded.

Regarding the relationship between the companies who had risen or fallen substantially in reputation and their respective stock returns, the findings seems to go along what has been found by Brammer (2006) although the statistical significance is not convincing, only crossing the 10% significance level at different subsets of the period. Surprisingly, the findings had little in common with the findings of Krueger (2010), which also used the RQ reputational score. The differences are probably attributed to different time periods and different methods of determining which companies to include in a portfolio of companies with rising/falling reputation. These findings also suggest there is an inherent persistence in reputation, with large swings in RQ having limited impact on future firm performance for most companies.

In accordance with Kreuger & Wrolstad's studies (2007, 2016) and Antunovich & Laster (2000), the portfolio with companies having high reputation also had a low market beta around 0.75 and a lower standard deviation than the market. All other portfolios had a standard deviation equal or higher than the market, but the delta top10 portfolio also had a lower market beta than 1. Furthermore, the top10 portfolio also had a remarkably higher skewness of daily return than all other portfolios including the market portfolio, corresponding with that of Pfarrer et al. (2010) regarding positive surprises for companies with high reputation. Trying to foretell if the remarkable results of the top10 portfolio are likely to persist, the answer is twofold. On the one hand, the case might be that highly reputable firms tend to surprise positively in general and that the market will continue having a hard time capturing this phenomenon. On the other hand, the market might become to capture the benefits of high corporate reputation which would lead to diminishing benefits of the strategy as any benefits of having a high corporate reputation would then be priced in. It could also be the case that the valuations in some of the sectors where highly reputable

companies are currently overrepresented (such as tech) could be too high and will fall more than other sectors in an eventual market downturn.

The return characteristics of the top10 portfolio in regards to the Fama French factors, indicates that highly reputable companies are more likely to be big growth stocks as observed by Chung (1999), Shefrin & Statman (1998) and Antunovich & Laster (2000). But in contrast to the theories of Fama & French (1992) regarding big growth stocks, the top10 portfolio does not underperform. One could argue that these large growth stocks have experienced an exceptionally favourable environment in the post-crisis period, perhaps making above market-returns more challenging going forward.

For all portfolios except the top10 portfolio, the Jensen's alpha decreases in value if more risk factors are taken into consideration which was showed by including the book-to market and size factor in the analysis, which goes in line with the findings of Brammer 2006. However, the top10 portfolio has an improved and more robust alpha when looking at the Fama French 3 factor analysis than for the CAPM analysis. Both its SML and HML betas are negative, the latter can be explained by the high proportion of tech companies among the ones with high reputation. The fact that large tech companies have enjoyed high reputations could be related to their increased dominance during the post-crisis period. This might have earned them a reputation of doing everything right, which further increase their ability to attract customers and talent. Such high levels of reputation could be harder to maintain going forward, especially considering the recent amplified concerns over data privacy and integrity issues.

Regarding the stated hypothesises in this thesis, only 2/6 could be proved. The first hypothesis "H1: A stock portfolio with holdings in companies having relatively high reputation is likely to achieve positive abnormal returns relative to their benchmark risk factor model." seems according to the quantitative analysis to be true. There were strong indications of the corresponding hypothesis for a portfolio with holdings in companies experiencing a significant rise in reputation to be true, however the statistical significance is not enough for the hypothesis to be accepted. Concerning the portfolios which were expected to show below average performance, the hypothesises are likely not true. The hypothesised incumbent disadvantages associated with having a low corporate reputation might already be well reflected in the stock prices.

By looking at all the included risk factors for the top10 portfolio and the bottom10 portfolio in this study, it can be noticed that they all are at opposite ends compared to the market for the two strategies. The top10 portfolio has a lower volatility than the market, while it is higher for the bottom10 portfolio. The high reputation portfolio has a market beta less than 1 while it is higher than 1 for the low reputation portfolio. Regarding the return skewness, the two portfolio strategies

are almost equidistant to zero, but at opposite ends. Moreover, the different strategies also have opposing exposure to the SMB and HML factors where the highly reputable holdings are more associated to large cap growth stocks, while the lowly reputable holdings behave more like small cap value stocks. Hence it can be concluded that the risk profiles of the high and low reputation portfolios are different in all measures covered in this study. The takeaway is that the risk profile of the top10 portfolio is less risky than the one of the bottom10 portfolio. The incumbent advantages of top10 firms which currently do not seem to be reflected in the stock price might become reflected in the stock price going forward, should the market adjust expectations. This in combination with an oncoming more challenging environment for large growth stocks, including threats of regulation from the EU and other authorities, might result in disappointing returns going forward.

Regarding the reputation-based test factor constructed by the excess returns of the top10 investment strategy, a few issues prohibits the factor to be a fully developed risk factor. First of all, the test factor is highly idiosyncratic as it is only long ten companies at a time while the other Fama French factors go long in 20% of the American stock market. The idiosyncratic structure is a result of limited data on corporate reputation as only up to 100 companies appear on the list each year. In theory, it would be possible to construct less idiosyncratic factors based on corporate reputation if more companies would have their reputations estimated. All companies have a reputation among the ones who interact with them, but it is easier to make accurate estimations if the companies are well known as there are more possible respondents. Attaining similar results with a larger sample size, different proxies, as well as for smaller firms could theoretically make the results of this study more robust. However, reaching the same conclusions for smaller firms or other proxies might be more difficult as reputation is harder to determine for less known companies. Also, by including more firms there is an inherent risk of diluting the effectiveness of the survey method of the reputation poll.

Moreover, the Fama French factors are re-weighted each month while our reputation based factors are only re-weighted once a year at varying dates of the publication of the RQ poll. This makes the estimated reputation metrics less efficient as it can create long lags between fluctuating actual reputation and the estimated reputation.

Another point to take into consideration is that a reputational factor representing the surplus stock returns of highly reputable companies against the market implies that higher corporate reputation should be associated with positive abnormal excess stock returns. Although it does not necessarily imply the opposite regarding low corporate reputation. Hence, it is a factor which covers an observed asymmetrical relationship between corporate reputation and abnormal risk

adjusted stock returns. These findings suggest that any investment strategies based on the reputational factor is more consistent with smart beta strategies rather than factor investing. This since the former is considered to be more long-only while the latter often include long-short strategies.

It is also not obvious why owning companies with good reputation would be associated with taking on additional risk which should be rewarded according to a risk factor based market model. One way to argue for the riskiness of investing in a company with a high reputation is that highly reputable firms might be too reliant on their reputation which could hurt their business severely if that reputation were to deteriorate. Highly reputable companies must spend both time and money on maintaining a high reputation and constantly manage the reality that ruining a reputation is way easier than building up a good one.

As with all observed relationships, the causality of the results must be discussed along with other possible explanations. There are indeed claims in earlier literature that high corporate reputation can be a driver of future risk adjusted abnormal stock returns, however the link is abstract and will remain difficult to prove. By looking at this study through a critical lens, one might object against the causality of the findings by claiming that the latest economic cycle has been structurally beneficial towards companies who tend to have a good reputation and therefore the superior stock returns should be a result of luck.

Moreover, the fact that the significance of the alphas fell in both risk models when value-weighting instead of equal-weighting casts a doubt over the robustness of our findings. Although some negative impacts on the risk adjusted return measures were expected given the additional idiosyncrasy of using a value-weighted approach, the results add to the explanation that the abnormal returns of the top10 portfolio might just be due to luck.

An additional objection to the findings in this thesis is that the surplus return observed for the strategy with high corporate reputation might not only be attributable to a pure reputation factor, but also to a fame factor. One could pose the question if the differences in stock performance would hold true if fairly unknown companies with good reputations in their respective industries would have risk adjusted excess returns above their benchmarks.

The significant Jensen's alpha obtained in this study does not imply there is a reputation-based factor missing from the asset pricing models used to benchmark the results. There is simply too little data to assert that a reputation-based risk factor adds explanatory value to current expected return models. Hence, the significant alpha from the reputation strategy must be interpreted as either luck or evidence of an anomaly. Abnormal returns as such must be due to behavioural biases or explained by economic friction.

Putting reputation in the realm of behavioural biases, no clear picture can be drawn from the results. None of the well-known cognitive nor emotional biases obviously help explain the over-performance of highly reputable firms. It is not apparent how investor behaviour deviates from the prediction of economic models to maximize subjective expected utility. Of course there is an element of psychology involved in investor decision-making but at this point only speculation can be asserted to any trends. Potentially, investors might consciously or subconsciously tend to invest more in companies that are highly reputable. As consumers, they might prefer to own brands they trust. Institutional investors have a large responsibility and may want to tilt their portfolio more towards highly reputable firms, especially given recent trends in sustainable and ethical investing. Moreover, for small private investors who generally relies less on calculations and economic models, the decision to invest in top-of-mind brands is probably closer at hand.

Left as an explanatory theory to the significant Jensen's alpha is economic friction, which is factors that keep markets from working according to economic models, such as restrictive regulations or imperfect information. In the case of reputation, the friction more likely lies in the incumbent advantages for firms with high reputation, uncaptured by the market and current economic models. The abnormal returns could be the sum of the reputational advantages which provides for benefits such as a higher ease of doing business. Improved perceptions towards highly reputable firms among its stakeholder will likely showcase itself by intangible benefits, which in turn can lead to improved financials. The fact that companies can reduce perceived uncertainty, increase trustworthiness among stakeholders and increase their appropriateness as a business partner has been shown in previous research (Fombrun, 1996; Fombrun & Van Riel, 2004; Mishina et al. 2012). Moreover, past research has also revealed that it becomes easier for highly reputable firms to get institutional support, moral validity and backing from business partners (Handelman and Arnold 1999, p. 34; Scott 1987). The positive skewness in returns obtained in this study for the top10 strategy also suggests economic friction is present. This is indicated by the fact that highly reputable firms seem to continually surprise positively. However, making any definitive claims of when and how much these firms beat expectation consensus is outside the scope of this study.

Although some qualitative arguments can be put forward for economic friction to explain the significant Jensen's alpha, more data would be needed to make any quantitative demonstrations. Likely, several factors collectively help explain the abnormal risk-adjusted excess returns obtained in this study. With more research being necessary, economic friction does seem to have more support in the results and in past research, making it a more likely explanation than does behavioural biases.

6. Conclusion

This study concludes that corporate reputation seems to have predictive value on future superior risk adjusted performance and from which investment strategies can be formed. It is quantitatively demonstrated that forming an investment strategy of the top ranked firms within corporate reputation can bring value to investors and be complementary to current smart beta/factor investing models from a risk perspective. However, the findings are not convincing regarding the possibilities to add another risk factor based on reputation on top of current stock return risk factor models.

Past research has been inconclusive regarding the link between abnormal risk adjusted stock returns and corporate reputation, but the overall picture leans more towards a positive relationship. Earlier studies have also treated the subject of different risk characteristics among companies at different ends of the reputational spectrum, mostly showing a less risky profile for stocks having a high reputation. The past research findings offered guidance in respect to the hypothesises in this study, resulting in an assumed positive reputation-abnormal return relationship.

The analysis confirms the first hypothesis, the top10 strategy has a risk-adjusted excessive return amounting to 4.54% on an annual basis, on a 5% significance level. The market beta is around 0.75 which signifies that the top10 portfolio strategy has a below-average market risk. The top10 strategy had the highest Sharpe ratio (0.58) and Treyvor ratio (0.13) among all strategies while the delta top10 strategy had the highest information ratio of 0.36. The third hypothesis stating that the delta top10 portfolio will show positive abnormal returns was not statistically significant on the 5% level, but significant on the 10% level. Both hypothesises regarding bottom performers, believed to show negative abnormal returns, showed no significance and were both dismissed. The fifth hypothesis, stating that portfolios consisting of holdings in companies with high/low corporate reputation will have significantly different risk profiles in relation to well known risk factors, was also confirmed as the top and bottom investment strategies had remarkable differences such as low/high betas, positive/negative skewness, low/high volatility and opposing signs of SMB and HML betas.

Regarding the last hypothesis exploring the top10 investment strategy as a factor which could explain market returns, the findings are inconclusive, showing weak evidence of additional explanatory value. Although the factor based portfolio consisting of the excess return of the top10 strategy to the market made the medium absolute value of the alphas higher and was fairly often not a significant factor for the industry portfolio, it did contribute to a higher R2 and fewer industry portfolios with statistically significant alphas. Due to the inconclusive findings and some important limitations to the reputation-based test factor, it is not yet ready to be introduced as a factor which

explains market returns. However, our findings indicate that there could be much more to find out regarding the link between abnormal risk adjusted stock market returns and corporate reputation if the latter were charted to a higher extent.

Remarkably, the top10 portfolio displays positive skewness contrary to the market portfolio. These notable results are obtained in absence of many significant acquisitions in the top10 portfolio companies and further reinforces the strong risk-adjusted returns of the top10 portfolio. The positive skewness is an indication of market friction in the form that corporate reputation is an asset which can be utilized to gain business advantages which in turn can lead to positive surprises. The opaque and intangible character of corporate reputation can make these advantages difficult to discover and therefore potentially circumvent market efficiency and lead to abnormal risk adjusted stock returns.

Reputation appears to go beyond traditional measures of current production and financial statements to deliver insights to future firm performance. The conclusion that portfolios consisting of highly reputable firms consequently show a higher risk-adjusted rate of return is good news for investors considering the rising trend of sustainability and ethical investing.

7. Implications for Future research

The objective of this research is to add perspective to the field of factor investing in general and to qualitative factors in particular. This study contributes to the understanding of the link between corporate reputation and stock market performance. It adds a strain of clarity to the inconclusive picture drawn from previous research and tilts the consensus view more towards a statistically significant relationship. Not only does it add understanding in terms of excess returns, but also supports the results of earlier studies regarding the risk profile associated with different levels of reputation. However, it shows limited indications that a risk factor based upon corporate reputation could add to the explanation of market returns.

As showed in this study, the over-performance of highly reputable firms was limited until the aftermath of the mortgage crisis. This raises several questions which could be addressed by further research. Has corporate reputation become more important than before the crisis, leading to more business advantages from having a good reputation? Or could the superior stock returns among highly reputable companies be a reflection of an increasing preference for holding their stocks among the investment community? And do recent polls do a better job of determining corporate reputation than before? All of these questions could be interesting subjects to investigate in future research.

Although the research behind the RQ poll is very rigorous and it is widely considered to be a reliable measure of corporate reputation, there are other sources which could be used as proxies for reputation. It would be interesting to see future studies explore other proxies as well as conducting research in new geographical areas and markets. Furthermore, using a more granular approach to decipher reputational attributes by isolating them to assess their individual importance could increase the understanding of reputation. This would require more fine data on these attributes as well as other sub-categories of reputation.

This study treats all periods between each release of the RQ poll equally, regardless of the economic conditions during that year. A possibility for future research would be to analyze specific time frames with different underlying economic conditions. This is reasonably done by event studies exploring which companies over- or underperform during specific events.

Another interesting approach would be to make a similar study in specific industries or, if data permits, only investigate the link between company reputation and stock performance among mid- and small-cap companies. This could clarify whether the results seen in this thesis hold true for companies which are not famous but just have good reputations within their specific fields.

As discussed, there are limitations to constructing a reputation based factor out of only 100 potential companies each year (some of them are ineligible due to private ownership), hence to

truly confirm or rule out a reputational based risk factor, the charting of corporate reputation needs to increase in scale. Consequently, finding ways to estimate corporate reputation both accurately and efficiently would enable the questions raised in this thesis to be answered with higher precision.

In order to bring clarity to the explanations for significant Jensen's alpha obtained by investing in highly reputable firms, both qualitative and quantitative studies are needed. Qualitative studies are appropriately conducted by interviewing a range of professional and private investors to discover any behavioural bias tendencies. Quantitative studies are preferable for uncovering to what extent economic friction help explain the over-performance of highly reputable firms. More data on report expectation consensus and market reactions to financial results is needed to put numbers on any positive skewness and its robustness.

In conclusion, we are confident this study contributes to existing research on factor investing by offering a lengthy perspective on how a qualitative factor as reputation has predictive value on future firm performance.

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Appendix

Overlap between portfolios

Overlap across portfolios	Top10 & Delta top10	Top10 & Delta bottom10	Botrom10 & Delta top10	Bottom10 & Delta bottom10
2000	P&G Sony		Apple Kmart	AT&T
2001	Coca Cola HP Microsoft		Bridgestone	Time Warner Ford MCI Daimler Chrysler
2002	Home Depot UPS Maytag Dell		Bridgestone	Time Warner Citi Sprint
2003	Disney	J&J	Qwest Bridgestone Sprint	Exxon RJ Reynold
2004	3M		MCI Altria Martha Stewart Bridgestone AMR	AT&T Halliburton
2005			Martha Stewart AT&T	Exxon
2006	Microsoft		Halliburton	Allstate Ford GM
2007	Berkshire H Intel Google		Microsoft	Exxon Comcast Halliburton
2008	Sony Amazon		Halliburton	Exxon Ford GM Citi
2009	Bekshire H Pepsi			Citi JP Morgan AIG Bank of America
2010			AIG Citi GM JP Morgan	
2011	Apple Coca Cola Amazon			JP Morgan Goldman Sachs Wells Fargo Bank of America
2012			Bank of America JP Morgan BP AIG Comcast Goldman Sachs	American- Airlines
2013	Honda		AIG Goldman Sachs Halliburton	Sprint Sears Monsanto
2014	J&J		Bank of America	Comcast

	Berkshire H		BP	Goldman Sachs AIG
2015	FedEx		AIG Goldman Sachs Sears Dish	BP Halliburton
2016			VW	Charter-Communication Monsanto Goldman Sachs Bank of America Wells Fargo
2017	Kraft Heinz		Wells Fargo Goldman Sachs Halliburton	BP UAL
Total	**26**	**1**	**37**	**45**

Appendix table 1. Holdings appearing in two portfolios specific periods

Overlap across time	Top10	Bottom10	Delta top10	Delta bottom10
2001	J&J Maytag Sony Intel IBM Microsoft	Bridgestone Altria Time Warner Ford	Kmart	Amazon Xerox Lucent AT&T
2002	J&J Coca Cola 3M Maytag	Bridgestone Altria Time Warner AMR	Unilever Dell Bridgestone	Time Warner
2003	J&J Coca Cola UPS General Mills Dell 3M	Sprint Qwest Bridgestone Altria Time Warner AMR Exxon Mobil	Bridgestone	GM
2004	J&J UPS Coca Cola Microsoft General Mills FedEx 3M P&G	Martha Stewart Altria Bridgestone Sprint Halliburton AMR	Bridgestone	AT&T Gateway
2005	J&J 3M Coca Cola UPS Microsoft Sony FedEx General Mills	MCI Halliburton Exxon Sprint Altria Comcast	Martha Stewart	
2006	J&J Coca Cola Google	Halliburton Exxon Mobil Sprint	AT&T Apple	GM

	UPS 3M Sony Microsoft General Mills	Altria Comcast		
2007	Microsoft J&J 3M Google Coca Cola General Mills	Halliburton Exxon Mobil Comcast GM Ford Sprint Chevron	Apple Verizon-Communications	Dell Home Depot Wal Mart
2008	Google J&J General Mills Kraft Foods 3M Coca Cola Microsoft	Halliburton Citi Exxon Comcast Sprint Ford GM	McDonalds	Exxon
2009	J&J Google Coca Cola Amazon Microsoft General Mills 3M	AIG GM Citi JP Morgan Comcast Bank of America	McDonalds	Citi
2010	J&J Berkshire H Google 3M Intel Amazon General Mills	AIG Citi Goldman Sachs GM JP Morgan Bank of America Delta Airlines Comcast	Ford	Dell
2011	Google J&J Apple Kraft Foods Amazon Disney	AIG BP Goldman Sachs Citi Bank of America Exxon Mobil JP Morgan Comcast	General Motors	
2012	Apple Google Coca Cola Amazon Disney J&J Whole Foods	AIG Goldman Sachs Bank of America BP JP Morgan Citigroup Comcast Wells Fargo	Toyota Starbucks BP	Best Buy
2013	Amazon Apple Disney Coca Cola Whole Foods Sony Costco	AIG Goldman Sachs Halliburton Bank of America BP JP Morgan	AIG Goldman Sachs	Monsanto
2014	Amazon Apple	Bank of America BP	Bank of America BP	

	Disney Costco Samsung Sony	Monsanto Halliburton Dish Network Goldman Sachs AIG Sears		
2015	Amazon Samsung Costco J&J Apple Google Berkshire H Disney	Goldman Sachs AIG Dish Network Monsanto Halliburton Sears Comcast Bank of America BP	JP Morgan	Toyota
2016	Amazon Apple Google Disney J&J	VW Halliburton Monsanto Goldman Sachs AIG Bank of America Sears		
2017	Amazon UPS Disney Tesla	Wells Fargo Goldman Sachs Monsanto Halliburton Sears	VW	
Total	**106**	**106**	**21**	**18**

Appendix table 2. Holdings appearing in the same portfolio in two consecutive periods