

Disclosure quality pays off (for some):

Evidence from Switzerland*

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June 3, 2010

Abstract

Popular sentiment holds that investors benefit from greater disclosure quality of companies. Existing research has advanced the more nuanced view that, while companies can benefit in several ways from high-quality reporting (for example, through lower cost of capital or greater stock liquidity), it also brings about direct or indirect costs. Motivated by these ambiguous predictions and by the lack of evidence on long-term results for investors, this paper investigates whether risk-adjusted excess returns are available to investors from a strategy that picks stocks according to this characteristic. We study this question in an institutional context where companies have a wide choice of disclosure quality, namely, Switzerland. Forming portfolios based on a unique dataset of disclosure quality, we find that on average over all firms investors do not earn excess returns by employing this portfolio sort. However, we document plausible cross-sectional regularities: For small firms, for those with little analyst coverage, and for those not widely covered in the media, the strategy pays off handsomely. Because our dataset spans the most recent decade, we are also able to investigate time-series variation. We find that the relevance of disclosure quality for investment outperformance does not appear to have changed after the Enron and WorldCom accounting scandals.

Keywords: *Voluntary disclosure, disclosure quality, portfolio analysis*

JEL classification: G11, G14, G30, M41

* Financial support from Ecoscientia, the Swiss Finance Institute, and the NCCR FINRISK is gratefully acknowledged. Our thanks go to the Swiss Banking Institute for sharing the data used in this study. Josephine Böhm and Satya Pimputkar provided helpful research assistance. We thank Mike Cooper, Rachel Hayes, and Karl Lins for insightful conversations about the paper.

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1 Introduction

In this paper, we show that investors can earn risk-adjusted excess returns by paying attention to the voluntary disclosure quality of companies for which there exists relatively little information in the market. The study of the effects of disclosure quality on company performance and investment returns is of significant practical and academic interest. Yet, ambiguous views prevail so far. Practitioners are uncertain about the benefits and costs of value reporting: For example, according to PricewaterhouseCoopers (2006) about half of the listed Swiss companies believe that higher disclosure quality will have a positive impact on the firm's stock value, while half do not. Indeed, a wealth of theoretical and empirical academic work exists on the advantages and disadvantages of voluntary disclosure quality and value reporting. For example, important work has shown that better value reporting is associated with lower cost of capital and higher liquidity of the stock, but that there may also be drawbacks, such as higher direct costs or indirect costs due to loss of a competitive edge. However, very little is known about whether investors ultimately benefit in terms of long-run returns from selecting companies with a high quality of their reports. This paper makes a step towards filling this gap.

Switzerland is well suited as a setting where to study this question. Importantly, and in contrast to many other countries, Swiss listed companies can choose their accounting standard depending on their trading segment.¹ There is, thus, a broad scope of providing additional and voluntary information to investors. Other studies have also exploited this fact; see, for example, Caramanolis-Çötelli et al. (1999) for an event study on the abnormal return effects of the quality of Swiss company reports. Second, value-based management – an element of which is value reporting – has only relatively recently entered the minds of managers and investors. Therefore, it is important to study a relatively recent time period. Fortunately, a high-quality dataset of value reporting quality, spanning the recent decade for a significant portion of the Swiss stock market, is available. For other countries, including the US, such data are much harder to come by for recent time periods (or, indeed, not available to our knowledge). For example, the Association for Investment Management and Research (AIMR) index is not available for the most recent decade. A third motivation derives from the role of Switzerland in the global context. The market capitalization of Switzerland (SIX Swiss Exchange) at the end of January 2010 was US\$ 1'036 billion, which is 2.22% of the

¹ Companies listed in the main market have the choice between the International Financial Reporting Standards (IFRS) or US GAAP. Smaller companies listed at the SIX Swiss Exchange Local Caps have the option to use the Swiss Generally Accepted Accounting Principles (Swiss GAAP FER) additionally to their accounting standard.

world-wide market capitalization. Averaging over the past ten years, Switzerland has the 10th highest market capitalization (World Federation of Exchanges 2010). Understanding what works for companies in the Swiss context may, therefore, subject to the general caveat of transferring empirical results from one sample to a different population, be of general interest.

We use standard portfolio formation techniques to analyze the returns available to investors from picking stocks according to voluntary disclosure quality. The variable on which we sort portfolios is the Annual Value Reporting Rating (AVR), an index on the quality of the value reporting of Swiss listed companies that has been compiled for more than a decade by the Swiss Banking Institute of the University of Zurich. While many other studies (discussed below) have been able to consider the short-term effects of increased disclosure, this data allow us to study long-term investment performance by using the time horizon spanning 1999-2007. The index consists of theoretically-grounded criteria (motivated from the work of Botosan (1997)) and some criteria developed from conversations with practitioners. Fortunately, great care has been taken by the Swiss Banking Institute to make the data comparable and consistent over the years, thus limiting (though of course not eliminating) the drawbacks any rating system brings with it and allowing researchers to use the data for academic work. For example, Hail (2002) uses the AVR data to show that companies with higher scores face lower costs of equity. Section 2 discusses the data in more detail.

We consider both individual portfolios (where the quintile “*Top Portfolio*” with the 20% of firms with the best disclosure quality is of particular interest) as well as a long-short (“*Spread*”) portfolio formed by buying the firms with the best disclosure quality and shorting those with the worst disclosure quality. We adjust the returns for the standard risk-factors for the Swiss market, i.e., market risk (beta), size, value, and momentum.

Our key findings are as follows. First, there is some evidence that the portfolios covering the firms with the lowest disclosure quality (5%-percentile) have (significant) negative risk-adjusted excess returns. Also, the *Top* and *Spread* quintile *Portfolios* tend to imply small positive excess returns, but these returns are not statistically significant from zero and their sign is not robust to switching from equal weights (EW) to value weights (VW). Overall, we do not find compelling evidence that on average firms are rewarded or punished for their disclosure quality.

Second, we then turn to cross-sectional and time-series analysis of the portfolio returns to test the hypothesis that disclosure quality matters particularly strongly for some types of firms or in some time periods. As for the former, the analysis provides evidence that disclosure

quality matters when investing into companies where investors benefit from additional information because relatively little information may be otherwise available on the market. The results from three sample splits all point in the same direction. First, for firms with a below-median extent of analyst following, the *Top* and *Spread Portfolios* show large positive abnormal returns. For example, the equally-weighted (value-weighted) excess return for the *Spread Portfolio* is 13.9% (14.3%) per year, or more than one percentage point per month. On the contrary, no such outperformance is observable for companies with above-median analyst following. Second, though weaker, the same result holds for company size, a variable which also proxies for opacity under the assumption that larger firms are better known. The *Top Portfolio* for small companies has a significant abnormal return of 9.2% for equally-weighted and 9.5% for value-weighted portfolios. The *Spread Portfolios* for smaller companies have (significant) abnormal returns of 9.7% for the equally-weighted and 13.3% for the value-weighted method. Again, no such outperformance exists for the larger companies. Finally, in the subset of companies not widely covered in the Swiss media, investors in the *Spread Portfolio* earn excess returns on the order of 10%, depending on how media coverage is measured exactly. By contrast, the quintile *Spread Portfolio* for companies with a high level of media coverage offers insignificant and slightly negative excess returns for both weighting approaches. In sum, as one might expect, reliable disclosure and transparent communication seems to be important and rewarded by the market where it is most needed.

As for the relative importance of disclosure quality in different time periods, we focus on comparing portfolio returns before and after 2002/03, the times of the Enron and WorldCom scandals. One can plausibly hypothesize that disclosure quality offers additional, profitable screening power after these scandals. However, we do not find unambiguous evidence for or against this hypothesis, suggesting that the extent that the market has priced in differences in disclosure quality has not changed due to the scandals.

We carefully consider the robustness of these results by conducting a large number of specification tests. First, we consider portfolios based on different cutoff points, such as quartile portfolios. Second, we examine a specification test for longer holding periods. Third, we consider industry-adjusted scores. Fourth, because the AVR may be already partially or fully reflected in the stock prices at the time when it is announced, a portfolio analysis for different starting months (e.g., April instead of October) is performed. Fifth, we re-evaluate our results when excluding financials. Finally, we also consider the subindices making up the overall index. Of course, the specific quantitative findings vary across the particular approach

employed. For example, in the overall analysis an adjustment of the AVR scores by deflating by the industry mean results in comparable but slightly higher alphas for the equally-weighted approach, whereas the abnormal return with the value-weighted method is negative. Excluding financials, the alphas are positive for the *Spread Portfolios* for both weighting methods (EW: 2.7%; VW: 3.9%) but are not significant. But in sum, the overall results – the lack of excess returns due to disclosure quality in the overall sample, and the importance of disclosure quality for explaining excess returns for firms for which public information is otherwise relatively scarce – remain robust to numerous methodological variations.

The paper is organized as follows. Section 2 reviews the theoretical arguments in favor of and against value reporting / voluntary disclosure quality and puts the paper into the context of the existing empirical literature. Section 3 presents the institutional context and the data. Section 4 describes the empirical strategy. Section 5 discusses the results. Section 6 offers concluding remarks.

2 Voluntary Information Disclosure and Capital Market Outcomes

Voluntary information disclosure – or value reporting, as it is sometimes called – as an element of value-based management (Rappaport 1986) is a relatively new concept. The primary goal of voluntary information revelation is to reduce the gap between the internal and external views of company value.² However, it is not obvious that this will ultimately create a net benefit for companies. This section briefly reviews advantages and disadvantages.

Several reasons speak against companies putting much effort into voluntary disclosure. First, preparing and releasing information to the public is a costly process. Second, indirect costs may arise due to a reduction in firm value when a company reveals beneficial information to competitors (Verrecchia 1990). Third, potentially increasing legal costs for the firm can be a result of voluntary disclosure.

On the other hand, significant research also exists that notes that companies derive benefits from enhanced voluntary disclosure quality. We cannot review the substantial literature on the subject here, but outline the major arguments that have been brought forward (for a review, see Healy and Palepu (2001) and Beyer et al. (2009)). Early work suggested that increased disclosure lowers cost of equity (e.g. Barry and Brown 1984; Diamond and Verrecchia 1991). Empirical results for the negative association between disclosure quality

² The seminal contributions (especially as regards normative suggestions for the actual implementation for companies) in the Swiss and Anglo-American literature, respectively, are Labhart (1999) and Eccles et al. (2001).

and the firm's cost of equity exists especially for relatively opaque firms.³ A second line of work emphasizes the benefits of voluntary disclosure in terms of improved stock liquidity.⁴ For the purposes of this study, decreased liquidity risk for investors may, in turn, be reflected in higher market valuation. Finally, greater disclosure quality allows companies to attain increased information intermediation.⁵

Other reasons why firms should care about how they are perceived by investors derive from the general notion that corporate reputation is often classified as an intangible asset and as a signal about the underlying quality of a firm's products (Milgrom and Roberts (1982)). Several studies show that there is a positive relation between a firm's reputation and its financial performance (Michalisin, Kline, and Smith (2000), Roberts and Dowling (2002)).

In the light of this rich set of evidence, it is surprising that only few papers address the more direct question of the effect of voluntary disclosure quality on market valuations (stock prices) and returns. Healy, Hutton and Palepu (1999) find that companies with an increase in disclosure show a significant progress in stock performance during the publication and the subsequent year. Bloomfield and Wilks (2000) find that higher disclosure leads to higher prices and greater liquidity in a laboratory financial market. While we are primarily interested in the long-term investment returns, other studies focus on a shorter timeframe. Fernandes et al. (2010) find that upon implementation of a rule that made it easier for foreign firms to deregister with the U.S. SEC and thereby terminate their U.S. disclosure obligations, the

³ For example Botosan (1997) does not find a significant relationship in the overall sample, whereas for companies with a low analyst following an empirical relationship appears (though not very strongly). This finding is in line with the Merton (1987) where investors have incomplete information about the firms in the economy. By disclosing information a less known company can make potential investors aware of them and enlarge their investor base. Botosan and Plumlee (2002) find further empirical evidence for decreasing cost of capital based on higher disclosure (but find that the timeliness of information disclosure increases cost of capital). Hail (2002), for example, also reports a negative relationship between cost of equity and the Annual Value Reporting Rating (AVR) score for Swiss companies. Sengupta (1998) provides empirical evidence that firms with high disclosure quality have lower interest cost of issuing debt. Addressing the theoretical concern that information quality is, in fact, an idiosyncratic risk factor that should be diversified away; Armstrong et al. (2009) consider a model with both variance and covariance risk. They show that the overall effect of increasing information quality on expected returns is non-linear and is negative only for firms with sufficiently high betas; they also provide empirical evidence in line with this prediction (though with measures of information quality based on earnings and analysts forecasts). Mouselli and Hussainey (2009) also suggest that disclosure quality is a systematic risk factor and show that it is priced in the cross-section of UK stock returns.

⁴ Amihud and Mendelson (1986) argue that the investors' demands have to be compensated with an additional return for bearing the liquidity risk. More liquid stocks need to offer a lower supplementary liquidity premium, resulting in lower expected returns cost of equity. For example, Welker (1995) finds a significant negative relationship between bid-ask spreads (as a proxy for information asymmetries) and disclosure quality. See also Healy, Hutton and Palepu (1999) and Leuz and Verrecchia (2000).

⁵ According to Lang and Lundholm (1993, 1996) mandatory disclosure does not fully reveal the companies private information. Furthermore, voluntary disclosure decreases the cost of acquiring information for analysts. Hence the analysts will increase their information supply on the market. Lang and Lundholm (1993) find that the disclosure quality is higher for those companies issuing securities in current or future periods. Lang and Lundholm (1996) find that stocks from companies with high disclosure quality have higher analyst following, less variation in analyst forecasts and less volatility in forecast revisions.

market reacted especially negatively for firms from countries with weak disclosure and governance regimes. For example, Caramanolis-Çötelli et al. (1999) provide empirical evidence for abnormal returns driven by the disclosure quality during the announcement timeframe. However, especially in this context, the question of defining the precise event date is particularly critical. Portfolio analysis can, therefore, provide added value over and above short-term event studies. This is what this paper adds to the literature.

3 Measuring Disclosure Quality, Sample Selection, and Data

3.1 The Annual Value Reporting Rating as a measure of disclosure quality

We use a direct measure of the voluntary disclosure quality that a company adopts.⁶ Since 1999 the Swiss Banking Institute (SBI) of the University of Zurich conducts the Annual Value Reporting Rating (AVR). The main aim of the analysis is to determine the actual situation of value reporting in annual reports of Swiss companies. The voluntary disclosure quality is assessed using a scorecard with 35 items within 9 subindices/categories, which are thought to be important for the decision-making process of an investor, based on Botosan (1997) and conversations with practitioners including. The nine subindices are: i) impression, ii) background information, iii) important non-financials, iv) trend analysis, v) risk information, vi) value based management, vii) management-discussion and analysis of annual financial statements, viii) goals and credibility and ix) sustainability.⁷ The total score of the ranking is a straightforward summation of the checklist with 35 items, which are graded (1 = no information; 6 = very high information quality) based on the information content and quality. On the checklist that assessors use to rate companies, the currently required disclosure level is exactly specified. Summary statistics and further information are available in Table 1.

[Insert Table 1 about here]

The numbers suggest that disclosure quality is relatively stable overall in Switzerland, as measured by the ratio of the median number of points over the total reachable number of points, shown at the bottom of the table. (The absolute rating numbers are, of course, not to be interpreted cardinally.) Although the median/average AVR score in 2002 is low due to a

⁶ Other important work has instead used indirect measures. For example, Francis et al. (2004, 2005) use accruals quality (and find that it has significant explanatory power for the cross section of expected returns).

⁷ Details are available at <http://www.isb.uzh.ch/go/AVR>.

general shift in disclosure quality (perhaps in response to the Enron and WorldCom scandals), this does not affect the validity of sorting on the relative ranking. There appears to be an increasing disparity between the high and low rated companies since 2003, as measured by the spread of quintile 4 and 1. By contrast, the difference among the companies with good disclosure quality is decreasing since 2003, as can be seen in the difference between the maximum and the fourth quintile.

Any rating system has some degree of subjectivity attached to it, and this rating is no exception. A number of features suggest a high reliability of the rating, though. The SBI carefully recruits every year around eight assessors to perform the AVR. A team consists of two independent assessors, allowing double checking. The study head gives a preparatory training and screens the ratings and compares them with previous results to maintain consistency. One can reasonably disagree with both the voluntary disclosure attributes the SBI focuses on and with the index we compute. Just like good governance, good disclosure comes down to a lot more than a point system (as Jack and Suzy Welch argue in a Business Week article⁸). However, if the index were to convey no information, we would simply find that the index we use is not related to investment performance. A final reason to hope for undistorted quality, even if there may be some noise, is that the SBI does not sell the data to the companies that are being studied. Therefore, there is no reason to expect a systematic bias in which companies get the best scores.

3.2 The Swiss stock market and sample selection

At the end of November 2009 the Swiss stock market (SIX Swiss Exchange) contained 345 listed (domestic 279; foreign 66) companies with a market capitalization of US\$ 1'052 billion, which is 2.2% of the world-wide market capitalization. The yearly value of shares traded is US\$ 67'863 million. Averaging over the past ten years, Switzerland has the 10th highest market capitalization in the world.

The coverage of AVR is excellent. Specifically, 293 Swiss companies have been rated by the SBI since 1999. For this analysis we exclude all companies which have never been listed during the sample period. We further exclude five companies due to the lack of market data. Our final sample size is 206 companies. The sample contains 127 continuously listed and 60 continuously rated companies. 37 companies enter the sample during the analysis and are still listed. The same amount is disappearing due to mergers, acquisitions or going privates. Three companies went bankrupt. Two companies have been listed and delisted during the sample

⁸ “A dangerous division of labor,” by Jack and Suzy Welch, Business Week, November 6, 2006.

period. In contrast to other research (e.g, Botosan 1997) the sample is not limited to one industry. Table 2 summarizes the sample.

[Insert Table 2 about here]

To eliminate potential survivorship bias, we do not exclude companies which have been delisted during the sample period. Companies which are newly listed or went public are included as soon as possible if an AVR score is available.

3.3 Data

We use the AVR (1999-2007) disclosure quality score as the sorting variable for our portfolios. On the financial side, this paper uses for the basic set end-of-month market data from October 1999 to October 2008.⁹ We obtain data on stock returns (adjusted for splits, dividends with the return index (RI)), market value (MV) and data from the financial statements from Datastream. As a proxy for the extent of analyst following, we use the numbers of stock recommendations from the I/B/E/S. Specifically, we calculate the average number of recommendations in a year by averaging over the monthly number of recommendations within each calendar year. We use the four Swiss Carhart risk factors as calculated by Ammann and Steiner (2008). To be consistent with the methodology and their factors we use the call money rate as the risk free rate. The provider of this data is the Swiss National Bank.

4 Empirical strategy

To examine the relationship between voluntary disclosure quality and returns, we follow standard portfolio analysis approaches as conducted, for example, in Gompers, Ishii and Metrick (2003). The results of each rating are published in the business magazine Bilanz in September of the corresponding year. Therefore, we set the starting date of the primary portfolio analysis in October (but consider alternative starting dates in the robustness tests). We construct both an equally-weighted (EW) and value-weighted (VW) set of quintile portfolios. The VW portfolios are rebalanced monthly based on the actual market value weight. We sort the stocks based on their score in the AVR and group them into five portfolios (but consider other sorts/cutoff points in the robustness tests). The portfolio

⁹ The Swiss Carhart risk factors are only available until January 2009.

containing the stocks below the first quintile of the AVR is called *Bottom Portfolio* P1, whereas the *Top Portfolio* (P5) includes the stocks above the fourth quintile. Additionally, we build a long-short *Spread Portfolio*, where the investor buys the *Top Portfolio* and sells the *Bottom Portfolio*. For the baseline analysis with quintile portfolios this *Spread Portfolio* is called LSP5-P1.

If the abnormal returns are positive for the *Spread Portfolio* then the better rated/ranked stocks outperform stocks with low disclosure quality. Note that this methodology, in fact, is based on inefficient markets. If disclosure quality matters for firm performance and this relationship is fully incorporated by the market, then stock prices should quickly adjust to any relevant change in disclosure quality. In this case a simple event study would find expected returns to be unaffected beyond the event window. Furthermore, no difference in returns should be observable. If the change/level in disclosure is not immediately reflected in the stock prices than the realized returns of the companies will be systematically different from other similar equities.

Portfolio Return Contribution. The portfolio returns may be different due to the composition, riskiness and “style” of the portfolio. Therefore, the differences of portfolio returns are probably driven by the exposure to several risk factors. To address this fact, we calculate the abnormal portfolio return alpha (α) based on three different models: (i) the Capital Asset Pricing Model (CAPM) introduced by Sharpe (1964) and Lintner (1965); (ii) three-factor model of Fama and French (1993), and (iii) the Carhart (1997) portfolio analysis regression model.¹⁰ Equation 1 shows the portfolio attribution regression in further detail:

$$R_{it} - R_{ft} = \alpha + \beta_1 RMRF_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 WML_t + e_t \quad (1)$$

where $R_{it} - R_{ft}$ is the time series of excess returns of portfolio i , $RMRF_t$ is the excess return over the risk free rate of the market, SMB_t is the premium return of “Small Minus Big”, (size risk factor; measured by market capitalization), HML_t is the premium return of “High Minus Low”, (value risk factor; measured by the book-to-market ratio), and WML_t is the premium return of “Winners Minus Losers”, (momentum risk factor; measured by the one-year past return).

Fama and French (1998) and Griffin (2002) find that the Carhart risk factors are country-specific. Therefore, we take the appropriate Swiss risk factors, which are provided by Ammann and Steiner (2008).

¹⁰ Carhart's model includes a momentum risk factor, due to findings of momentum abnormality by Jegadeesh and Titman (1993).

5 Results

This section presents our empirical results. We first examine the portfolio analysis for the full sample for equally-weighted (EW) and value-weighted (VW) portfolio returns. Then we present the analysis for a sample split based on the number of analysts following the company the company size, and press coverage. Further, we check our results for robustness. Finally, we summarize our results.

5.1 Full Sample/Total Index Score

We present the results of this analysis in Table 3 for equally-weighted portfolios and in Table 4 for value-weighted portfolios.¹¹ Each column represents one portfolio in Panels A, B, C and E. Panel A shows the mean excess returns and the annualized alphas from the estimated regressions with one, three and four risk factors. The corresponding t -statistic is in parenthesis below the alphas. Panel B reports the estimated factor loadings on the four (Carhart) risk factors, which provide relevant insight into the constitution of the portfolios. Panel C contains common portfolio summary statistics, such as the annualized portfolio standard deviation or mean market value. Finally, the mean portfolio members and the portfolio's Sharpe ratio are reported. We discuss Panels D and E in the robustness section.

The key findings are threefold. First, while the mean excess return and that from adjusting for market risk (CAPM alpha) are negative (and, in the case of value-weighting, even significantly so), controlling for the other risk factors (size, value, and momentum) appears important. Looking at the 4-factor alphas in Panel A, we find insignificant evidence for the *Spread Portfolios* depending on the weighting approaches (EW-alpha: 0.9% / VW-alpha: -3.9%). Second, we observe significant outperformance of *Top Portfolio P4* for both weighting approaches (EW-alpha: 8.7% / VW-alpha: 13.8%). One possible interpretation of this finding is that the market takes a high disclosure quality level to be valuable, but does not reward “excess” quality. Third, insights can be gleaned from studying the loadings on the four factors as reported in Panel B. For *Top Portfolio P5* the factor loading on SMB is negative because size is positively related to disclosure quality; see also the mean market values provided in Panel C. This echoes previous studies, e.g., Lang and Lundholm (1993).

¹¹ Under the VW approach, highly capitalized stocks may strongly influence the portfolio returns. For example in Portfolio P5 six stocks (Novartis, Roche, Nestlé, UBS, ABB and Swiss Re) are responsible for 94% of the weights due to their high market value in contrast with the size of the other 13 smaller stocks within the portfolio for the first year of the analysis. Therefore, EW returns may provide more robust insights.

[Insert Table 3 about here]

[Insert Table 4 about here]

Overall, we do not find strong evidence that greater voluntary disclosure quality is monotonically associated with superior performance for investors forming portfolios based on this disclosure quality. However, it is possible that for particular subsets of companies or at particular times, disclosure quality matters more. This is what we investigate next.

5.2 Cross-sectional results, part 1: Extent of Analyst Following

We expect that a company's effort in terms of disclosure quality in a low information environment will have a higher impact than for a company in a high information environment. To operationalize this idea, we draw on the notion of Botosan (1997) that analysts may act as information multipliers and intermediaries who reduce the power and importance of disclosure quality.¹² Based on the average number of stock recommendations per company in each year, we split the sample into two parts, above-median and below-median analyst following.

We would expect to find higher excess returns for the *Spread Portfolio* of *low analyst following subsample* in comparison to those based on the *high analyst following subsample*. Panel A in Table 5 provides the result from this analysis.

[Insert Table 5 about here]

Strikingly, the equally-weighted (value-weighted) excess return for the (quintile-based) *Spread Portfolio* for the low analyst following split is 13.9% (14.3%) per year. For high followed companies the alphas of *Top* and *Spread Portfolios* are mainly negative. As one might expect, these alphas are not statistically significant from zero at high significance levels for all combinations. However, as is evident from visual inspection of Table 5, there is a marked difference between companies with little analyst following (on the left-hand side of the table) compared to those with a high analyst following (in the middle of the table). More formally, we perform a trading strategy which takes a long position in the *LS Spread Portfolio* based on companies with a low extent of analyst following and a short position in the same *LS*

¹² See also, for example, Leuz and Verrecchia (2000) and Hail (2002) for evidence that the economic consequences of improved disclosure quality are better detectable in a low disclosure environment.

Spread Portfolio but for companies with high analyst coverage. The results can be found on the right-hand side of the table. For example, the equally-weighted (value-weighted) excess return for the strategy based on quintile portfolios is 14.8% (12.1%) per year. For some portfolios, the outperformance is remarkable. For example, when this strategy is applied to the decile *Spread Portfolios*, it yields risk-adjusted excess returns of 23.8% (EW) and 33.2% (VW).

In short, for companies with low analyst following, paying attention to disclosure quality seems to pay off more. Our suggested interpretation of these results is that these companies with low analyst following need to provide more disclosure to the market due to the scarcity of information multipliers.

5.3 Cross-sectional results, part 2: Company Size

Many investors are arguably focusing their attention on large companies because these are more visible. Instead, information for smaller companies tends to be scarce. Will those among the small firms that voluntarily increase their transparency and enhance their disclosure quality be rewarded for doing so by the market? To check for this possibility, we split the sample into two parts around the corresponding median market value of the current year and then perform the portfolio analysis. The results are presented in Panel B in Table 5.

Generally, the extra returns that investors earn by picking smaller companies with good disclosure quality compared to worse disclosure quality are higher than the extra returns they earn by paying attention to disclosure quality for firms above the median market value size. Again, this is not a result that holds for each possible portfolio one can construct, but again the alphas on the left-hand side of the table look strikingly different from those in the middle. For example, the equally-weighted (value-weighted) excess return for the (quintile-based) *Spread Portfolio* based on the smaller companies is 9.7% (13.3%) per year. The corresponding portfolios based on large companies yield -2.3% (-0.9%) per year. Moreover, the difference between the strategies based on small and large companies (on the right-hand side of the table) for the same *Spread Portfolios* suggests a systematic difference in the economic effect of disclosure quality.

The negative performance of *Spread Portfolios* based on large companies may indicate that large companies tend to “destroy” value by putting too much effort on voluntary disclosure quality. We speculate that one channel how this result comes about may be that for the largest and most complex companies, high-quality disclosure amounts to such large amounts of information that investors suffer from information overflow.

5.4 Cross-sectional results, part 3: Media Coverage

A third proxy for the degree to which information asymmetries exist between firms and investors is the (lack of) press coverage. It is possible that within the set of those companies about which relatively few articles are written, investors benefit from enhanced disclosure quality more than within the set of companies for which media coverage is strong. To evaluate this hypothesis, we split the sample based on the yearly media coverage of the rated companies in relevant Swiss media. These include the primary two daily newspapers (Neue Zürcher Zeitung (NZZ) and Tages-Anzeiger), the leading weekly investors magazine (Handelszeitung) and the Swiss equivalent of the Associated Press (Schweizerische Depeschagentur). To obtain the number of relevant articles we follow standard procedures as in Fang and Peress (2009). As the source for our searches, we use LexisNexis and the database of NZZ (which is not covered in LexisNexis, even though it is the leading Swiss newspaper that is relevant also for international investors). The range and median values per year are shown in Table 1, Panel D.

If enhanced disclosure quality matters more to investors for companies with relatively low media coverage, we expect to find higher risk-adjusted returns for long-short portfolios based on disclosure quality for these companies than for firms widely covered in the media. To test this idea, we split the sample at the median number of media mentions in each respective year. Panel C in Table 5 presents the result of the portfolio analysis based on the split of the sample by the media coverage in the NZZ, whereas Panel D does this for the media outlets covered by LexisNexis. Notably, the equally-weighted (value-weighted) excess return for the (quintile-based) *Spread Portfolio* for the companies with low media coverage in NZZ is 9.30% (11.48%) per year. The same portfolio strategy based on other newspapers from LexisNexis yields in an equally-weighted (value-weighted) excess return of 10.63% (4.71%). Strategies based on other portfolio cutoffs also indicate - especially for with the equally-weighted approach - abnormal returns that are not explained by the four standard factors. By contrast, the quintile *Spread Portfolio* for companies with a high level of media coverage provides negative and insignificant excess returns for both weighting approaches. To combine these results, consider a trading strategy which takes a long position in the quintile *LS Spread Portfolio* for little-covered companies and a short position in the same *LS Spread Portfolio* but for companies with a high extent of press coverage. When investors go by the coverage in the NZZ, the risk-adjusted trading profit is 13.4% (12.1%) for the equally-weighted (value-weighted) approach. The significance of these results is not very high,

different portfolios offer significant alphas, depending on whether media coverage is measured from LexisNexis or from the NZZ. In sum, our results suggest that companies with low level of investor recognition but high voluntary disclosure quality have larger returns than well known firms. As such, they complement the findings of Bodnaruk and Ostberg (2009).

5.4 Time-series results, part 1: Before and after governance scandals or stability over time

Is there a systematic change in the value of disclosure quality due to the Enron and WorldCom accounting and governance scandals in 2002/2003? In the context of our analysis, it is conceivable that disclosure quality was not priced before the scandals.

To investigate this possibility, we conducted two separate portfolio analyses: one for the period from October 1999 to September 2003 and one for the period from October 2003 to September 2008. We present in Table 6 the results for the LS8020 *Spread Portfolios* for the full sample and for sample splits with respect to analyst following, company size and media coverage. (Results for other portfolios are not presented to conserve space but generally exhibit similar patterns.)

For the full sample, we are not able to detect a (significant) pattern for either weighting approach. The high excess returns for *Spread Portfolios* with low analyst coverage tend to decrease slightly in the period from 2003-2008 compared to the pre-scandal-period for both weighting schemes. On the other hand, the negative excess returns for high followed companies disappear after the accounting scandals. For example, the significant negative risk-adjusted excess return for equally-weighted *quartile Spread Portfolio* in the pre-scandal-period changed to a slightly positive insignificant alpha in the post-scandal-period. For these companies, thus, investors appear to value disclosure quality after the accounting scandals, at least in equally-weighted portfolios. A similar excess return pattern is obtained based on the sample split on media press coverage. The excess returns for the *Spread Portfolio* for highly covered companies tend to be positive in the post-scandal-period than negative as in the pre-scandal-period. This effect is again limited to equally-weighted portfolios. In contrast, the *Spread Portfolio* tends to convey higher alphas in the post-scandal-period for smaller companies instead of larger companies.

5.5 Time-series results, part 2: Stability over time

Equity markets experienced a variety of changes over our sample period, not only related to governance scandals. In this section, we explore whether our results are period-specific and how they vary over time. We focus on our *quintile Spread Portfolios* and consider a trading

strategy over rolling 48 months periods.¹³ The four panels in Figure 1 are organized in identical ways. They show the four-factor alphas for equal- and value-weighted portfolios (solid lines), plotting also the 90% confidence intervals (dashed lines). For the full sample we see in Figure 1 in Panel A that despite the slight increase in monthly alphas for both weighting approaches, at no point in time did a trading strategy based on disclosure quality for the full sample yield significant excess returns. Alphas are also stable over time – but significantly positive for equally-weighted portfolios – for companies with a low analyst following (Panel B), though there is a hint of a downward trend over time. This significant holding does not hold for value-weighted portfolios. The same pattern is observable for the trading strategy based on companies with low media coverage in Panel D. A somewhat stronger trend is found in Panel C for the small size sample split, for the value-weighted portfolio. While the equal-weighted Spread Portfolio implies significant alphas virtually over the complete sample period, the value-weighted portfolio offers significant excess returns only towards the end of the period. Overall, however, despite this last exception, this analysis suggests that our findings on the cross-sectional dimension are fairly stable over time.

5.6 Robustness and Specification Tests

In this final section, we present some robustness checks for our main findings.

Portfolios based on other percentiles. We first want to verify that our main results are not driven by the choice of the portfolio building process.

Panel D in Table 3 (4) represents the adjusted equally-weighted (value-weighted) portfolio returns based on other percentiles.

We obtain a small, but largely insignificant positive outperformance for all equally-weighted *Spread Portfolios* based on other portfolio cutoff points. This result does not apply to value-weighted portfolios where the outperformance is negative (and insignificant). These results are in line with the results of the main analysis, where a small insignificant outperformance is detectable for equally-weighted portfolios. What is noteworthy is the equally-weighted (value-weighted) excess returns for the *Spread Portfolio LSP9505*, which is 12.5% (7.7%) per year, respectively.¹⁴ This result is mainly driven by the large underperformance of the corresponding *Bottom Portfolio P0005*. This indicates that

¹³ For an application of this approach in a different context, also using portfolio analysis, see Boemer et al. (2010).

¹⁴ The equally-weighted (value-weighted) portfolio containing the stocks below the 2.5% threshold has a negative excess return of -16.2% (-18.6%).

companies with low voluntary disclosure are punished by the market.¹⁵ Overall, however, this robustness check confirms that in the overall sample, forming portfolios based on disclosure quality does not offer significantly positive or negative excess returns.

We perform the same specification tests for the sample splits with respect to the number of analyst following (Panel A in Table 5) and the company size (Panel B in Table 5). The high outperformance of the *Spread Portfolio* is again observable for both weighting approaches for companies with low analyst following. For example, the equally-weighted (value-weighted) excess return for the *Spread Portfolio LSP9010* for the low analyst following split is 17.8% (25.4%) per year. Generally, the excess return declines for portfolios with a lower threshold. Taken together, we are able to present robust outperformance for the high disclosure quality portfolio for the subsample with low analyst following. The analysis for the highly followed companies is in line with the previous mixed findings. Usually, the excess returns are (insignificant) negative. Surprisingly, the equally-weighted *Spread Portfolio* containing all stocks above the median AVR score in a long position and the stocks below the median AVR score in a short position has a significant excess return of 6.7%. The corresponding value-weighted portfolio has a negative performance of -1.8%.

As we can see in Panel B in Table 5, the results for the specification tests with respect to company size are in line with previous findings for quintile portfolios. For example, the equally-weighted (value-weighted) excess return for the *Spread Portfolio LSP7525* for the subsample with small companies is 8.7% (8.6%) per year. Focused on the large companies we find no outperformance for *Spread Portfolios*. In other words, disclosure quality seems to pay off only for small and/or low followed companies.

Different Portfolio Formation Periods. Although the AVR is published yearly, we want to know what an investor would get, if he did not renew his portfolio every year according to the latest AVR. Therefore, we introduce longer portfolio holding periods until reformation. Panel E in Table 3 (4) shows abnormal returns for equally-weighted (value-weighted) quintile *Top* and *Spread Portfolios* with different portfolio reformation time frames based on the four risk factor regressions. Generally, the *Spread Portfolios* based on a longer holding period have positive excess returns for both weighting approaches. For example, the significant equally-weighted (value-weighted) excess return for the *Buy and Hold Spread Portfolio LP5-P1* is

¹⁵ According to a rule of thumb, portfolios should contain at least five companies (Vaihekoski 2004). This standard is fulfilled in this analysis, even for the year with the smallest sample size.

8.3% (9.4%) per year. This suggests that voluntary disclosure quality has a long-term yield for the investor.

Industry-Adjusted Scores. Industries have diverse reporting quality standards. One might reasonably assume that the difference to the companies' peers is particularly important for our investor. To address this, we adjust the companies' scores relative to those of their peers and rerun our analysis. Specifically, we use the Industry Classification Benchmark (ICB) to determine the companies industry.¹⁶ The total score from AVR is adjusted for industry effects by dividing the score by the average score of the industry if the industry contains at least five stocks. Only the telecommunication industry with Swisscom and the company EG Laufenburg of the utilities industry in 1999 are excluded from this analysis.

Panel A of Table 7 shows the results. We find a positive excess return of 2.92% for the equally-weighted *Spread Portfolio LSP5-P1*. This is 2.04 percentage points higher than the excess return (0.88%) with unadjusted scores, but it is still insignificantly different from zero, confirming the result that in the overall sample we do not find superior investment performance based on firm's disclosure quality. Portfolios based on different cut-off points show generally comparable results as for the unadjusted score and have a positive yield. Portfolios based on value-weighted returns tend to have an underperformance of the *Spread Portfolios*.

[Insert Table 7 about here]

Portfolio Starting Specification. The portfolio starting date could be crucial for the analysis. If the short-term effect of good voluntary disclosure is already incorporated in stock prices, we would not be able to find positive returns based on our analysis. Therefore, we decided to examine the analysis with starting date April instead of October. This helps increase the likelihood that the disclosure quality is captured by the right portfolio.¹⁷ The results from this analysis provided in Panel B in Table 7. For example the equally-weighted (value-weighted) excess return for the *Spread Portfolio LSP5-P1* is -.01% (-5.2%) per year. For further

¹⁶ Due to the small sample size the use of supersector or sector classification is not possible although it might provide a better insight into the different portfolios.

¹⁷ Imagine a company with normal disclosure practice would be in Portfolio P3. The management or the board of directors decides to enhance the value reporting and disclosure practice in the next annual report which will be published in April one year later. As a result, the stock would be placed in the Top Portfolio P5. If the short-term market reaction will be positive and the portfolio building date is later than April the effect would be captured by the wrong portfolio.

analysis, we examine the analysis for other months and see that in the early half of the year, especially in April, May, and June, the highest alpha for the corresponding portfolios occurs. This may indicate that voluntary disclosure quality is quickly reflected into stock prices. However, in none of the cases do we find statistically significant outperformance of the high disclosure quality sample.

Subsample without Financials. Disclosure practices of financial institutions are heavily regulated and different from the disclosure practice of other industries. Consequently, the exclusion of financials is a common robustness check in disclosure-related research. Therefore, we exclude the companies from the financial industry (based on the "Industry Classification Benchmark" number; ICB: 8000) and redo the analysis. The results are available in Panel C in Table 7. The equally-weighted (value-weighted) excess return for the *Spread Portfolio LSP5-P1* is 3.9% (2.1%) per year. Further analysis with respect to portfolio formation percentile and holding periods shows insignificant positive outperformance for equally-weighted portfolios.

Subindices. We also conducted a separate portfolio analysis for each of the nine subindices of the AVR. As expected, not every category is equally important, but it is also not the case that one or two categories exclusively stand out. One interesting finding is that the subindex relating to "impression" is not important at all for generating the result that low followed companies with high overall disclosure quality produced excess returns compared to the high followed group. Future research might be able to shed additional light on the question of "form vs. substance."

6 Concluding remarks

This study shows that investors are able to earn abnormal returns on trading strategies based on voluntary disclosure quality, at least in the sample and time period under consideration. The effect is, consistent with our expectations, more pronounced for relatively opaque firms, as measured by their analyst following, size, and media coverage. To our knowledge, this is the first systematic evidence on the long-run investment performance implications of disclosure quality. As such, this paper complements the large literature that exists on short-run effects on increased disclosure quality, on the correlation of disclosure quality with cost of capital, and on the effects on liquidity of disclosure quality.

Further research could be profitably conducted considering changes in ratings (rather than levels) as well as additional proxies for opaqueness. There are also other empirical strategies one could employ to address the research question of this paper. For example, future research might examine whether companies with better disclosure are assigned higher valuations by the market, as measured by Tobin's Q.

7 Literature

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8 Appendix

Table 1: Summary Statistic AVR

This table summarizes the AVR total score for the years 1999–2007. Panel A shows the total coverage of AVRR and the companies that had been listed in this period. Panel B summarizes the total AVRR scores over the years. Δ Q4 - Q1 is the difference between the 4th quintile and 1st quintile in percentage points.

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Panel A. Companies in the AVR Sample									
Rated companies	111	151	151	166	177	187	202	200	203
Listed companies	89	115	112	129	136	130	137	138	143
Listed companies in%	80	76	74	78	77	70	68	69	70
Panel B. AVR Total Score									
Reachable points	48	50	50	58	210	210	210	210	210
Min	5	8	7	1	49	49	43	46	51
1st quintile	13	16	17	10	68	67	71	72	80
2nd quintile	17	21	23	11	76	78	83	88	92
Average	18.1	22.9	23.5	14.6	83.5	86.4	91	95.6	101
Median	18	22	24	13	79	83	89	91	96
3rd quintile	20	24	26	15	84	90	96	101	104
4th quintile	24	29	29	19	100	103	111	120	123
Max	30	44	42	38	158	153	153	164	170
Standard deviation	5.7	7.8	7	7	19.9	21.9	23.4	26.3	24
Skewness	0	0.4	-0.1	1	1.1	0.7	0.4	0.3	0.4
Max – Q4	13%	30%	26%	33%	28%	24%	20%	21%	22%
Δ Q4 - Q1	23%	26%	24%	16%	15%	17%	19%	23%	20%
Median / Reachable points	38%	44%	48%	22%	38%	40%	42%	43%	46%
Panel C. Industries in Sample									
Basic materials	7	9	9	13	13	12	13	12	13
Industrials	29	39	41	42	41	41	41	39	41
Consumer goods	8	15	13	14	16	14	16	15	15
Health care	11	12	13	15	14	12	13	15	15
Consumer services	12	14	13	12	15	16	19	18	18
Telecommunications	0	1	1	1	1	1	1	1	1
Utilities	1	0	0	5	5	5	5	5	5
Financials	20	23	21	24	32	32	33	32	37
Technology	5	7	7	9	9	7	6	7	6
Panel D. Media Coverage									
NZZ									
Min	0	0	0	0	0	0	0	0	0
Median	43	25	24.5	27	25.5	27	32	41	33
Max	969	1215	1844	1264	1198	1234	1213	1304	1739
LexisNexis									
Min	0	0	0	0	0	0	0	0	0
Median	11	6	2	9	21.5	37.5	39.5	31	35
Max	595	480	133	245	872	1696	1554	1426	1520

Table 2: Sample Attrition

The panel on the left presents the sample breakdown. The panel on the right provides further sample information

Sample Breakdown		Sample Information	
Unique companies in AVR	293	Continuously listed	127
Not listed at all	-80	Continuously rated	60
Subtotal	213	Listed new in sample	37
Companies not listed in Switzerland	-2	Delisted	37
No data available	-5	Listed & delisted	2
Total in sample	206	Bankruptcy	3

Table 3: Disclosure Index-Sorted Stock Portfolios (Equally-Weighted)

All stocks are sorted based on the companies' AVR scores. We construct 5 portfolios based on quintile cutoffs. This table presents the results from regressions of equally-weighted excess returns over the market on a constant, market return (RMRF), as well as three (RM, SMB, HML) Fama-French and four (RMRF, SMB, HML, WML) Carhart factor regressions. The first portfolio building date is 10/99 and the portfolios are rebalanced monthly and reformed every year. The sample period is 10/99-10/08. Panel A shows monthly alphas (in annualized percentages) from these regressions and the corresponding values of *t*-statistics (in parentheses). Panel B shows loadings on the four risk factors and the corresponding *t*-statistics (in parentheses) from the Carhart four-factor regression. Panel C reports annualized standard deviation and monthly skewness of portfolio returns, mean market value (MV), market-to-book ratio (MBR) and mean portfolio stock numbers and Sharpe ratios for each portfolio. Panel D shows the Carhart four-factor regression alpha for portfolio based on other cutoffs. For example, the Portfolio P0005 includes all stocks with an AVR score in the range from the minimum to the 5%-percentile. Panel D contains also the long-short portfolios for matching portfolios. * denotes significance at 10%, ** denotes significance at 5%, *** denotes significance at 1%.

Reporting Quality	(low)			(high)		
Quintile Portfolio	P1	P2	P3	P4	P5	LSP5-P1
Panel A. Portfolio Alphas						
Mean excess return	7.22 (1.228)	5.45 (0.874)	5.99 (1.003)	14.72** (1.994)	3.31 (0.548)	-3.66 (-1.016)
CAPM alpha	6.07 (1.499)	4.10 (1.111)	4.75 (1.262)	13.11*** (2.851)	1.86 (0.741)	-3.99 (-1.178)
3-factor alpha	0.19 (0.061)	-1.37 (-0.496)	-1.12 (-0.416)	6.56* (1.863)	-0.85 (-0.388)	-1.04 (-0.322)
4-factor alpha	0.12 (0.036)	-1.03 (-0.343)	-1.39 (-0.482)	8.67** (2.288)	1.01 (0.432)	0.88 (0.253)
Panel B. Four-Factor Regression Coefficients						
RMRF	1.0667*** (12.825)	1.1997*** (16.426)	1.1626*** (16.455)	1.2673*** (14.307)	1.1354*** (20.118)	0.0687 (0.815)
SMB	0.8359*** (8.146)	0.7816*** (8.673)	0.8362*** (9.592)	0.8562*** (7.834)	0.3782*** (5.431)	-0.4577*** (-4.399)
HML	0.2575** (2.104)	0.4907*** (4.567)	0.5528*** (5.319)	0.6649*** (5.102)	0.2964*** (3.570)	0.0389 (0.314)
WML	0.0050 (0.057)	-0.0248 (-0.320)	0.0199 (0.265)	-0.1400 (-1.488)	-0.1316*** (-2.194)	-0.1366 (-1.525)
Panel C. Portfolio Characteristics						
Portfolio stdev	0.171	0.183	0.174	0.208	0.179	0.110
Portfolio skewness	-0.116	-0.647	-0.844	0.289	-0.837	
Mean market value	1119.38	2473.87	2316.10	6067.69	29951.02	
Mean market to book ratio	2.13	2.32	2.82	2.48	3.25	
Mean portfolio number	30	27	28	27	25	
Sharpe ratio	0.423	0.298	0.343	0.708	0.186	-0.333

Panel D. Four-Factor Alphas for Different Portfolio Cutoff Points (Table 3; continued)

Bottom Portfolio	P0005	P0010	P0015	P0025	P0033	P0050
4-factor alpha	-11.41**	-3.23	-0.60	0.35	1.03	0.58
	(-2.584)	(-0.765)	(-0.152)	(0.115)	(0.359)	(0.226)
Top Portfolio	P9500	P9000	P8500	P7500	P6600	P5000
4-factor alpha	-0.17	-1.35	-0.38	3.55	5.38**	2.31
	(-0.057)	(-0.483)	(-0.154)	(1.368)	(2.055)	(0.971)
Spread Portfolio	LS9505	LS9010	LS8515	LS7525	LS6633	PMedian
4-factor alpha	12.55**	1.93	0.22	3.19	4.32	1.73
	(2.050)	(0.401)	(0.051)	(0.998)	(1.552)	(0.795)

Panel E. Four-Factor Alphas for Different Portfolio Formation Periods

Quintile Portfolio Alphas	P1	P2	P3	P4	P5	LSP5-P1
4-factor alpha (2 year)	-3.92	2.30	-0.38	8.30	3.04	7.22*
	(-1.140)	(0.792)	(-0.120)	(2.428)	(0.981)	(1.728)
4-factor alpha (3 year)	-2.63	2.77	-0.66	7.19*	2.99	5.76
	(-0.600)	(1.017)	(-0.197)	(1.866)	(1.176)	(1.270)
4-factor alpha (5 year)	1.61	1.79	2.53	1.38	5.50*	3.84
	(0.370)	(0.565)	(0.732)	(0.380)	(1.956)	(0.960)
4-factor alpha (Buy & Hold)	-1.99	-1.27	3.50	-0.01	6.13**	8.28*
	(-0.445)	(-0.394)	(0.935)	(-0.003)	(2.166)	(1.995)

Table 4: Disclosure Index-Sorted Stock Portfolios (Value-Weighted)

All stocks are sorted based on the companies' AVR scores. We construct 5 portfolios based on quintile cutoffs. This table presents the results from regressions of value-weighted excess returns over the market on a constant, market return (RMRF), as well as three (RM, SMB, HML) Fama-French and four (RMRF, SMB, HML, WML) Carhart factor regressions. The first portfolio building date is 10/99 and the portfolios are rebalanced monthly and reformed every year. The sample period is 10/99-10/08. Panel A shows monthly alphas (in annualized percentages) from these regressions and the corresponding values of t-statistics (in parentheses). Panel B shows loadings on the four risk factors and the corresponding t-statistics (in parentheses) from the Carhart four-factor regression. Panel C reports annualized standard deviation and monthly skewness of portfolio returns, mean market value (MV), market-to-book ratio (MBR) and mean portfolio stock numbers and Sharpe ratios for each portfolio. Panel D shows the Carhart four-factor regression alpha for portfolio based on other cutoffs. For example, the Portfolio P0005 includes all stocks with an AVR score in the range from the minimum to the 5%-percentile. Panel D contains also the long-short portfolios for matching portfolios. * denotes significance at 10%, ** denotes significance at 5%, *** denotes significance at 1%.

Reporting Quality	(low)				(high)	
Quintile Portfolio	P1	P2	P3	P4	P5	LSP5-P1
Panel A. Portfolio Alphas						
Mean excess return	9.51 (1.43)	5.88 (0.83)	3.09 (0.41)	12.26 (1.43)	0.39 (0.08)	-8.38* (-1.77)
CAPM alpha	8.25* (1.72)	4.39 (1.01)	1.40 (0.34)	10.40* (1.96)	-0.79 (-0.46)	-8.40* (-1.77)
3-factor alpha	4.86 (1.04)	0.86 (0.21)	1.14 (0.27)	8.33 (1.61)	-0.03 (-0.02)	-4.68 (-1.00)
4-factor alpha	4.81 (0.95)	-0.54 (-0.12)	1.61 (0.35)	13.77** (2.49)	0.72 (0.38)	-3.92 (-0.77)
Panel B. Four-Factor Regression Coefficients						
RMRF	1.025*** (8.56)	1.291*** (12.09)	1.260*** (11.35)	1.192*** (9.44)	0.850*** (18.81)	-0.1754 (-1.40)
SMB	0.468*** (3.17)	0.507*** (3.85)	0.0422 (0.31)	0.2373 (1.52)	-0.113** (-2.03)	-0.582*** (-3.76)
HML	0.1573 (0.89)	0.329** (2.09)	-0.2204 (-1.35)	0.519*** (2.79)	-0.1072 (-1.61)	-0.2646 (-1.43)
WML	0.0033 (0.03)	0.0989 (0.87)	-0.0325 (-0.28)	-0.350** (-2.61)	-0.0524 (-1.09)	-0.0557 (-0.42)
Panel C. Portfolio Characteristics						
Portfolio stdev	0.1916	0.2058	0.2256	0.2446	0.1444	0.1476
Portfolio skewness	-0.3067	-1.0018	-0.5771	-0.8049	-0.6721	
Mean market value	1119.4	2473.9	2316.1	6067.7	29951	
Mean market to book ratio	2.1	2.3	2.8	2.5	3.3	
Mean portfolio number	30	27	28	27	25	
Sharpe ratio	0.496	0.286	0.137	0.501	0.027	-0.568

Panel D. Four-Factor Alphas for Different Portfolio Cutoff Points (continued)

Bottom Portfolio	P0005	P0010	P0015	P0025	P0033	P0050
4-factor alpha	-8.00	7.78	8.79	2.46	4.72	-0.25
	(-1.01)	(1.32)	(1.59)	(0.53)	(1.06)	(-0.07)
Top Portfolio	P9500	P9000	P8500	P7500	P6600	P5000
4-factor alpha	-0.87	-0.69	1.18	0.93	1.75	2.44
	(-0.30)	(-0.27)	(0.58)	(0.51)	(0.99)	(1.40)
Spread Portfolio	LS9505	LS9010	LS8515	LS7525	LS6633	PMedian
4-factor alpha	7.69	-7.91	-7.04	-1.49	-2.84	2.69
	(0.81)	(-1.32)	(-1.26)	(-0.31)	(-0.65)	(0.74)

Panel E. Four-Factor Alphas for Different Portfolio Formation Periods

Quintile Portfolio	P1	P2	P3	P4	P5	LSP5-P1
4-factor alpha (2 year)	-2.08	2.93	1.69	10.68**	2.55	4.71
	(-0.38)	(0.64)	(0.35)	(2.03)	(1.23)	(0.76)
4-factor alpha (3 year)	-3.25	1.84	0.13	6.14	2.46	5.89
	(-0.59)	(0.44)	(0.02)	(1.05)	(1.15)	(0.92)
4-factor alpha (5 year)	-6.03	8.18	3.47	1.02	2.60	9.14
	(-1.23)	(1.65)	(0.64)	(0.20)	(1.26)	(1.48)
4-factor alpha (Buy & Hold)	-5.97	4.61	4.63	2.54	2.88	9.37
	(-1.22)	(0.82)	(0.83)	(0.47)	(1.33)	(1.58)

Table 5: Cross-sectional Sample Splits

This table summarizes the four factor alphas of the portfolio analysis with a sample split based on the median extent of analyst following (number of recommendations) from I/B/E/S in Panel A, based on median company size in Panel B, based on median coverage in the NZZ in Panel C, and based on median coverage in other relevant Swiss newspapers (Tages-Anzeiger, Handelszeitung, Sonntagszeitung and Schweizerische Depeschagentur) in Panel D. The LS8020 portfolio is our standard Spread Portfolio based on quintile cutoffs. Other portfolios are based on different percentiles. For example, the portfolios based on quartiles result in P7500 as the Top Portfolio and LS7525 as the corresponding Spread Portfolio which buys the Top Portfolio P7500 and sells the corresponding Bottom Portfolio P0025. All results are from regressions of equally-weighted (EW) and value-weighted (VW) excess returns over the market on a constant (alpha), market return (RMRF), as well as four (RMRF, SMB, HML, WML) Carhart factor regressions. The first portfolio building date is 10/99 and the portfolios are rebalanced monthly and reformed every year. The sample period is 10/99-10/08. * denotes significance at 10%, ** denotes significance at 5%, *** denotes significance at 1%.

Panel A. Results based on Sample Split on Analyst Coverage

Analysts Following:	Low (Below Median)				High (Above Median)				Difference (Low – High)	
	Equally-Weighted		Value-Weighted		Equally-Weighted		Value-Weighted		EW	VW
	Top	LS	Top	LS	Top	LS	Top	LS	LS	LS
P9000 LS9010	5.1 (1.303)	17.75*** (2.743)	11.15 (1.257)	25.4** (2.192)	0.12 (0.037)	-4.95 (-0.602)	-0.64 (-0.219)	-6 (-0.821)	23.77** (2.163)	33.21** (2.248)
P8000 LS8020	9.26*** (2.681)	13.86*** (3.111)	17.26* (1.768)	14.32 (1.429)	-1.7 (-0.616)	-0.82 (-0.170)	0.11 (0.046)	1.81 (0.360)	14.80** (2.122)	12.31 (1.045)
P7500 LS7525	6.42** (2.188)	9.99** (2.522)	13.59 (1.565)	9.83 (1.106)	-1.94 (-0.644)	-4.37 (-0.927)	0.15 (0.061)	-0.32 (-0.066)	14.96** (2.199)	10.18 (0.959)
P6600 LS6633	4.97* (1.694)	6.82** (2.044)	11.82 (1.496)	7.54 (0.981)	1.2 (0.466)	0.44 (0.125)	0.89 (0.448)	2.27 (0.540)	6.35 (1.259)	5.16 (0.598)
P5000 LSMedian	3.46 (1.350)	3.67 (1.482)	4.84 (0.696)	-2.14 (-0.334)	4.88* (1.686)	6.72** (2.261)	1.8 (0.974)	-1.78 (-0.460)	-2.87 (-0.761)	-0.37 (-0.050)

Panel B. Results based on Sample Split on Company Size

Company Size:	Small (Below Median)				Large (Above Median)				Difference (Small – Large)	
P9000 LS9010	4.70 (1.007)	10.33 (1.330)	3.53 (0.646)	10.65 (1.104)	1.15 (0.400)	-3.40 (-0.590)	0.74 (0.282)	-8.35 (-1.301)	14.17 (1.422)	20.57* (1.679)
P8000 LS8020	9.24*** (2.816)	9.65 (1.626)	9.51** (2.138)	13.26* (1.682)	-1.55 (-0.534)	-2.27 (-0.597)	-0.01 (-0.004)	-0.91 (-0.185)	12.18* (1.840)	14.29 (1.612)
P7500 LS7525	9.66*** (2.929)	8.67* (1.802)	8.96** (2.083)	8.56 (1.351)	0.17 (0.064)	-0.41 (-0.110)	0.52 (0.236)	0.71 (0.140)	9.12 (1.585)	7.80 (0.950)
P6600 LS6633	2.67 (0.876)	1.73 (0.456)	3.59 (0.971)	5.03 (0.944)	0.01 (0.005)	0.69 (0.202)	0.64 (0.343)	0.30 (0.067)	1.03 (0.216)	4.71 (0.676)
P5000 LSMedian	3.72 (1.345)	4.01 (1.407)	4.01 (1.123)	4.81 (1.286)	4.07 (1.463)	5.06 (1.524)	1.77 (0.988)	-3.45 (-0.972)	-1.00 (-0.234)	8.53 (1.582)

Panel C. Results based on Sample Split on Media Coverage (NZZ)

Media Coverage:	Low (Below Median)				High (Above Median)				Difference (Small – Large)	
P9000 LS9010	4.72 (1.346)	9.76 (1.508)	6.65 (1.483)	13.49* (1.636)	0.37 (0.123)	2.77 (0.342)	-0.97 (-0.337)	-10.67 (-1.586)	6.83 (0.730)	26.77** (2.434)
P8000 LS8020	8.22** (2.598)	9.30** (2.227)	11.2*** (2.666)	11.48 (1.650)	-2.35 (-0.842)	-3.61 (-0.645)	-0.99 (-0.414)	-0.52 (-0.094)	13.35* (1.948)	12.06 (1.340)
P7500 LS7525	9.14*** (2.800)	7.20* (1.865)	10.6** (2.584)	9.61 (1.608)	-0.03 (-0.012)	-0.32 (-0.068)	0.50 (0.230)	-0.09 (-0.016)	7.54 (1.209)	9.71 (1.208)
P6600 LS6633	6.03* (1.883)	4.86 (1.392)	6.74* (1.724)	4.11 (0.797)	0.40 (0.155)	0.75 (0.197)	0.85 (0.452)	0.83 (0.180)	4.08 (0.769)	3.25 (0.456)
P5000 LSMedian	4.40 (1.596)	4.17 (1.420)	5.15 (1.479)	0.83 (0.227)	3.40 (1.080)	5.14 (1.521)	2.33 (1.306)	1.74 (0.425)	-0.92 (-0.206)	-0.89 (-0.182)

Panel D. Results based on Sample Split on LexisNexis (Table 5: continued)

P9000 LS9010	3.39	13.92**	0.76	11.73	-0.60	3.15	-1.09	-8.49	10.47	21.92*
	(0.812)	(2.057)	(0.116)	(1.334)	(-0.202)	(0.510)	(-0.376)	(-1.259)	(1.191)	(1.908)
P8000 LS8020	7.83**	10.63**	12.3**	4.71	-2.37	-3.80	-0.83	0.88	14.95**	3.80
	(2.267)	(2.552)	(2.111)	(0.678)	(-0.788)	(-0.689)	(-0.352)	(0.147)	(2.029)	(0.441)
P7500 LS7525	8.30**	8.61**	12.5**	8.15	-1.25	-1.73	0.45	3.14	10.51	4.88
	(2.496)	(2.108)	(2.228)	(1.163)	(-0.461)	(-0.346)	(0.201)	(0.567)	(1.443)	(0.578)
P6600 LS6633	7.58**	7.22*	11.4**	7.37	1.28	2.87	0.85	1.39	4.24	5.90
	(2.432)	(1.917)	(2.266)	(1.213)	(0.477)	(0.773)	(0.449)	(0.320)	(0.756)	(0.807)
P5000 LSMedian	5.67**	4.95*	7.08	0.62	2.46	4.67	2.15	2.13	0.27	-1.48
	(1.990)	(1.711)	(1.599)	(0.137)	(0.771)	(1.289)	(1.196)	(0.542)	(0.059)	(-0.287)

Table 6: Time-series sample splits

This table summarizes the four factor alphas of the LS8020 portfolio in different time periods for the full sample and based on a sample splits with respect to analyst following, company size and media coverage. We focus on the period before and after the accounting scandals of Enron and WorldCom in 2002/2003. The LS8020 portfolio is our standard Spread Portfolio based on quintile cutoffs. All results are from regressions of equally-weighted (EW) and value-weighted (VW) excess returns over the market on a constant (alpha), market return (RMRF), as well as four (RMRF, SMB, HML, WML) Carhart factor regressions. The first portfolio building date is 10/99 and the portfolios are rebalanced monthly and reformed every year. The sample period is 10/99-10/08. * denotes significance at 10%, ** denotes significance at 5%, *** denotes significance at 1%.

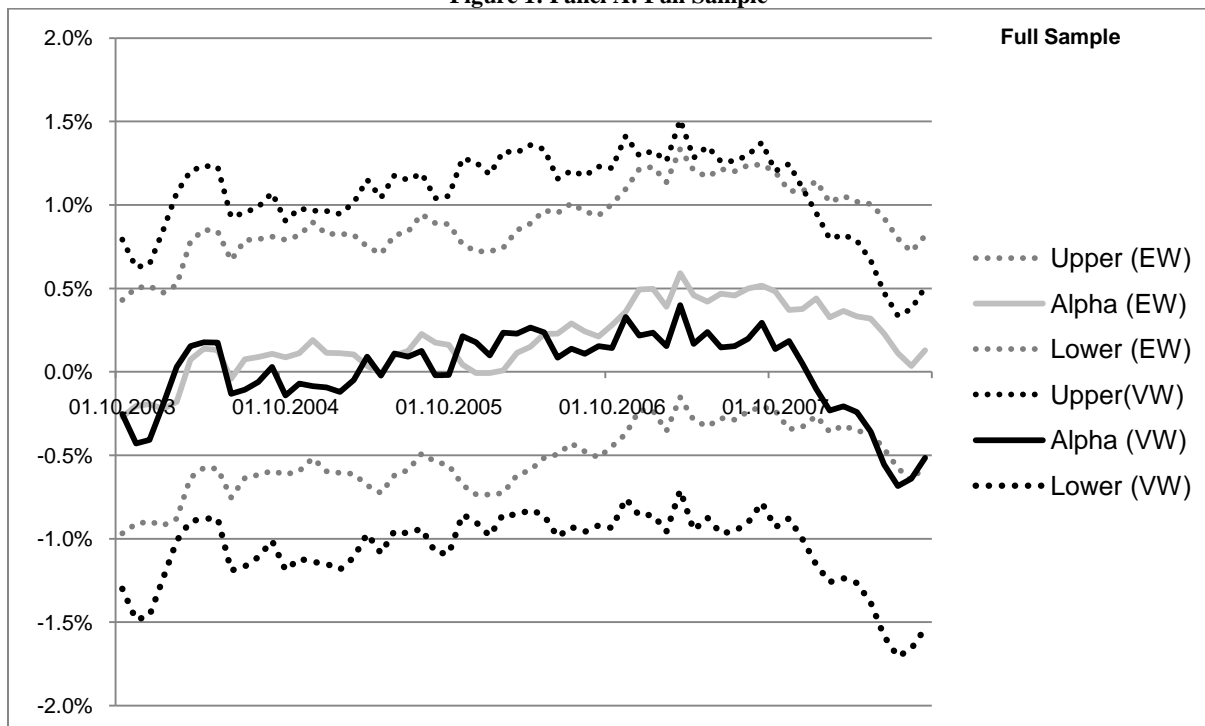
		Equally-Weighted		Value-Weighted	
		1999-2003	2003-2008	1999-2003	2003-2008
Full Sample		-3.18 (-0.639)	4.10 (0.902)	-3.00 (-0.402)	-4.62 (-0.706)
Analyst Coverage	Low	17.43*** (2.639)	11.20* (1.969)	21.08 (1.401)	9.38 (0.739)
	High	-7.01 (-1.024)	4.17 (0.654)	3.40 (0.459)	0.61 (0.094)
Company Size	Small	3.47 (0.412)	14.62* (1.873)	-0.55 (-0.051)	24.99** (2.370)
	Large	-3.60 (-0.650)	-1.25 (-0.252)	0.03 (0.005)	-1.63 (-0.256)
Media Coverage (NZZ)	Low	15.86** (2.547)	4.51 (0.861)	29.58** (2.768)	-0.78 (-0.093)
	High	-12.08 (-1.554)	3.37 (0.455)	-1.71 (-0.213)	0.40 (0.056)
Media Coverage (LexisNexis)	Low	14.27** (2.310)	7.92 (1.491)	3.05 (0.302)	5.99 (0.663)
	High	-12.13 (-1.584)	3.07 (0.421)	0.81 (0.093)	0.93 (0.121)

Table 7: Robustness and Specification Tests

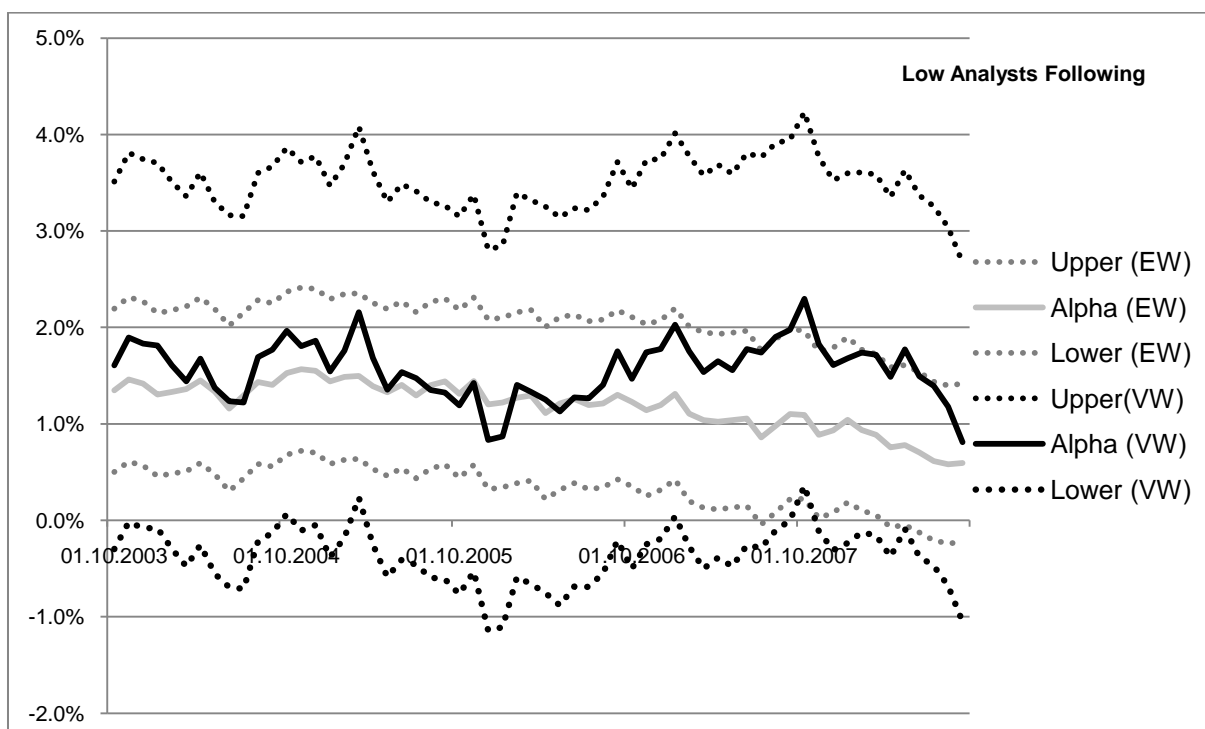
This table summarizes our robustness and specification tests. All stocks based on the score in the AVR and divided into 5 portfolios based on quintile cutoffs. The LS8020 portfolio is our standard Spread Portfolio based on quintile cutoffs. Other portfolios are based on different percentiles. For example, the portfolios based on quartiles result in P7500 as the *Top Portfolio* and (LS7525) as the corresponding *Spread Portfolio* which buys the *Top Portfolio P7500* and sells the corresponding *Bottom Portfolio P0025*. All results are from regressions of equally-weighted (EW) and value-weighted (VW) excess returns over the market on a constant (alpha), market return (RMRF), as well as four (RMRF, SMB, HML, WML) Carhart factor regressions. The first portfolio building date is: 10/99 and the portfolios are rebalanced monthly and reformed every year. The sample period is 10/99-10/08.. * denotes significant at 10%, ** denotes significant at 5%, *** denotes significant at 1%.

Panel A: Total Sample: Industry-Adjusted Score				
Weighting:	Equally-Weighted		Value-Weighted	
	Top	LS	Top	LS
P9000 LS9010	-2.53 (-0.842)	-2.18 (-0.504)	0.09 (0.036)	-4.45 (-0.794)
P8000 LS8020	0.87 (0.311)	2.92 (0.961)	-0.25 (-0.135)	-4.28 (-1.021)
P7500 LS7525	2.50 (0.855)	3.17 (0.998)	0.59 (0.322)	-2.89 (-0.706)
P6600 LS6633	2.61 (0.966)	2.95 (1.066)	1.03 (0.585)	2.74 (0.696)
P5000 LSMedian	2.01 (0.834)	1.27 (0.609)	2.47 (1.398)	1.52 (0.436)
Panel B: Total Sample: Portfolio Starting in April				
Weighting:	Equally-Weighted		Value-Weighted	
	Top	LS	Top	LS
P9000 LS9010	3.16 (1.066)	0.40 (0.074)	-0.63 (-0.244)	-9.20 (-1.469)
P8000 LS8020	3.45 (1.532)	-0.01 (-0.002)	1.31 (0.647)	-5.22 (-1.058)
P7500 LS7525	4.52* (1.677)	0.01 (0.004)	1.34 (0.675)	-7.23 (-1.568)
P6600 LS6633	4.07 (1.512)	0.75 (0.263)	1.72 (0.881)	-4.40 (-1.020)
P5000 LSMedian	2.90 (1.142)	0.12 (0.053)	2.93 (1.627)	0.20 (0.060)
Panel C: Without Financial Companies				
Weighting:	Equally-Weighted		Value-Weighted	
	Top	LS	Top	LS
P9000 LS9010	-3.35 (-1.010)	0.71 (0.126)	-0.49 (-0.161)	-4.28 (-0.560)
P8000 LS8020	2.56 (0.958)	3.89 (0.954)	1.27 (0.531)	2.12 (0.317)
P7500 LS7525	3.22 (1.074)	5.27 (1.369)	1.25 (0.531)	0.63 (0.104)
P6600 LS6633	4.83 (1.595)	4.57 (1.413)	1.41 (0.629)	-3.12 (-0.598)
P5000 LSMedian	0.71 (0.260)	0.93 (0.354)	2.45 (1.135)	3.05 (0.611)

Figure 1: Panel A: Full Sample



Panel B: Low Analyst Following



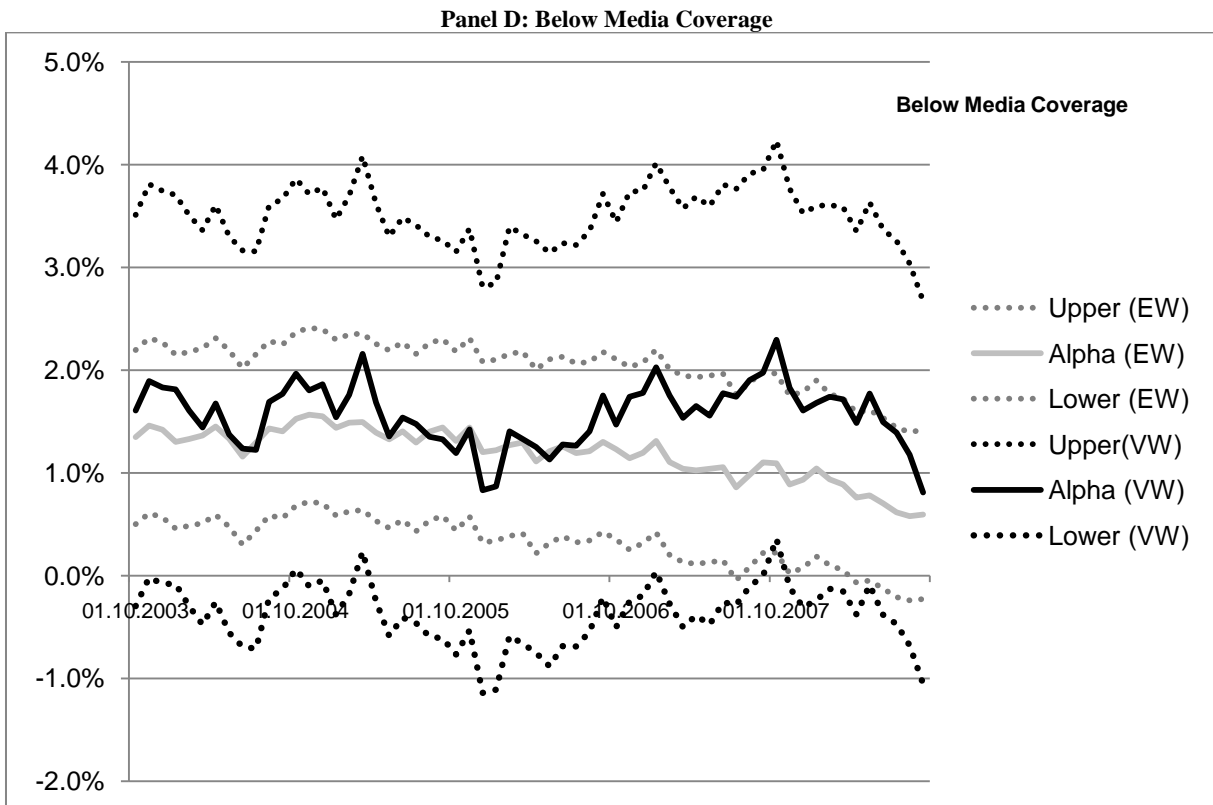
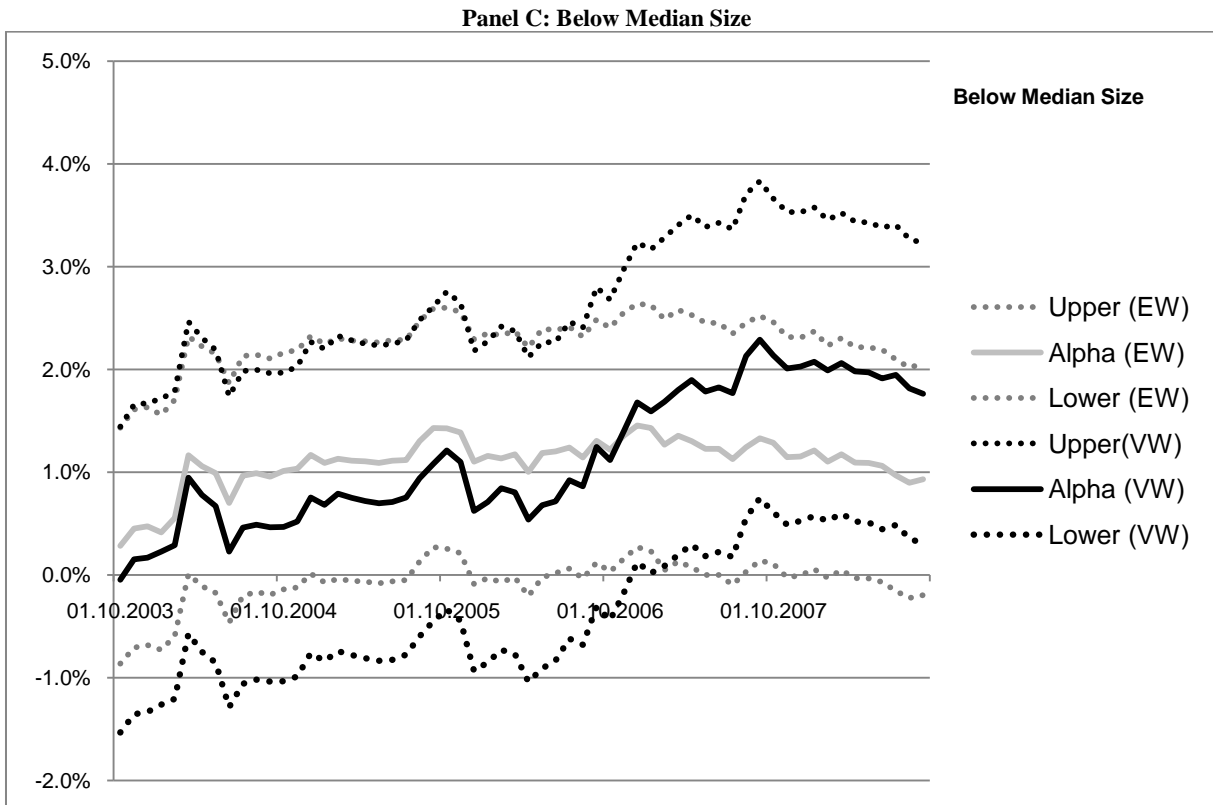


Figure 1 contains monthly Carhart-alphas (monthly abnormal returns) for long-short-portfolios LS8020 formed on the AVR score. The estimation is based on rolling 48-month intervals from October 2003 until September 2008. This figure shows the intercept (alpha) and the 90% confidence interval for equally-weighted and value-weighted portfolios. Panel A shows the result for the full sample. Panels B, C, and D present the results for the low analyst, small size, and low media coverage sample, respectively.