Hedge Fund Returns: Believe It or Not?

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Abstract

We study the dynamics of hedge fund performance reports and investigate the determinants of return revisions from 2002 to 2013. Comparing over 200 vintages of Lipper TASS Hedge Fund data at different times, we track changes and find that about two-thirds of the hedge funds in our sample revised their previously reported returns. On average, more than one-fifth of the monthly returns were revised after being first reported. Our empirical evidence indicates that positive revisions significantly outnumber negative revisions, but the magnitude of negative revisions exceeds that of positive revisions. Overall, positive and negative revisions cancel each other out, raising little concern about the accuracy of the performance records. We also find an obvious decreasing time trend in both the number and proportion of return revisions, consistent with the tendency of tightening regulations for the industry. There is a significant relation between return revisions and fund characteristics, such as strong fund governance at the fund level and revision level. The revised funds outperform unrevised funds after return revisions. Our findings suggest that innocuous corrections for prior errors could be a plausible explanation for return revisions. We find no direct evidence of hedge fund managers maliciously manipulating historical returns.

Keyword: Return revision; fund governance; regulation; correction

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1. Introduction

In contrast to the heavily regulated mutual fund or exchange-traded fund industries, hedge funds are lightly regulated financial institutions that are generally not required to report information about their characteristics, strategies, or performance to regulatory authorities or databases.[1] Hedge funds are protective of their trading positions and models because they consider revealing such information precarious to both the funds and investors. As a result, hedge funds are among the least transparent market participants, even though some choose to voluntarily report to a commercial database as a cheap way to reach the potential investors. One important piece of information that is self-reported by thousands of hedge funds to one or more commercial databases is their monthly performance. However, the substantial discretion hedge fund managers have in reporting performance concerns regulators, academics, investors, and the media. Due to the light regulatory environment, there is long-standing disbelief of hedge fund performance disclosures to the public due to the voluntary nature of the reporting. In this paper, using a rich database on hedge funds with more than 200 monthly downloads (vintages), we investigate the dynamics in the performance reports of hedge funds and try to shed light on the motivation of return revisions, as well as the overall accuracy of the reported information.

First, we track changes to the statements of historical performance of about 9,500 hedge funds recorded in the publicly available Lipper TASS Hedge Fund Database (TASS) at different points in time between 2002 and 2013. To the best of our knowledge, we are the first to compare more than 200 monthly vintages for consistency. We find that as many as two-thirds of funds (over 6,500 individual funds) revised their previously reported performance, with more than two-fifths of funds later changing a previous monthly return by at least 0.5%. On average, more than one-fifth of monthly returns were revised after being first reported. We also find that about 60% of the revisions within three months of the initial reporting were revisions to previously estimated returns due to incomplete/delayed information. Therefore, we focus on effective revisions that occurred more than three months after the initial reporting.

Next, we examine the style distribution and time series pattern of return revisions. We find that more than one-third of all revisions were made by funds of hedge funds. This finding is consistent with the large percentage of funds of funds and the linkage between the returns of

[1] New regulations after the latest financial crisis introduced in the United States and the European Union as of 2010 require hedge fund managers to report more information, leading to greater transparency.

funds of funds and those of its constituent hedge funds. We also find an obvious decreasing time trend in both the number and proportion of return revisions, even after adjusting for performance report recency, consistent with the increased scrutiny of regulators such as the US Securities and Exchange Commission (SEC).

We then investigate what causes the return revisions at the individual fund level and the individual revision level, given a fund can experience multiple revisions. We find that, at the fund level, revisions are more common among larger funds with stronger fund governance, higher incentive fees, and better past performance. At the revision level, returns are more likely to be revised for funds with stronger governance, while revisions tend to occur in the next month when a fund has a higher governance score. Returns also tend to be revised when a fund has stronger governance compared to that in the same month the return was first reported. These drivers of return revisions are significant, regardless of direction.

Last, we explore the impact of return revisions on future fund performance. We carry out a series of performance comparisons between revised and unrevised funds at the individual fund level. We also compare the cumulative average abnormal returns (CAARs) of the revised funds with those of the unrevised funds in a 24-month window around revisions and a 12-month window following revisions. The results of these comparisons show that the revised funds outperform the unrevised funds. This finding is consistent with that of Brown, Goetzmann, Liang, and Schwarz (2008, 2009, 2012), that funds with lower operational risk and higher quality tend to deliver better future performance than their inferior counterparts. It is also consistent with the Basel definition of operational risk for the banking industry.[2]

Our paper contributes to the growing body of literature on the reliability of self-reported hedge fund returns. The fact that hedge fund managers voluntarily report returns to commercial databases implies that they are able to choose if and when to start and stop reporting. This leads to potential biases not seen in traditional databases such as those of mutual funds. Ackermann, McEnally, and Ravenscraft (1999), Fung and Hsieh (2000, 2009), and Liang (2000) provide an overview of these biases, such as survivorship, self-selection, and backfill bias.

Self-reporting also leads to the possibility of return smoothing. Asness, Krail, and Liew (2001) argue that hedge fund managers have an incentive to intentionally smooth their reported returns because higher serial correlations make reported returns appear less risky and less

[2] See https://www.bis.org/publ/bcbsca07.pdf.

correlated with other assets than they truly are. Getmansky, Lo, and Makarov (2004) show high serial correlations in hedge fund returns relative to those of other financial institutions and consider various reasons, including underlying asset illiquidity, to explain this phenomenon. Cassar and Gerakos (2011) match third-party due diligence reports with return-smoothing measures and find that managers with greater discretion in sourcing the prices used to value the fund's investment positions tend to report smoother returns.

Bollen and Pool (2008) find evidence that hedge fund managers have a greater incentive to smooth losses than gains. This finding is reinforced by a different approach of Bollen and Pool (2009), who document that the amount of small gains far exceeds that of small losses. They show that these discontinuities are a result of deliberate return misreporting. In a recent study, Bollen and Pool (2012) propose a variety of flags for potential fraudulent activity based on reported returns and relate these flags to an indicator for whether the fund has been charged with legal or regulatory violations.

Agarwal, Daniel, and Naik (2011), Cici, Kempf, and Puetz (2011), and Patton, Ramadorai, and Streatfield (2013) also provide evidence of return misreporting in hedge funds. Agarwal, Daniel, and Naik (2011) find that hedge fund returns in December are suspiciously higher than during the rest of the year. Cici, Kempf, and Puetz (2011) provide more direct evidence on misreporting by showing that hedge funds systematically misvalue their stock positions. Finally, Patton, Ramadorai, and Streatfield (2013) find that hedge funds rewrite return histories by restating returns in systematic ways.

However, disagreeing with Bollen and Pool (2009), who infer misreporting based on a discontinuity at zero in the return distribution, more recently Jorion and Schwarz (2013) provide plausible non-manipulation explanations for the observed discontinuities in the distributions of the net returns of hedge funds. These include the effect of the incentive fee accrual process, the boundary at zero for fixed income yields, and the impact of asset illiquidity. In particular, the authors show that incentive fees can mechanistically create a kink in the net return distribution and conclude that the observed hedge fund return discontinuities are not direct proof of manager manipulation. By using a comprehensive database, we study the changes in return revisions and our findings are consistent with those of Jorion and Schwarz, adding to the debate on the accuracy of hedge fund return reporting. Our findings are important for the quality of the hedge

fund data reported by TASS, since it is deemed one of the most reliable databases in the industry (Liang (2000)).

Our findings are also important to a new strand of literature on the positive role hedge fund play in the economy in terms of price discovery, liquidity provision, volatility reduction, and market efficiency restoration. For example, using stock holding information, Cao, Chen, Goetzmann, and Liang (2015a) find that hedge funds, as a whole, play a positive role in the stock price formation process by reducing the mispricing of underpriced securities through arbitrage. Cao, Liang, Lo, and Petrasek (2015b) document that hedge fund holdings and trading help to restore market efficiency under average market conditions. Reca, Sias, and Turtle (2015) find that, instead of destabilizing the market through crowd trading, hedge fund equity portfolios are very independent and hedge fund demand shocks are unlikely to affect future returns inversely during extreme market distress.

The remainder of the paper is organized as follows: Section 2 describes the data and provides summary statistics for return revisions in our sample. Section 3 presents the style distribution and time trend of return revisions. Section 4 examines the determinants of return revisions at the individual fund and revision levels. Section 4 examines the determinants of revision direction and magnitude. Section 5 presents the impact of return revisions on future fund performance. Section 6 provides robustness checks. Finally, Section 7 concludes the paper.

2. Data

We obtain data from TASS, which is widely used in academic research. The main database consists of historical returns, assets under management (AUM), and fund characteristics such as the inception date, redemption and subscription frequencies and lockup period, management fees, incentive fees, high-water mark provisions, personal capital investment, leverage, and the date of the last audit.

To the best of our knowledge, we are the first to compile comprehensive monthly downloaded data and use them over a 12-year period, from 2002 to 2013. The TASS data we use are proprietary and track changes in reported returns by funds monthly. our sample includes 219 snapshots (vintages) of TASS datasets downloaded each month from February 2002 to January 2014, except for three months (September 2002, December 2006, and August 2007).[3] These

[3] Some months feature more than one download.

monthly snapshots allow us to identify not only changes in returns from the previous vintage, but also other characteristics at various times and the entire return history for each fund. Note that not every hedge fund updates its information on the same day each month and the snapshots were not downloaded on the same day of the month either. We define each return record $R_{i,t,s}$ in our overall dataset by three dimensions: fund *i*, return month *t*, and the month *s*, subsequent to the reported return, where the month *t* return is replaced by the value in the new download in month *s* (vintage *s*), with the return month *t* being the date in the ProductPerformance file and the month *s* of the reported return is PerformanceEndDate in the TASS ProductDetails file. We compare the returns for each fund and each return month reported in subsequent vintages to track the revisions in returns. For months with no fund information update, we simply compare the returns for all the previous months for each fund reported later with those reported at the latest time. Therefore, return revisions are defined as $RV_{i,t,s} = R_{i,t,s} - R_{i,t,s-1}$. If $RV_{i,t,s} \neq 0$, the return of month *t* for fund *i* was revised. The return reported month *s* is also the revision month if $RV_{i,t,s} \neq 0$. If $RV_{i,t,s} > 0$, the revision involves increasing the initially reported return; if $RV_{i,t,s} < 0$, the revision involves decreasing the initially reported return.

We apply some standard filters to the data. Only funds that provide monthly returns net of fees and denominated in US dollars are retained. To minimize backfill bias, we drop the first 12 months' returns for each fund. We remove returns with extremely large or small numbers (truncating between monthly return limits of -90% and +200%) to eliminate a possible source of error. In addition, we remove observations for months prior to January 2002, when TASS started using a new reporting format. Our final sample consisted of 9,494 funds.

2.1 Summary statistics for all hedge funds

Table 1 provides the summary statistics of the 9,494 hedge funds for the number of funds, monthly returns, AUM, age, and fee structure. For each year from 2002 to 2013, we report the number of funds and the mean, median, standard deviation, minimum, and maximum of returns on an equally weighted portfolio of all funds. The summary statistics in Panels A and B are calculated using the first reported returns and the last reported returns, respectively.

Panel A in Table 1 shows a steady increase in the number of funds from 2002 to 2007. This pattern reflects the growth in the hedge fund industry and increasing attraction to the

investment community.[4] However, in 2008, the number of funds decreased, coinciding with the latest financial crisis. In fact, during the financial crisis, not only did the number of funds reported to TASS decrease, but also the average monthly return plummeted in 2008. The equally weighted portfolio return based on the first reported returns shows that the worst return, -1.64%, occurred in 2008. In 10 out of the 12 years, the average monthly return was positive, with four years in the proximity of 1% or above.

The mean, median, standard deviation, minimum, and maximum of monthly returns on an equally weighted portfolio, as reported in Panel B of Table 1, are calculated from the last reported returns based on all data vintages. We can see that the statistics for the returns in Panel B are quite close to those in Panel A. In eight out of the 12 years, the average monthly returns based on the last reported values are slightly higher than those calculated using the originally reported returns. However, the average monthly return difference across all 12 years is only 0.0003% between the two panels, indicating that the positive and negative revisions cancel each other out. Previous studies have indicated various reporting biases in hedge fund data. It is comforting to know that, despite many return revisions, TASS's overall data quality on performance reporting is hardly affected.

Panel C reports the cross-sectional mean, median, standard deviation, minimum, and maximum for the 9,494 hedge fund characteristics, including monthly returns, size, age, management fees, and incentive fees. During the sample period, the best-performing (worst-performing) fund experienced an average monthly return of 17.4% (-22.09%) over its life, based on the last reported returns. The mean of the average returns of all hedge funds is only 0.33% per month. The median is only 2.3% of the average return of the best-performing fund. Table 1 can also shows a large size variation among all funds, where size is measured as the average monthly AUM over the life of the fund. The median size is only $38.09 million, while the mean size is $149.04 million, indicating a skewed distribution.[5] The largest fund in our sample is more than 400 times the size of the median-sized fund. Interestingly, the median fund age (number of months in existence since inception) is only 66 months, while the average fund age is about 80.6 months. The short life span can be partly explained by the existence of a high-water mark provision. The manager of a hedge fund with a high-water mark provision can choose to close

[4] Cao, Chen, Goetzmann, and Liang (2015a) and Cao, Liang, Lo, and Petrasek (2015b) document that hedge funds' US equity holdings increased from nearly zero in the early 1980s to about 10% in 2007.
[5] Very few emerging market hedge funds have a very large AUM in the hedge fund industry.

the fund if the fund's recent performance is deeply below the high-water mark or its current superior performance is unlikely to continue in the near future. The mean (median) management fee is 1.45% (1.5%), with a maximum of 22% for a few hedge funds. The mean (median) incentive fee is 15.1% (20%) and as high as 50% for a few hedge funds.

2.2 Summary statistics of return revisions

Table 2 shows the summary statistics of return revisions during our sample period. Panel A shows that, out of the 9,494 funds, less than one-third (2,927 funds) never changed their originally reported returns, about 1/10 (1,059 funds) had one return revision in their fund history, about one-fourth (2,439 funds) had three to 13 revisions, and 1/10 (930) made more than 38 return revisions. The fund with the most revisions made changes to 398 returns after they were previously reported![6]

Panel B of Table 2 reveals a total of 119,017 return revisions during our sample period. The mean absolute revision is 64.5 basis points, which is about twice the mean monthly return of 0.33%, as reported in Table 1. Therefore, the revisions we observe are substantial. However, even though the total number of positive revisions exceeds that of negative revisions, the average magnitude of negative revisions is -0.693%, larger than that of positive revision, resulting in a mean revision of only 0.008%.[7] Panel C reports summary statistics for the absolute value of the magnitude of the revisions. We observe that 43.7% (4,145 funds) of funds revised their returns at least once by 0.5% or more and 33% of funds revised their returns by 1% or more. If we only count revisions that occurred after three months, 14.6% of funds revised their returns by at least 1%.[8] Panel D shows that the average number of upward revisions is significantly higher than that of downward revisions. The difference is more dramatic in the early half of our sample period but is similar in the latter half. The relatively large upward revision in returns does not support the conjecture that hedge funds overstate their original returns and revise them downward later. More importantly, the tiny overall revision does not indicate that we should worry about the accuracy of hedge fund performance reporting in general.

[6] This is actually a fund of hedge funds.

[7] Getmansky, Kapadia, and Feng (2011) mention that most hedge funds charge monthly management fees and their incentive fees are paid annually and are accrued before being paid out. In our sample, 19.55% of revisions occurred more than 12 months after the return months. The negative adjustment could be due to fee deductions.

[8] Communications with the data vendor indicate that funds may report information with a delay or estimated information, so the three-month window is treated as a normal revision period.

Panel E of Table 2 reports the recency of return revisions, which is defined as the number of months *k* between the month *s* in which a revision was made and the month *t* of the initial return. For example, if the return for January 2005 was revised in the vintage of July 2005, then the revision recency is six months. Each column in Panel E shows the proportion of the revising funds remaining once we exclude revisions near the report month *s*. For example, if $k > 3$, we ignore revisions within three months of the initial return. As *k* increases, the proportion of funds that are flagged as having revised their returns declines, from 56% of all revised funds when we ignore revisions within three months to 16% when we ignore revisions within 24 months of the reported return. A total of 34.5% of revisions occurred more than three months after they were previously reported and about 13% of revisions occurred more than two years after they were previously reported.

Panel F of Table 2 reports the status of the return revisions before and after the changes. Among all revisions, 39% occurred within three months of the initial returns and the returns were changed from estimated (E) to actual (A). About 60% (= 38.86% + 19.07%) of revisions within three months of the initial returns were made because managers determined the actual returns to replace the previously estimated returns due to fee deductions or a reevaluation process. Therefore, most of the revisions within three months of the initial returns could be motivated by updating/correcting the estimated returns.[9] To be more meaningful, our study on the motivation of return revisions thus focuses on effective revisions that occurred more than three months after the initial returns, which is different from the previous literature, which includes all revisions

2.3 Time trends of fund characteristics

To investigate the motivation of return revisions in hedge funds, we examine the relation between return revisions and fund characteristics. Our unique dataset enables us to document the time series of fund characteristics over the sample period for different vintages. To present the time trend of fund characteristics, we calculate the annual averages of these characteristics as the means of the monthly averages of the values of each characteristic across all funds alive that month.

We also consider a variety of fund characteristics. Lockup and advanced notice periods are share restrictions imposed by the fund on its investors. These restrictions provide liquidity

[9] Conversations with TASS customer service confirm this.

safeguards for the managers but could also allow them to hide from the reputational consequences of changing data within the lockup period. We include an indicator variable that takes a value of one if the manager invests personal capital in his or her own fund and zero otherwise. Fee structure variables, such as management fees and especially incentive fees, tie the managers' incentives directly to fund performance and penalize them for losses. A dummy variable is also included for leverage and it equals one if the fund takes on leverage and zero otherwise. Finally, four fund characteristics deserve special mention. The aggregate of these four variables defined below, called the governance variable in our paper, helps us better understand the incentives for fund managers to revise their fund returns (Ozik and Sadka (2011)).

We now study the impact of fund governance on return revisions. Strong fund governance can align managers' interests with those of investors, leading the managers to undertake the best decisions for the investors. Inspired by the corporate governance literature (La Porta, Lopez-de-Manes, Shleifer, and Vishny (2002); Gompers, Ishii, and Metrick (2003); Ozik and Sadka (2011)), we consider several fund characteristics to act as a proxy for fund governance: whether the fund was audited in the past six months or in the next six months, whether it has a high-water mark provision, onshore domiciliation, and SEC registration. Following Ozik and Sadka (2011), we aggregate these four variables to devise a measure of fund governance (ranging from zero to four).

As a group, funds without a listed audit date have less oversight than funds with an audit date listed and the returns of audited funds are more accurate and consistent across databases (Liang (2003)). However, updated returns or recent auditing may mean much more than an outdated return. Hence, we extend Liang's (2003) study by assigning a score of one only if the audit date is within the past six months or in next six-month period and zero otherwise. The high-water mark provision aligns managerial incentives more closely with those of the limited partners in the hedge fund and thus improves the governance structure.[10] It requires the manager to make up previous losses before charging an incentive fee. A fund is assigned a high-water mark score of one if it carries a high-water mark provision and zero otherwise. Offshore hedge funds enjoy lighter regulation since they are not registered with the SEC (Aragon, Liang, and Park (2012)) and are largely located in tax-free jurisdictions. We assign a value of one to onshore

[10] However, if fund assets are far below the water mark, the manager may have an incentive to close the fund and start a new one.

funds and zero to offshore funds. Unlike mutual funds, which are required to be registered with the SEC, hedge funds are lightly regulated investment vehicles.[11] For example, large hedge funds with more than $100 million in AUM are required to fill out Form 13F quarterly for all US equity positions worth over $200,000 or consisting of more than 10,000 shares. More recently, under the Dodd–Frank Act, hedge funds with more than $150 million in AUM are required to register with the SEC as investment advisors and to fill out Form ADV. We assign a score of one to funds registered with the SEC and zero otherwise.

Figure 1 presents the monthly averages in each year of the above variables for two fund groups: those funds that revised their returns after three months (revised funds) and those that revised their returns within three months plus those that never revised their returns (unrevised funds). We see that the aggregate governance scores for both the revised funds and unrevised funds largely display an upward time trend, with the number for revised funds always above that of unrevised funds. Another variable with a similar pattern is the high-water mark dummy, which is one of the four components of the governance score defined above.

The incentive fee variable and the dummy variables of leverage and the manager's personal capital decreased with time before 2007 and have fluctuated ever since, while management fees increased with time before 2007. Most of the time, the monthly averages of the incentive fee, leverage dummy variable, and notice period for the revised funds are above those of the unrevised funds. The downward trend of the leverage dummy reflects the deleveraging over time. The monthly averages of the personal capital dummy and the lockup period for the unrevised funds are always well below those of the revised funds.

In sum, the revised funds display different fund characteristic values than the unrevised funds: They have stronger governance scores, higher incentive fees but lower management fees, greater leverage and stricter share restrictions, more personal investment, and more frequent usage of the high-water mark provision. These findings indicate that revised funds are associated with higher fund quality than unrevised funds. This result does not support the return smoothing or manipulation argument.

[11] The Dodd–Frank Act requires major hedge funds with $150 million under management to be registered with the SEC.

3. Style distribution and the time trends of return revisions

Hedge funds use different strategies and invest in potentially different assets. We are interested in how the return revisions are distributed among different fund styles. Table 3 shows the return revisions defined by fund and return month for each investment style. A total of 23.56% of the returns of the fixed income arbitrage funds were revised after originally reported. This is the highest figure among all 12 categories, while the lowest percentage is from multi-strategy funds, at only 13.86%. Fixed income arbitrage is one of the most illiquid categories and often requires complicated valuation models. Other illiquid styles, including the convertible arbitrage and event-driven categories, also have relatively large proportions of return revisions. However, surprisingly, 22.74% of the returns of managed futures funds were revised, even though managed futures are among the most liquid styles. This finding shows that illiquidity may not be the only factor that affects return revisions; other factors, such as derivative pricing, could also play an important role. The return revisions in the fund of funds category account for more than one-third of all revisions. This is not only due to the large percentage of fund of funds, but also because the returns of funds of funds are directly related to the returns of their constituent hedge funds. If the returns reported by underlying hedge funds are revised, so are the returns of the fund of funds.

To determine the time trend of return revisions, we first calculate the total number of returns that were revised more than three months after they were initially reported. Based on these total revision numbers for each month, we obtain the number of revisions as a percentage of the total number of returns. Then, we average the monthly total number of revisions and the percentage of revisions in each year. The results are shown in Panel A of Table 4. The average numbers of return revisions per month in the first four years, from 2002 to 2005, are around 360. This number peaked in 2007, coinciding with the maximum number of funds, as shown in Table 1. From 2008 to 2013, the average numbers of revisions in each year appear to gradually decrease. The overall percentage of return revisions during our entire sample period is 7.57%. The monthly percentages from 2002 to 2007 are all above 7.57%, while those from 2008 to 2003 are the same as or below the overall percentage.

Note the two relatively large drops from 11.63% to 9.74% (2003–2004) and from 7.57% to 5.33% (2009–2010). These coincide with regulatory rule changes: First, on December 2, 2004, the SEC adopted a new rule and rule amendments under the Investment Advisers Act of 1940

that required hedge fund managers to register as investment advisers by February 1, 2006. Second, on July 21, 2010, President Obama signed the Dodd–Frank Act into the federal law.

Figure 1A shows a monotonically declining pattern of the monthly percentages of return revisions in each year when only revisions that occurred after three months of the original report are considered. When all revisions are presented, the percentage of revisions is largely declining, but no longer monotonically.

It is natural to wonder whether the smaller number of monthly revisions and lower percentage of revisions in the latter half of our sample period are due to the fact that the more recent the month of returns, the less likely the returns will turn out to be revised. To address this issue, we first determine the actual distribution of revision recency using the 119,017 revisions we detected. Then we multiply the monthly total numbers of these return revisions by an adjustment factor, as shown in Figure 2B. The adjustment factor is defined as 1 + (1 - cumulative percentage of revision recency) to compensate for more recent months. The total monthly numbers of revisions adjusted by the adjustment factor in each year are shown in Panel B of Table 4, along with the monthly percentages of revisions calculated using the adjusted numbers of the return revisions. We can see that the time trend of the adjusted total numbers and percentages of revisions in each year are similar to those of the unadjusted numbers.

4. Determinants of return revisions

In this section, we begin by analyzing the determinants of return revisions for each fund. We then move to the more micro level to investigate the drivers of return revisions at the individual revision level, given a fund can make multiple revisions. These analyses at different levels help us to understand managers' incentives to change returns. Last, we analyze the determinants of the magnitudes and signs of revisions, showing the differences between the initially perceived and final performance records.

4.1 Individual fund level

To investigate the determinants of return revisions at the individual fund level, we employ different sets of probit regression. Among the explanatory variables, for a revised fund, the variables representing management fees, incentive fees, advanced notice and lockup periods, the leverage dummy, and the manager personal investment dummy are defined by the characteristics

in month *s* - 1, prior to the first return revision, in month *s*, while these variables for an unrevised fund are defined by the characteristics in the months prior to the final record. The mean return and mean size of a revised fund are the averages of all returns and all sizes, respectively, in month *s* - 1. The return volatility of a revised fund is the standard deviation of all the returns prior to the first revision. The definitions of the mean return, mean size, and return volatility of an unrevised fund are similar to those for a revised fund, except that the returns or sizes used are from the months prior to the last vintage. We use a measure of fund illiquidity suggested by Getmansky, Lo, and Makarov (2004), namely, the first-order autocorrelation coefficient of all available returns. In each regression, we include style fixed effects to control for the possibility that differences in volatility and liquidity across these strategies will lead to differences in the propensity to revise returns.

As shown in Panel A of Table 2, there is wide variation in the number of return revisions among the revised funds. A total of 11.15% of all funds only revised their returns once, while 1.98% of the funds made more than 90 return revisions. To take this difference into account, we use the ordered probit regression to examine the effects of covariates on the probability of return revisions. In the ordered probit regression, the dependent variable has a value of four if the number of revisions *n* is more than 20, three if *n* is between seven and 20, two if *n* is between three and six, one if *n* is one or two, and zero if there was no revision. The first two columns in Table 5 report the results of the ordered probit regression. When examining only the impact of fund governance, we find a significant positive relation between governance and return revisions. The stronger the governance, the higher the probability that a fund will revise its previously reported returns. When we control for other fund characteristics, we find that the governance score is still statistically significant at the 1% level.

In the probit regression, the dependent dummy variable equals one if the fund revised its returns at least once and zero otherwise. In the probit increased (decreased) regression, the dependent variable is one if all the return revisions of a fund sum up to be positive (negative) and zero if there was no revision.

In these four sets of regressions, the coefficients of governance are all significantly positive at the conventional levels. The revised funds have higher governance scores than the unrevised funds do. Stronger governance allows funds less latitude to manipulate performance records and makes managers more conscientious about being truthful. It may be that strong

governance, such as effective auditing, triggers corrections on prior errors in returns. Other variables that have significant coefficients in all four probit regressions are the incentive fee, the average fund return, the average fund size, and the dummy variable for the manager's personal investment. All indicate higher fund quality and better operational control. In addition, we find that better-performing funds tend to revise their returns. One posit about hedge fund performance misreporting is that fund managers overstate their returns to reduce the risk of outflows, since investors withdraw money from poorly performing funds (Green (2010)). If this were true, we would expect a higher probability of return revisions for funds with poorer governance and past performance. However, we find exactly the opposite: Our results do not support the argument that hedge fund managers manipulate returns in the initially reported numbers. Instead, stronger regulation makes managers more sensitive about correcting previous errors in valuation and reporting. This scenario excludes the possibility that poorly performing funds overstate their originally reported returns through return revisions to portray a rosier picture to prospective investors. Larger funds have a higher probability of revising their returns. This may be because larger funds usually have more positions, which can make the valuation process more complicated and require later revisions The above evidence does not support the argument of managers manipulating historical returns.

4.2 Individual revision level

The previous section examined factors related to return revisions at the individual fund level. We now explore the factors that drive return revisions at a more micro level, the individual revision level, given a fund can revise its return history multiple times. The number of return revisions captured in our sample accounts for less than 1% of all basic return observations defined by fund, initial return month *t*, and revision month *s*. To make the probit regression more meaningful, we match each fund that revised its return in month *s* to a fund with the same strategy with the nearest asset size but that did not revise its return in month *s*. The dependent variable is a dummy variable equal to one if a fund revised its return in month *s* to the return of month *t* and zero for the matched fund. We use three sets of explanatory variables in our probit regressions. The first set of variables is defined by the fund characteristics in return month *t*. The second set of variables is defined by the fund characteristics in the month before the revision (month $s - 1$) and the third set is the differences between the variables corresponding to the

variables defined in return months *t* and *s* - 1. To examine time variability, we run the probit regression over our whole sample period as well as over two sub-periods, one from 2002 to 2007 and the other from 2008 to 2013.

Panel A of Table 6 reports the results of probit regressions on the variables defined by the fund characteristics in the return month *t*. We find that the coefficients of governance are strongly significant in all the periods, whether in the univariate regression or the specifications controlled for other fund characteristics, such as the fund management fee, the incentive fee, leverage, the fund's redemption notice and lockup periods, fund manager investment of personal capital in the fund, fund age, as well as the average, autocorrelation, and volatility of a fund's monthly returns in the past 12 months. The higher the governance score of a fund, the more likely a return will be revised after three months. In contrast, using SEC rule changes, Dimmocka and Gerkenb (2014) show that regulatory oversight reduces return misreporting by hedge funds. Hoffman (2013) also finds that audit regulation diminishes the misreporting of returns by hedge funds. Stronger governance in the return months makes it more difficult for managers to misreport returns. Therefore, the significantly positive coefficients of the governance score could suggest that revisions to past returns are not driven by the need to reverse previously misreported returns

Panel B of Table 6 reports the results of probit regressions on the variables defined by the fund characteristics in month *s* - 1. Similar to Panel A, we find that the coefficients of the governance score are strongly significant in all the periods, whether in the univariate regression or in the specifications controlled for other fund characteristics the same as those in Panel A. Stronger governance allows less room for return manipulations, such as downward revisions to lower the high-water mark with the intention of inflating the performance fee reward or upward revisions to make the return history more attractive to potential investors.

We also examine the effect of the changes in characteristics from the return month *t* to the month before revision *s* - 1. We use probit regressions with the difference between the variables in the regressions in Panels A and B in Table 6 as the independent variables. The results are shown in Panel C. We find that when a fund has a stronger governance score in month *s* - 1 than in month *t*, the fund tends to revise its previously reported returns. This finding again confirms the important role of fund governance in return revisions. A fund is more likely to revise its returns when fund governance is improving. These results lead us to conclude that

innocuous corrections of prior mistakes could plausibly explain return revisions, instead of malicious manipulations.

4.3 Direction and magnitude of return revisions

Having determined the factors that drive return revisions, we now turn to understanding the impact of these factors on the direction as well as magnitude of return revisions. In Section 4.1, we explored the determinants of return revisions at the individual fund level, where we examine the effect of fund characteristics on the revision direction, which is defined as the sign of the sum of all the revisions a fund made. Since a fund may have made multiple revisions in different directions, the direction of the revision at the fund level thus defined may not be representative. Using our unique dataset, we examine the determinants of revision direction at the individual revision level corresponding to different vintages. The samples we use for the probit regressions are the same as those in Section 4.2. We use revisions in both directions and matched returns without revisions. In the regression for positive revisions, the dependent variable is a dummy variable equal to one if a fund's revised return in month *s* is greater than the initial return of month *t* and zero for the matched fund. In the regression for negative revisions, the dependent variable is a dummy variable equal to one if a fund's revised return in month *s* is less than the return in month *t* and zero for the matched fund. As in Section 4.2, we examine three sets of explanatory variables: those defined by the characteristics in return month *t*, those defined by the characteristics in the month *s* - 1, prior to revision, and the difference between the two months.

The results of separating the positive and negative revisions are reported in Panel A of Table 7. One noteworthy feature is the significantly positive coefficient for governance in all regressions, whether the revisions are upward or downward. If funds manipulate returns, those funds with poor governance are more likely to decrease returns after their initial reporting because they have more latitude to report higher than actual returns initially. Therefore, we find no direct evidence that hedge funds misreport their returns in the return month *t* or manipulate their returns through revisions to their previously reported returns in a systematic way. Innocuous corrections may be a plausible explanation for return revisions.

We also examine the determinants of the revision magnitude. The dependent variables in the ordinary least squares (OLS) regressions are the absolute values of the individual return revisions. The independent variables are the three sets of characteristics described above. The

results of this analysis are shown in Panel B of Table 7. We find that funds with stronger governance are significantly related to larger revision magnitudes in all three regressions.

5. Impact of return revisions on future performance

While we care about what factors are related to or drive the revisions of previously reported returns, we are more concerned about the impact of such revisions on future fund performance. As in Section 4, we investigate the impact of return revisions at the fund and revision levels.

5.1 Performance comparison at the fund level

First, we follow the approach adopted by Patton, Ramadorai, and Streatfield (2013). In each month, we allocate funds to the unrevised and revised groups. If a fund never revised its returns up until a given point in time, then the fund is classified as an unrevised fund at that time. A fund is categorized as a revised fund at the time when it revised its returns for the first time and will remain in the revised group thereafter. Therefore, for each period, the unrevised portfolio, P_{n}, includes the returns of all funds that never revised their returns and the returns of the revised funds prior to their first revisions, P_{r1}. The revised portfolio contains the returns of the revised funds after their first revisions, P_{r2}. For each portfolio, we equally weight all monthly returns and obtain two time series of portfolio returns. Next, we compare the performance of the two portfolios by computing the differences of the two time series of portfolio returns and regressing the differences on the Fung–Hsieh seven- and eight-factor models, respectively (Fung and Hsieh (2001)).

The first two numbers in the first row of Panel A of Table 8 are the results of this analysis. The alphas of the non-reviser minus the reviser portfolios for the Fung–Hsieh seven- and eight-factor models are -0.023% and -0.027% per month, respectively. Both the alphas are negative but insignificant, which means that the risk-adjusted performance of the unrevised funds is poorer than that of the revised funds, but the difference is not statistically significant. We also define unrevised and revised funds in a slightly different way. From Panel F of Table 2, we know that about 60% of the revisions within three months of the initial reporting were revisions to previously estimated returns. We then treat funds whose revisions all occurred within three months as unrevised funds. That is, we use the revision recency $k > 3$ months to obtain effectively revised funds. The monthly alphas for the effectively revised funds are

negligibly small, 0.001% and -0.002%, and statistically insignificant from the results for the Fung–Hsieh seven- and eight-factor models. Therefore, unlike Patton, Ramadorai, and Streatfield (2013), we do not find that the revised funds underperform the unrevised funds when we employ the same approach to compare performance. From the results we obtained thus far, we can conclude that the revisions were innocuous and provide no information about future performance.

Next, we compare the performances of revised funds before and after their first revisions to further examine the impact of return revisions on future fund performance. Interestingly, we find that, compared to before their first revisions, these funds performed significantly worse after their first revisions. The alpha differences between the pre- and post-revision reviser funds for the Fung–Hsieh seven- and eight-factor models are 0.065% and 0.061% per month (or 0.78% and 0.732% per annum), respectively, if we set $k \geq 1$. The corresponding annual alphas are 1.9% and 1.847%, respectively, if we set $k > 3$. Is a return revision an omen of deteriorating future fund performance? Or is this a coincidence of the trend in which hedge fund alphas decrease over time, as documented by Naik, Ramadorai, and Stromqvist (2007), Fung, Hsieh, Naik, and Ramadorai (2008), and Zhong (2008)? One possible explanation for the decreasing alpha is capacity constraints, which are due to both the unscalability of managers' abilities and limited profitable opportunities in a competitive market (Zhong (2008)). we find that the average sizes of the revised funds after their first revisions are significant larger than their average sizes prior to their first revisions. Larger fund size could have an adverse impact on fund performance, since the fund could reach its designed capacity.

We then compare the performance of revised funds prior to their first revisions with that of unrevised funds that only contain funds that never revised their returns. The results of comparisons 5 and 6 in Panel A of Table 8 show that the former significantly outperform the latter, whether we set $k \geq 1$ or $k > 3$. Comparisons 7 and 8 also show that the unrevised funds containing only funds that never revised their returns significantly underperform the revised funds after their first revisions. Previously, however, we found that the unrevised funds, when defined as including all funds that never revised their returns as well as funds prior to their first revisions, show no significant performance difference compared to the revised funds after their first revision. Therefore, it is possible that the significant outperformance of the unrevised funds

found by Patton, Ramadorai, and Streatfield (2013) is driven by their superior performance of the revised funds prior to their first revisions.

As mentioned above, we cannot decisively conclude that the underperformance of the revised funds after their first revisions compared with the revised funds prior to their first revisions results from the revisions. We would like to compare the performance of the unrevised funds with that of the revised funds in the same period. However, we cannot classify the unrevised funds into pre- and post-revision periods as we classify the revised funds, since the unrevised funds have no revision months. To address this issue, we first calculate the percentage time point of the lifecycle for funds in each month. For example, if a fund reported returns from January 2002 to December 2007 and revised its return(s) in March 2003, then the time point of revision is the 15th month of its lifecycle in our sample period. The percentage time point of this revision is 25%, or 0.25. Similarly, we can calculate the percentage time point of the lifecycle for each fund in each month. We calculate the average percentage points in time for all the first revisions and use this average percentage time point to separate unrevised funds into what we call the pre- and post-periods. The unrevised funds using the average percentage points as dividing points include funds that never revised their returns and funds that revised their returns but all within three months after the return months, where we set $k > 3$. We classify funds that revised their returns at least once, where we set $k \geq 1$, and funds that revised their returns more than three months after the return months, where we set $k > 3$, into pre- and post-period portfolios according to the month of the first effective revisions. We then compare the performance of non-reviser and reviser portfolios over different periods. The alphas and *t*-statistics are reported in Panel B of Table 8.

Comparison 9 in Panel B of Table 8 shows that, similar to the performance of the revised funds, the performance of funds that never revised their returns, P_n, after their first hypothetical first revision point is significantly lower than prior to the hypothetical revision points. The underperformance of the unrevised funds in the later period may also be explained by capacity constraints. The comparison of the performance between the pre- and post-period unrevised funds when $k \geq 3$ yields a similar result. We also combine the unrevised and revised funds, classify them into pre- and post-period portfolios, and compare their performance. Comparisons 11 and 12 in Panel B show the results. As expected, based on the results of comparisons 3 and 4 in Panel A and comparisons 9 and 10 in Panel B, when all the funds are considered, the pre-

period portfolio significantly outperforms the post-period portfolio. This finding is consistent with the observations of Naik, Ramadorai, and Stromqvist (2007), Fung, Hsieh, Naik, and Ramadorai (2008), and Zhong (2008): Hedge fund alphas decrease over time.

Next, we compare the performance between non-reviser and reviser portfolios over the same period to examine the impact of return revisions on fund performance. Comparison 13 of Panel B in Table 8 shows that the alphas of the pre-period non-reviser minus reviser portfolios for the Fung–Hsieh seven- and eight-factor models are -0.185% and -0.189% per month, respectively. The alphas of the post-period non-reviser minus reviser portfolios for the Fung–Hsieh seven- and eight-factor model are -0.241% and -0.240% per month, respectively. All four alphas are negative and significant at the 1% level, which means that the risk-adjusted performance of the unrevised funds is significantly poorer than that of the revised funds in both the pre- and post-periods. Our results remain true when $k \geq 3$ is considered, as shown by Comparisons 15 and 16 in Panel B. The revised funds significantly outperform unrevised funds in both the earlier and later periods.

Therefore, combining all the above results, we find that superior performance greatly boosts the overall performance of non-reviser funds as defined by Patton, Ramadorai, and Streatfield (2013). The outperformance of the revised funds before their first revisions compared to the performance of the revised funds after their first revisions can be explained by capacity constraints, since this is also the case for the performance of the unrevised funds in their earlier period compared to the later period. The revised funds outperform unrevised funds in the same periods. The revised funds in their period after the first revisions also outperform the unrevised funds in their lifetime during our sample period.

Panel B of Table 8 compares the performance of the revised funds with that of the unrevised funds in the pre- and post-periods. The periods of the unrevised funds are divided using the average percentage time point calculated from all the first revision times of the revised funds and we use the actual first revision times of the revised funds to classify them into different periods. Would these different treatments have a bias against unrevised funds? To address this issue, we allocate both the unrevised and revised funds into earlier and later periods using the average percentage time point and repeat the comparisons in Panel B. The results of the new comparisons tell the same story as those in Panel B.[12] In addition to the average percentage

[12] These results are not reported in detail here but are available from the authors upon request.

points in time of the revisions, we also employ different hypothetical revision percentage time points. The results always hold, such that the revised funds outperform the unrevised funds.

A concern remains that the higher future performance of revised funds could be attributable to a few extreme returns. To address the issue, we compare the differences of the median portfolio returns between the revised and unrevised funds. The results are reported in the last two columns of each panel in Table 8. We can see that the better performance of the revised funds is not driven by the extreme high performance of a few revised funds.

All the performance comparisons at the fund level show that the revised funds outperform unrevised funds in the same periods. The revised funds after their first revisions also outperform the unrevised funds in their lifecycle during our sample period. The positive impact of revisions on the future performance of the revised funds leads us to conclude that the revisions are a sign of honesty, in the sense that funds correct their past errors or inaccuracies in return evaluations, which contradicts the argument that managers first pump up initial returns to lure investors and then revise them downward.

5.2 Performance comparison at the revision level

Our unique dataset also allows us to investigate the impact of return revisions on future fund performance at the individual revision level. Specifically, we carry out an event study to compare the CAARs of the revised funds and matched unrevised funds in 12-month windows before and after the revisions. Our focus is on the 12-month window after the revisions.

To avoid the compounding effect of multiple revisions, we drop any revision if the fund had another revision in the 12 months before or after it. We require the funds that experienced effective revisions and survived the screen to have returns for all 24 months in this two-year event window. The requirement is the same for the matched funds. In the end, we obtain 7,072 revisions that occurred more than three months after they were initially reported and 7,072 matched revisions. We first calculate monthly abnormal returns for each revised fund as the fund excess return minus the Fung–Hsieh seven-factor realization multiplied by the factor loadings estimated over the 36-month estimation period prior to the revision. Based on the monthly abnormal returns for each fund, we compute the CAARs over the 24-month event window and the 12-month window after the revisions for the revised and matched funds. To examine whether revisions in different directions would have different impacts on future performance, we also

calculate the CAARs for the revised and matched funds over the 12 months after positive and negative revisions.

Figure 3A shows that the CAARs of the revised and matched funds parallel each other until three months before the revisions. Then the CAAR of the revised funds increases steadily and well above that of the matched funds until the end of our event window, which is 12 months after the revisions. When the revisions occur, the CAAR is 7.6% for the revised funds but only 6.3% for the matched unrevised funds. In the 12 months following revisions, the CAAR of the revised funds remains above that of the matched funds. At the end of the 24-month event window, the CAAR is 11.11% for revised funds, in contrast to 7.98% for the matched funds.

Figure 3B shows the CAARs of the revised and matched funds over the 12-month event window after revisions. From the first month to the end of the event window, the CAAR of the revised funds is always higher than that of the unrevised funds. The CAAR of the revised funds is almost twice that of the matched funds at the end of the 12 months after the return revision. Figures 3C and 4D present the CAARs of the revised and matched funds over the 12-month event window after positive and negative revisions, respectively. The two plots show a pattern similar to that in Figure 3B. The direction of the return revision is not a signal of the future performance of the revised funds.

Similar to the comparison at the fund level, we find that in the 24-month event window and the 12-month window after revisions, the CAARs of the revised funds are higher than those of the matched funds, whether the revision is upward or downward. The higher performance of the revised funds at the revision level again signifies that the revisions are not indicators of poor operational controls or dishonesty; on the contrary, they may indicate motivation to correct past inaccuracies in the return estimations, following standard industry practice. The higher performance of the revised funds compared to that of the unrevised funds is consistent with the operational risk literature (Brown et al. (2008, 2009, 2012)), that hedge funds with stronger governance and lower operational risk deliver better future performance since operational risk is a risk of loss with no risk premium compensation.

6. Robustness checks

There are a number of reasons that our findings reported in Sections 3 to 5 may not accurately represent the motivation and impact of the return revisions. This section presents a series of

robustness checks that address three particularly important concerns; the specification checks do not show any evidence that our findings are biased by these concerns.

6.1 Different governance measures

As presented in Section 3, we find that funds with stronger governance are more likely to revise past returns. We posit that stronger governance restrains funds from manipulating performance. We measure governance as the aggregate variable composed of the dummy variables for audits, high-water mark provisions, country domicile, and SEC registration. Even though high-water mark provisions closely align managerial incentives with those of the limited partners in a hedge fund and thus improve governance structure, they may also provide managers with strong incentives to manipulate return reports to collect higher or earlier incentive fees (Agarwal, Daniel, and Naik (2011); Patton, Ramadorai, and Streatfield (2013)). Therefore, we construct another governance measure that excludes the high-water mark provision from our original governance measure. We carry out probit and OLS regressions with the new governance variable and high-water mark provision as explanatory variables to find the determinants of revisions at the individual fund level and individual revision level, the revision direction, and the revision magnitude. The results are shown in the Appendix in Tables A.1, A.3, and A.5, respectively.

Our main findings hold for this new governance measure. At the individual fund level, in Table A.1, the coefficients of the alternative fund governance measure for the four sets of regression are all significantly positive, similar to those in Table 5. At the individual return revision level, we also find that funds with stronger governance are more likely to revise past returns, as can be seen from Table A.3.

6.2 Exclusion of funds of funds

Funds of funds invest in hedge funds of different strategies. They revise their past returns whenever the hedge funds they hold revise their past returns. In this case, the revisions of funds of funds are corrections of past returns. Funds of funds may also have stronger governance, since they perform due diligence with their investment. Therefore, it is possible that our main findings are dominated by funds of funds. To check whether our findings are affected by funds of funds, we carry out the analyses using the sample of funds without funds of funds.

The results of examining the determinants of revisions at the individual fund and revision levels, revision direction, and revision magnitude are reported in Tables A.2, A.4, and A.6, respectively. Table A.7 shows the results of various performance comparisons at the individual fund level to determine the impact of return revisions on future fund performance. The results of the performance comparisons between the revised and unrevised funds at the individual revision level are shown in Figure A.1. The results in these tables and figures show that, when funds of funds are excluded from our samples, our findings still hold, except for the determinants of the return revision magnitudes. The result that stronger governance is related to larger revision magnitudes is largely driven by funds of funds.

6.3 Different measures of returns

A concern remains that the better future performance of hedge funds that revised their returns results from the higher upward revisions in our sample. Therefore, to examine the impact of revisions on future fund performance, our analysis compares the performance of unrevised and revised funds using their initially reported returns rather than their most recently reported returns. The results of a variety of performance comparisons at the fund level are shown in Table A.8. Figure A.2 presents the results of performance comparisons between the revised and unrevised funds at the individual revision level. Our findings hold for the first reported returns. The better performance is not attributable to the greater number or percentage of positive revisions compared to negative revisions.

7. Conclusion

In this paper, we investigate the dynamics in the performance report of hedge funds and shed light on the motivation of return revisions. We also want to evaluate the overall quality of TASS's hedge fund data. Our comprehensive datasets include 219 monthly snapshots of TASS data, which provide us with fund returns reported for different vintages from January 2002 to December 2013. To the best of our knowledge, we are the first to employ such rich data to study return revisions and assess data quality. The time series and the cross-sectional information from our unique datasets allow us to investigate the determinants of hedge fund return revisions not only at the individual fund level, but also at the individual revision level. We uncover several interesting and important results.

We track changes in the historical performance statements of about 9,500 hedge funds and find that as many as two-thirds of funds (over 6,500 individual funds) revised their previously reported performance, with more than two-fifths of funds later changing a previous monthly return by at least 0.5%. On average, more than one-fifth of monthly returns were revised after being first reported. Positive revisions are more common than negative revisions, but the magnitude of the negative revisions is larger than that of the positive revisions, resulting in a cancellation in overall magnitude.

Among the 12 categories of hedge fund styles, illiquid styles—including fixed income arbitrage, convertible arbitrage, and event driven—have relatively large proportions of return revisions. However, illiquidity may be one of the factors that affect return revisions, but other factors, such as derivative pricing, can also play an important role. The return revisions in the fund of funds category account for more than one-third of all revisions. We find an obvious decreasing time trend in both the number and proportion of return revisions, even after adjusting for performance report recency. The declining trend is accompanied by a strengthening of hedge fund governance. This is consistent with the fact that the US SEC and other regulators have tightened regulations for the hedge fund industry.

We find that revisions are more common among larger funds with stronger fund governance, higher incentive fees, and better past performance. In other words, high-quality funds tend to revise more often due to their higher standards. At the micro level for individual revisions, the returns of funds with stronger governance are more likely to be revised, while return revisions tend to occur in the next month for funds with an improved governance score. Returns also tend to be revised when a fund's governance is stronger than it was in the month the return was first reported. These drivers of return revisions are significant, whether the revisions are positive or negative. Therefore, we find a strong connection between return revisions and desirable fund characteristics at the individual fund and revision levels. The performance comparison shows that revised funds outperform unrevised funds at both the fund and revision levels. Our findings hold for various robustness checks.

These findings suggest that beneficial corrections on previously reported returns may be a plausible explanation for return revisions in the hedge fund industry. We find no direct evidence of hedge fund managers maliciously manipulating returns. Our findings have important implications on the quality of hedge fund return information: Despite their high frequency,

overall revisions tend to cancel each other out, having no adverse impact on the accuracy of the performance records.

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Table 1: Summary Statistics of Fund Characteristics

Panel A: Summary Statistics by Year (2002–2013)
Based on the First Reported Returns

Year	# of Funds	Equal-weighted hedge fund portfolio monthly returns (%)				
		Mean	Median	Std. dev.	Minimum	Maximum
2002	3128	0.2359	0.5447	0.9264	-1.5338	1.5424
2003	3581	1.3889	1.1633	0.9861	-0.2262	3.4881
2004	4084	0.6701	0.7786	1.2503	-1.4110	2.9261
2005	4677	0.7299	1.2919	1.3710	-1.5536	1.9713
2006	5148	0.9881	1.3261	1.4242	-1.6857	3.3228
2007	5379	0.9543	0.9406	1.5309	-1.8780	3.1033
2008	5349	-1.6438	-1.9467	2.6662	-6.3812	1.8540
2009	4637	1.4215	1.3003	1.5675	-0.9450	4.8076
2010	4405	0.7447	0.9185	1.7466	-2.9690	3.0975
2011	4074	-0.5229	-0.3328	1.6908	-3.5845	1.9657
2012	3544	0.4934	0.6136	1.2365	-2.1541	2.4336
2013	2896	0.7279	0.8807	1.0534	-1.7098	2.4278
Overall	9494	0.5157	0.7651	1.6750	-6.3812	4.8076

Panel B: Summary Statistics by Year (2002–2013)
Based on Last Reported Returns

Year	# of Funds	Equal-weighted hedge fund portfolio monthly returns (%)				
		Mean	Median	Std. dev.	Minimum	Maximum
2002	3128	0.2458	0.5555	0.9338	-1.5597	1.5574
2003	3581	1.3973	1.1802	0.9951	-0.2333	3.5088
2004	4084	0.6725	0.7762	1.2554	-1.4075	2.9243
2005	4677	0.7334	1.2997	1.3716	-1.5523	1.9682
2006	5148	1.0046	1.3459	1.4343	-1.6818	3.3703
2007	5379	0.9626	0.9291	1.5290	-1.8543	3.1346
2008	5349	-1.6712	-1.9705	2.6894	-6.4440	1.8561
2009	4637	1.4234	1.3072	1.5786	-0.9425	4.8348
2010	4405	0.7509	0.9200	1.7688	-2.9962	3.1501
2011	4074	-0.5374	-0.3261	1.7120	-3.6414	2.0138
2012	3544	0.4928	0.6127	1.2504	-2.1932	2.4488
2013	2896	0.7096	0.8985	1.0713	-1.7426	2.4402
Overall	9494	0.5154	0.7557	1.6898	-6.4440	4.8348

Panel C: Cross-Sectional Statistics (2002–2013)

	N	Mean	Median	Std. dev.	Minimum	Maximum
Average monthly return over the life of the fund (%): first reported	9494	0.33	0.40	1.26	-17.07	17.40
Average monthly return over the life of the fund (%): last reported	9494	0.33	0.40	1.27	-22.09	17.40
Average monthly AUM over the life of the fund (millions $)	7652	149.04	38.09	414.02	0.00	15516.67
Age of the fund (# of months in existence)	9492	80.60	66.00	56.72	1.00	480.00
Management fee (%)	9472	1.45	1.50	0.63	0.00	22.00
Incentive fee (%)	9441	15.10	20.00	7.88	0.00	50.00

Panels A and B report the number of hedge funds and the mean, median, standard deviation, minimum, and maximum of monthly returns on the equal-weighted hedge fund portfolio. The statistics of the returns in Panels A and B are based on the returns reported for the first time and those reported for the last time in the snapshots, respectively. Panel C reports the cross-sectional mean, median, standard deviation, minimum, and maximum of the statistics for hedge fund characteristics, including returns, size, age, management fees, and incentive fees. The first two rows of the table are the average monthly return over the life of the fund based on the returns reported for the first and last time in the snapshots, respectively. The sample period is from January 2002 to December 2013.

Table 2: Summary Statistics of Return Revisions

Panel A: Fund Revision Summary

# of Changes	Number of Funds	Percentage	Cumulative Percentage
0	2,927	30.83%	30.83%
1	1,059	11.15%	41.98%
2	667	7.03%	49.01%
3–13	2,439	25.69%	74.70%
14–38	1,472	15.50%	90.20%
39–90	742	7.82%	98.02%
91–398	188	1.98%	100.00%

Panel B: Summary Statistics for the Distribution of All Revisions

	Revisions	Absolute Revisions	Positive Revisions	Negative Revisions
Count	119,017	119,017	63,651	55,366
Mean (%)	0.008	0.645	0.603	-0.693
Median (%)	0.02	0.105	0.103	-0.107
95th percentile	1.164	2.541	2.305	-0.020
5th percentile	-1.213	0.020	0.020	-2.812
Std. Dev.	3.215	3.149	3.011	3.300

Panel C: Fund Revision Magnitude

		At Least 0.01%	At Least 0.1%	At Least 0.5%	At Least 1%
All Revisions	Funds	6567	5806	4145	3155
	% of Funds (%)	69.17	61.15	43.66	33.23
Revisions 3 Months Later	Funds	3660	2825	1830	1389
	% of Funds (%)	38.55	29.76	19.28	14.63

Panel D: Mean Equality Test of Return Revisions in Different Directions

	2002–2007			2008–2013			2002–2013		
	Incr.	Decr.	*t*-Value	Incr.	Decr.	*t*-Value	Incr.	Decr.	*t*-Value
All revisions	521.9	404.9	5.93	367.2	369.2	0.09	445.1	387.2	3.49
Revisions 3 Months Later	192.9	184.8	2.04	100.5	102.6	0.22	148.0	144.9	0.43

Panel E: Recency of Revisions (*k*)

	1 or More Months	More than 3 Months	More than 6 Months	More than 12 Months	More than 24 Months
Funds	6,567	3,660	2,629	1,751	1,080
% of Funds (%)	100	55.73	40.03	26.66	16.45
Revisions	119,017	41,010	31,488	23,267	15,507
% of Revisions (%)	100	34.46	26.46	19.55	13.03

Panel F: Return Status of Revisions

Revision		Estimated or Actual Returns before and after Revisions					
		Missing	AA	AE	EA	EE	Total
Revisions in 3 Months	# of Revisions	29	22,695	456	46,250	8,577	78,007
	% of Total Revisions	0.02	19.07	0.38	38.86	7.21	65.54
Revisions after 3 Months	# of Revisions		34,393	1,065	3,866	1,686	41,010
	% of Total Revisions		28.90	0.89	3.25	1.42	34.46
Total	# of Revisions	29	57,088	1,521	50,116	10,263	119,017
	% of Total Revisions	0.02	47.97	1.28	42.11	8.62	100

This table shows summary statistics of the changes in returns reported at different points in time. Panel A reports the number of funds with different number of changes in the reported returns. Panel B shows the proportion of reviser funds with at least one revision that is at least as large as the size thresholds listed, Panel C shows various percentiles of positive, negative, and net revisions and their absolute values. Panel D shows the average number of returns that were increased or decreased compared to the previously reported returns in each month from 2002 to 2013, from 2002 to 2007, and from 2008 to 2013, respectively. It also shows the *t*-value of the equality test of the average number of revisions in either direction in each month. Panel E shows the proportions of reviser funds with at least one revision that relates to a return that is at least as old as the recency thresholds listed. Panel F shows the proportions of revisions with the return statuses listed: AA indicates that the actual return was stated by fund manager before the revision and is still the actual return after the revision, AE indicates the return revision is from the actual return as stated by the fund manager to the estimated return, EA indicates exactly the opposite, and EE indicates a revision from an estimated return to an estimated return. Panel G shows the return revisions of each style of hedge funds as the percentage of the number of all the funds in each style and as the percentage of all revisions.

Table 3: Revisions by Style

-	Convertible Arbitrage	Dedicated Short Bias	Emerging Markets	Equity Market Neutral	Event Driven	Fixed Income Arbitrage
Percentage of revisions in the same style	22.34	19.49	17.51	19.15	20.75	23.56
Percentage of all the revisions	2.71	0.52	6.76	3.84	7.68	3.63
	Fund of Funds	Global Macro	Long/Short Equity hedge	Managed Futures	Multi-strategy	Other
Percentage of revisions in the same style	22.46	16.79	15.4	22.74	13.86	16.48
Percentage of all the revisions	34.93	3.67	21.05	7.52	4.76	2.92

This table shows the return revisions of hedge funds in each style as the percentage of the number of all the funds in each style and as the percentage of all the revisions.

Table 4: Revisions by Year

Panel A. Average Monthly Number and Proportion of Original Return Revisions in Each Year

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Overall
Original Revisions	# of Revisions	367	373	354	368	392	412	345	308	208	150	107	50	286
	% of Revisions	13.31	11.63	9.74	8.90	8.70	8.63	7.57	7.57	5.33	4.16	3.44	1.88	7.57

Panel B: Average Number and Proportion of Adjusted Return Revisions in Each Year

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Overall
Adjusted Revisions	# of Revisions	367	373	355	370	397	420	357	323	224	167	124	62	295
	% of Revisions	13.31	11.64	9.76	8.95	8.80	8.80	7.83	7.96	5.74	4.62	3.99	2.33	7.81

Panel A shows the average monthly number and proportion of returns that were revised more than three months after the return month in each year during our sample period. The average monthly number of return revisions in each year is calculated as the mean of the 12 monthly numbers of return revisions. The proportion of return revisions in each month is the number of revisions to the returns that month as a percentage of the total number of returns that month. The average monthly proportion of return revisions in each year is calculated as the mean of the 12 monthly proportions of the return revisions. Panel B shows the average monthly number and proportion of returns that were revised later than three months after the return month in each year during our sample period. The number and proportion of returns that were revised are adjusted for the return report recency using the adjustment factor shown in Figure 2B.

Table 5: Determinants of Return Revisions at the Individual Fund Level

	Ordered Probit		Probit		Probit Increase		Probit Decrease	
Governance1	15.34***	9.50***	16.11***	7.58**	15.73***	7.70**	16.48***	7.5**
Mfee		-8.77**		-4.50		-5.54		-4.12
Ifee		1.79***		1.95***		1.64***		2.19***
Levid		6.64		10.08**		12.44**		7.09
Notice		0.28***		0.14*		0.18*		0.08
Lockup		0.08		0.60		0.94*		0.32
Personalcapid		12.17***		12.28**		12.04*		14.42**
Theta		-10.70**		-8.01		-15.92***		-3.04
Meanreturn		27.43***		29.68***		31.04***		29.95***
Stdret		-1.56*		-1.33		-4.08***		0.89
Meansize		8.63***		9.57***		11.1***		8.56***
Style effect	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.0359	0.1338	0.033	0.1177	0.0346	0.1335	0.0287	0.1097

This table reports the effects of covariates on the probability of a hedge fund's return revisions. In the ordered probit regression, the dependent variable has a value of four if the fund changed its returns more than 20 times, three if the number of revisions *n* is between seven and 20, two if *n* is between three and six, one if *n* is one or two, and zero is the fund never revised its returns. In the probit regression, the dependent variable is a dummy variable equal to one if the fund revised its returns at least once and zero otherwise. In the probit increase regression, the dependent variable has a value of one if all the return revisions of a fund sum up to be positive and zero if the fund never revised its returns. In the probit decrease regression, the dependent variable has a value of one if all the return revisions of a fund sum up to be negative and zero if the fund never revised its returns. The revisions in this table occurred more than three months after the return months. The variable Governance1 is calculated as the sum of four individual governance variables: auditing, the high-water mark, country of domicile, and SEC registration. The auditing variable is equal to one if a fund reports a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one when there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore; SEC is a variable equal to one if the fund is registered with the SEC; Mfee and Ifee are the magnitudes of management and incentive fees, respectively; and Levid is an indicator variable equal to one when the fund uses leverage. The Notice variable denotes the fund's redemption notice period (in days), Lockup is the period (in months) over which investors cannot withdraw their investment, and Personalcapid is an indicator variable set to one when fund managers invest their personal capital in the fund. The variables Governance1, Mfee, Ifee, Levid, Notice, Lockup, and Personalcapid of a fund that revised its returns are defined by the characteristics in the months prior to the first return revision, while these variables are defined for unrevised funds by the characteristics in the months prior to the last return. The variable Theta denotes fund asset liquidity, which is measured using the equation developed by Getmansky, Lo, and Makarov (2004); Meanreturn for a fund that has revised its returns is the average of the returns in the months prior to the first return revision and Meanreturn for an unrevised fund is the average of the returns in the months prior to the last return; Stdret for a fund that has revised its returns is the standard deviation of its returns in the months prior to the first revision and Stdret for an unrevised fund is the standard deviation of the returns in the months prior to the last return; Meansize for a fund that revised its returns is the average of the sizes in the months prior to the first revision and Meansize for an unrevised fund is the average of the sizes in the months prior to the last return; and Size is defined as the logarithm of AUM. All independent variables are divided by 100. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Determinants of Return Revisions at the Individual Revision Level

Panel A. Characteristics for the Return Month

	$X_{\text{Return Month}}$ 2002–2013		$X_{\text{Return Month}}$ 2002–2007		$X_{\text{Return Month}}$ 2008–2013	
Governance1	8.51***	3.24***	6.40***	2.82**	11.84***	6.40***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo-R^2	0.0036	0.0054	0.0021	0.0075	0.0068	0.0169

Panel B. Characteristics for the Month before the Revision Month

	$X_{\text{Revision Month-1}}$ 2002–2013		$X_{\text{Revision Month-1}}$ 2002–2007		$X_{\text{Revision Month-1}}$ 2008–2013	
Governance1	11.97***	9.71***	19.60***	14.63***	8.02***	5.76***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo-R^2	0.0067	0.0183	0.0176	0.0342	0.0030	0.0156

Panel C: Changes in Characteristics between the Return Month and the Month before the Revision Month

	$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2002–2013		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2002–2007		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2008–2013	
Governance1	8.24***	18.65***	1.33	11.07***	11.38***	21.85***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo-R^2	0.0010	0.0127	0.0000	0.0107	0.0021	0.0202

This table reports the results of the probit regression of the return revision dummy on fund governance while controlling for other fund characteristics at the individual revision level. We match each hedge fund with size data that revised its return in month *s* to the return of month *t* to a hedge fund with the same strategy and the nearest asset size in the same return month but that did not revise its return in month *s* to the return of month *t*. The dependent variable is a dummy variable equal to one if the fund revised its return in month *s* to the return of month *t* and zero for the matched fund. In Panel A, the independent variables are defined by the fund characteristics in return month *t*. In Panel B, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In Panel C, the independent variables are the differences between the variables defined by the fund characteristics in return month *t* and in month *s* - 1. The variable Governance1 is calculated as the sum of four individual governance variables: auditing, the high-water mark, country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one if there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore and SEC is a variable equal to one if the fund is registered with the SEC. Controlled characteristics include the fund management fee, the incentive fee, leverage, the fund's redemption notice and lockup periods, fund manager investment of personal capital in the fund, the average of the fund's returns in the past 12 months, the first-order autocorrelation of monthly returns in the past 12 months, the standard deviation of the fund's returns in the past 12 months, the capital flow in the past three months, and fund age. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Determinants of Revision Direction and Magnitude

Panel A. Determinants of Return Revision Direction

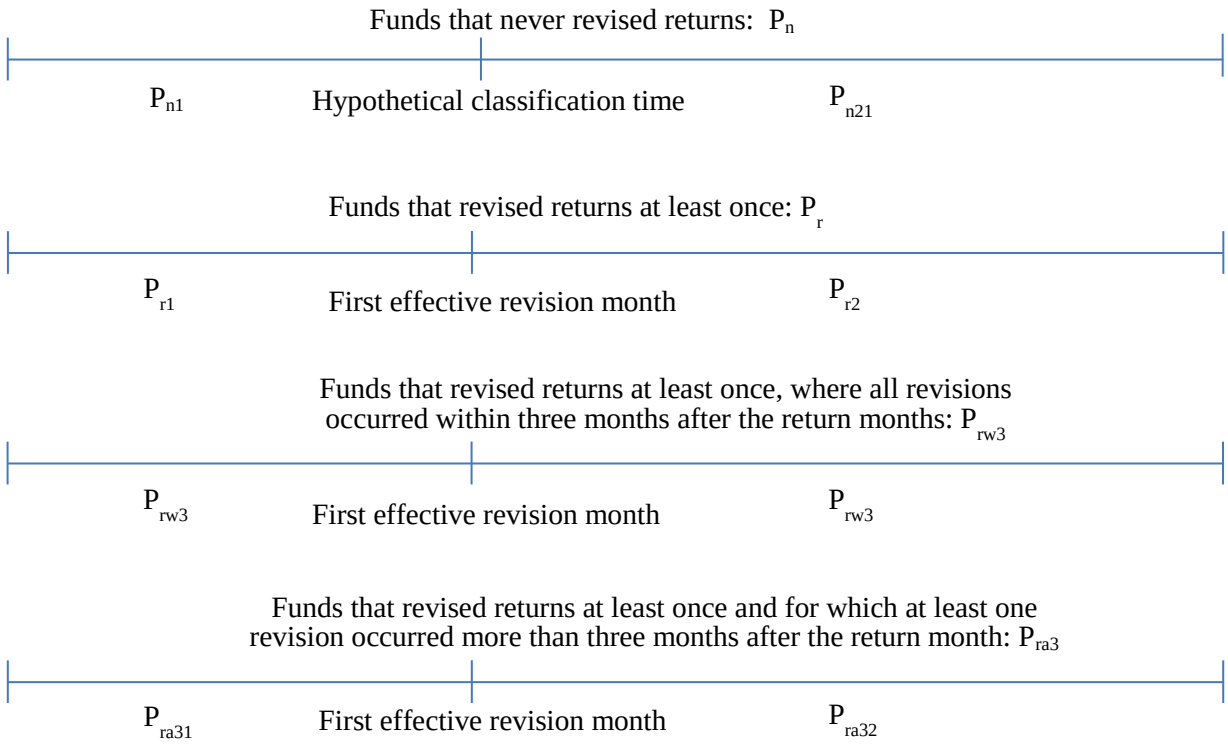
	$X_{\text{Return Month}}$		$X_{\text{Revison Month-1}}$		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$	
	Increase	Decrease	Increase	Decrease	Increase	Decrease
Governance1	2.99**	5.74**	8.9***	8.83***	22.53***	14.36***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo-R^2	0.0063	0.0077	0.0130	0.0157	0.0149	0.0120

Panel B. Determinants of Return Revision Magnitude

	$X_{\text{Return Month}}$	$X_{\text{Revison Month-1}}$	$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$
Governance1	20.96***	23.43***	124.76***
Character Control	Yes	Yes	Yes
Pseudo-R^2	0.0277	0.0205	0.1024

Panel A reports the results of the probit regression of the direction of the dummy of the return revision on fund governance while controlling for other fund characteristics at the individual revision level. Panel B shows the results of the OLS regression of the magnitude of the return revision on fund characteristics at the individual revision level. We match each hedge fund with size data that revised its return in month *s* to the return of month *t* to the hedge fund with the same strategy and the nearest asset size in the same return month but that did not revise its return in month *s* to the return of month *t*. In Panel A, the dependent variable in the columns of increase is a dummy variable equal to one if the fund reported its return in month *s* to the return of month *t* is greater than what it previously reported and zero for the matched fund. In the columns of decrease, the dependent variable is a dummy variable equal to one if the fund reported its return in month *s* to the return of month *t* is smaller than what it previously reported and zero for the matched fund. In the first two columns, the independent variables are defined by the fund characteristics in return month *t*. In the third and fourth columns, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In last two columns, the independent variables are the differences between the corresponding variables defined by the fund characteristics in month *t* and month *s* - 1. In Panel B, The dependent variable is the absolute value of the revision a fund made in month *s* to the return of month *t*. The dependent variable equals zero for the matched fund. In the first column, the independent variables are defined by the fund characteristics in return month *t*. In the second column, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In last column, the independent variables are the differences between the variables defined by the fund characteristics in return month *t* and month *s* - 1. The variable Governance1 is calculated as the sum of four individual governance variables: auditing, a high-water mark provision, the country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one if there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore and SEC is a variable equal to one if the fund is registered with the SEC. Controlled characteristics include fund management fees, incentive fees, fund leverage, the fund's redemption notice and lockup periods, fund whether managers invested personal capital in the fund, the average of the fund's returns in the past three and 12 months, the first-order autocorrelation in the past 12 months, the standard deviation of the fund's returns in the past 12 months, capital flow in the past three months, and fund age. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Fund-Level Performance Comparisons



Panel A. Portfolios Based on Actual Revision Points

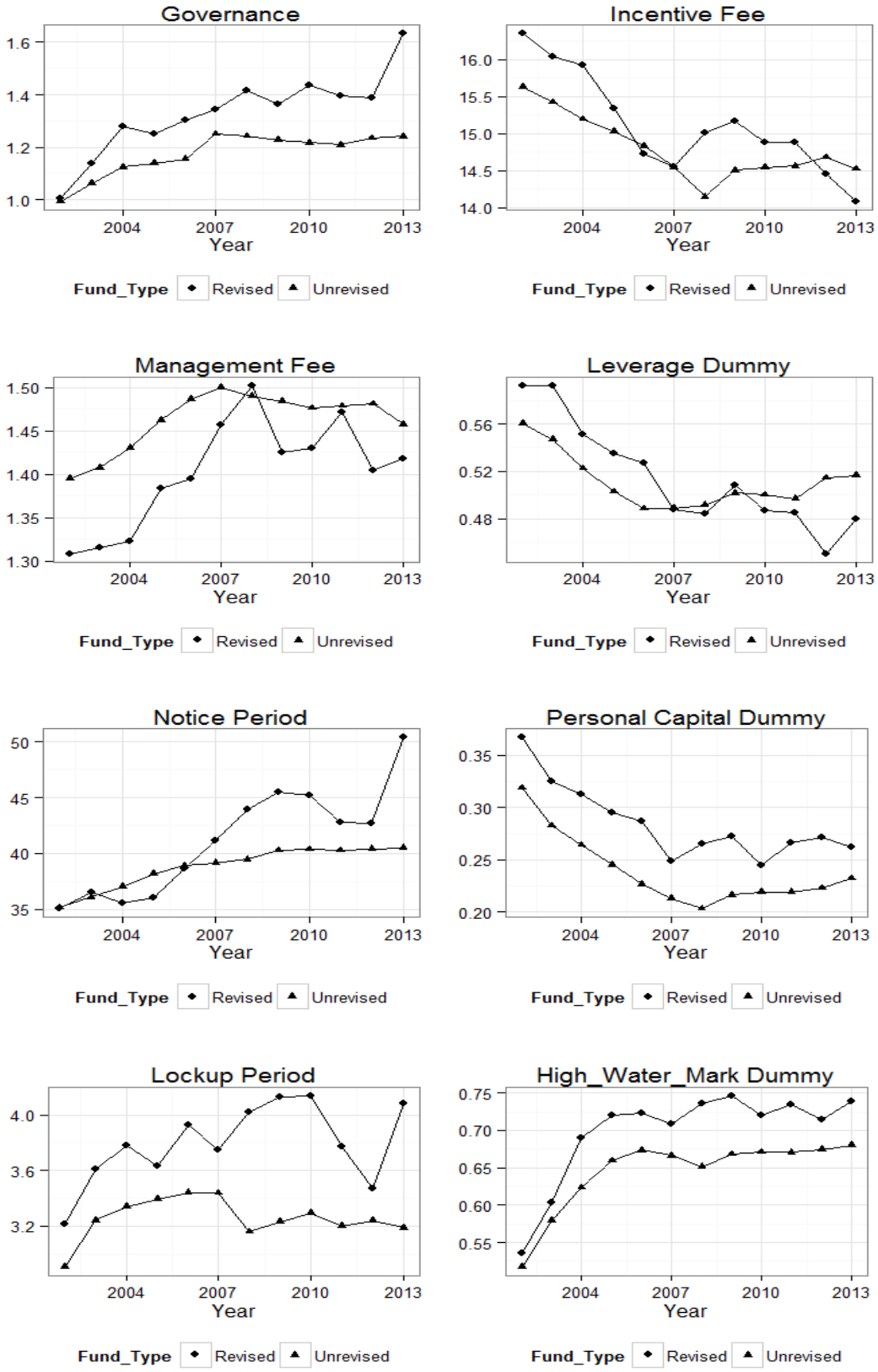
		Portfolio Mean Return		Portfolio Median Return	
		7-Factor Model	8-Factor Model	7-Factor Model	8-Factor Model
1	P_n_P_{r1} vs. P_{r2}	-0.023	-0.027	-0.062***	-0.065***
		(-1.00)	(-1.19)	(-3.45)	(-3.71)
2	P_n_P_{rw3}_P_{ra31} vs. P_{ra32}	0.001	-0.002	-0.044*	-0.045**
		(0.05)	(-0.06)	(-1.95)	(-2.00)
3	P_{r1} vs. P_{r2}	0.065**	0.061**	-0.015	-0.018
		(2.47)	(2.34)	(-0.75)	(-0.9)
4	P_{ra31} vs. P_{ra32}	0.158***	0.154***	0.046*	0.045*
		(4.57)	(4.47)	(1.81)	(1.75)
5	P_n vs. P_{r1}	-0.343***	-0.338***	-0.239***	-0.237***
		(-12.1)	(-12.01)	(-13.48)	(-13.35)
6	P_n vs. P_{ra31}	-0.389***	-0.384***	-0.265***	-0.264***
		(-12.33)	(-12.22)	(-13.63)	(-13.5)
7	P_n vs. P_{r2}	-0.154***	-0.156***	-0.134***	-0.137***
		(-5.64)	(-5.71)	(-6.78)	(-7.05)
8	P_n vs. P_{ra32}	-0.106***	-0.109***	-0.099***	-0.102***
		(-3.26)	(-3.37)	(-3.9)	(-4.03)

Panel B. Portfolios Based on Average Revision Points and Actual Revision Points

		Portfolio Mean Return		Portfolio Median Return	
		7-Factor Model	8-Factor Model	7-Factor Model	8-Factor Model
9	P_{n1} vs. P_{n2}	0.146***	0.132**	0.092***	0.085**
		(2.70)	(2.47)	(2.66)	(2.46)
10	$P_{n1}\_P_{rw31}$ vs. $P_{n2}\_P_{rw32}$	0.147***	0.135***	0.072***	0.065***
		(4.03)	(3.81)	(3.21)	(2.98)
11	$P_{n1}\_P_{r1}$ vs. $P_{n2}\_P_{r2}$	0.106**	0.099**	0.013	0.009
		(2.55)	(2.40)	(0.58)	(0.42)
12	$P_{n1}\_P_{rw31}\_P_{ra31}$ vs. $P_{n2}\_P_{rw32}\_P_{ra32}$	0.169***	0.162***	0.064***	0.061***
		(5.29)	(5.18)	(3.16)	(3.03)
13	P_{n1} vs. P_{r1}	-0.185***	-0.189***	-0.108***	-0.113***
		(-4.10)	(-4.17)	(-3.43)	(-3.59)
14	P_{n2} vs. P_{r2}	-0.241***	-0.240***	-0.201***	-0.202***
		(-6.98)	(-6.92)	(-8.92)	(-8.98)
15	$P_{n1\_}P_{rw31}$ vs. P_{ra31}	-0.248***	-0.247***	-0.157***	-0.157***
		(-8.43)	(-8.30)	(-8.33)	(-8.28)
16	$P_{n2}\_P_{rw32}$ vs. P_{ra32}	-0.227***	-0.225***	-0.182***	-0.180***
		(-7.36)	(-7.27)	(-7.67)	(-7.59)

This table reports the estimated alphas from the regression of the difference in mean or median returns between the unrevised fund portfolio and the revised fund portfolio from January 2002 to December 2013 for the Fung–Hsieh seven- and eight-factor models. The difference in returns is between the former and latter portfolios in each row of the first column. The monthly returns are the last reported returns for all the funds. Here, P_n includes funds that never revised their returns during our sample period, P_r includes funds that revised their returns at least once, P_{rw3} includes funds that revised their returns at least once but all within three months after the return months, and P_{ra3} includes funds that revised their returns at least once but more than three months after the return months. In Panel A, funds in P_r and P_{ra3} are classified into the portfolios in the earlier period, P_{r1} and P_{ra31}, as well as in the later period, P_{r2} and P_{ra32}, according to their actual first effective return revision months. In Panel B, funds in P_n and P_{rw3} are classified into the portfolios in the earlier period, P_{n1} and P_{rw31}, as well as in the later period, P_{n2} and P_{rw32}, according to the hypothetical first revision months. The hypothetical first revision months are based on the average revision point calculated from the first revision points of funds that revised their returns. The average revision point is the average of the percentages of the fund lifecycle in our sample period. Funds in P_r and P_{ra3} are classified into the portfolios in the earlier period, P_{r1} and P_{ra31}, as well as in the later period, P_{r2} and $P_{ra32,}$ according to their actual first effective return revision months. Regression alphas are shown, with *t*-statistics in parentheses beneath. The superscripts ***, **, and *, indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

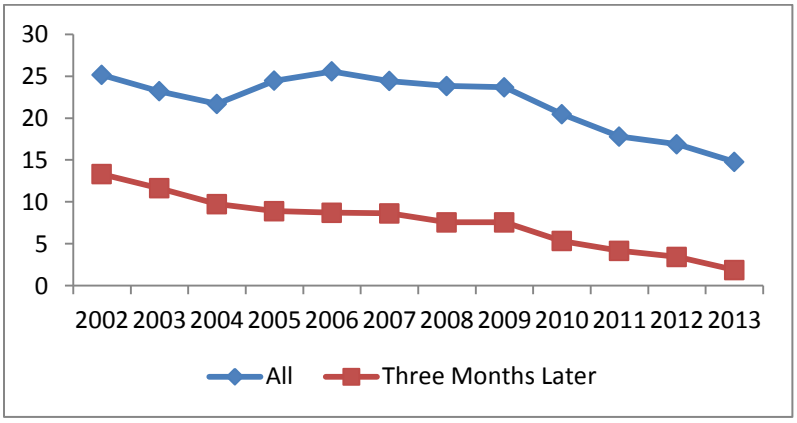
Figure 1: Average Monthly Characteristics of All Funds in Each Year



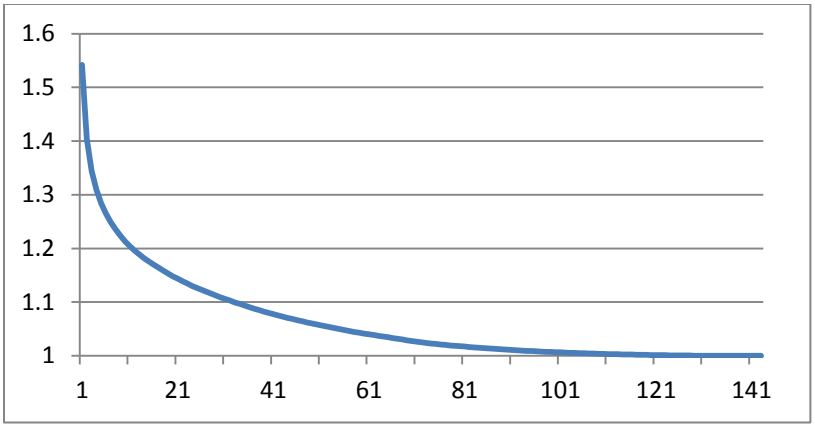
This figure shows the average monthly characteristics of all funds in each year. The monthly characteristics are the averages of the fund characteristics in each month. The revised funds are funds whose returns were revised more than three months after they were first reported. Unrevised funds comprise the rest of the funds. Governance is calculated as the sum of four individual governance variables: auditing, the high-water mark, the country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one when there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore, SEC is a variable equal to one if the fund is registered with the SEC, and Management Fee and Incentive Fee are the magnitudes of the management and incentive fees, respectively. The Leverage dummy is an indicator variable equal to one if the fund uses leverage, the Notice period denotes the fund's redemption notice period (in days), Lockup is the period (in months) during which investors cannot withdraw their investment, and the Personal capital dummy is an indicator variable set to one when fund managers invest their personal capital in the fund.

Figure 2: Average Monthly Revision Percentage in Each Year

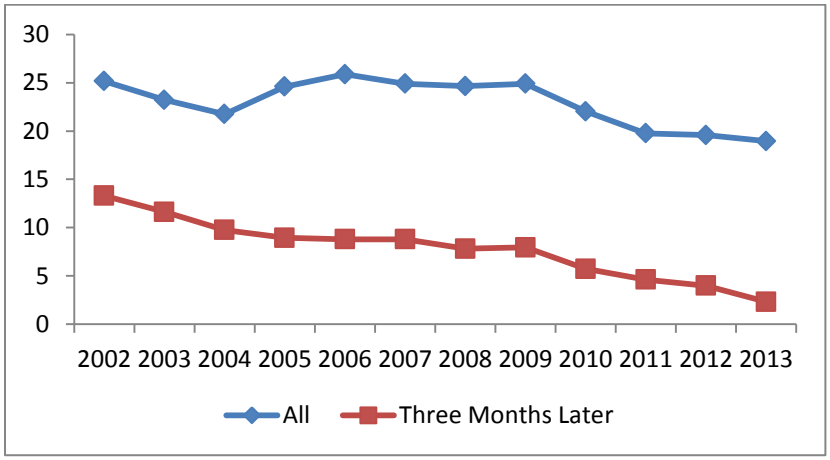
Panel A. Original Average Monthly Revision Percentage in Each Year



Panel B: Adjustment Factor for Performance Report Recency



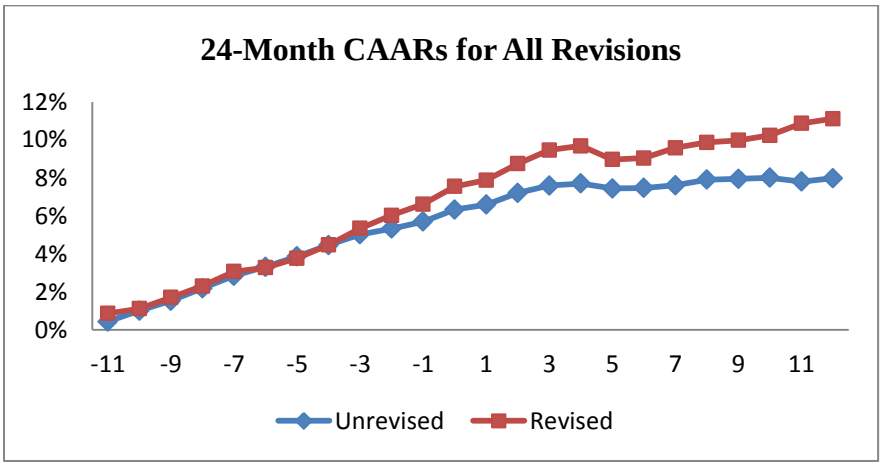
Panel C: Adjusted Average Monthly Revision Percentage in Each Year



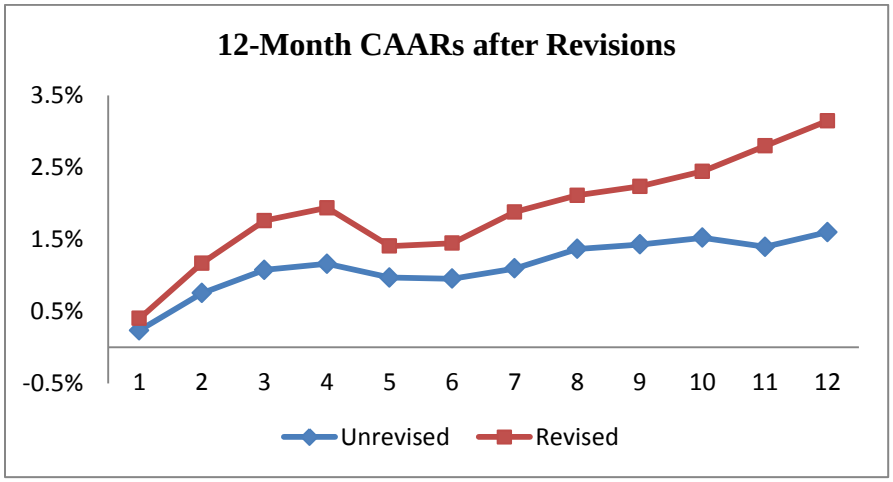
Panel A shows the average monthly proportion of all returns that were revised after being first reported (top graph) and the returns that were revised later than three months after they were first reported (lower graph) in each year during our sample period. The proportion of return revisions in each month is the number of revisions to the returns that month as a percentage of the total number of returns that month. The average monthly proportion of return revisions in each year is calculated as the mean of the 12 monthly proportions of return revisions in each year. Panel B shows the factor used to adjust for the return report recency: Revision Recency Adjustment Factor = 1 + (1 - cumulative percentage of revision recency). The *x*-axis is the number of months between December 2013 and the return month. Panel C shows the average monthly proportion of all returns that were revised after being first reported (top graph) and the returns that were revised later than three months after they were first reported (bottom graph) in each year during our sample period. The proportion of return revisions in each month is the number of revisions to the returns that month as a percentage of the total number of returns that month. The average monthly proportion of return revisions in each year is calculated as the mean of the 12 monthly proportions of return revisions in each year.

Figure 3: Revision-Level Performance Comparisons

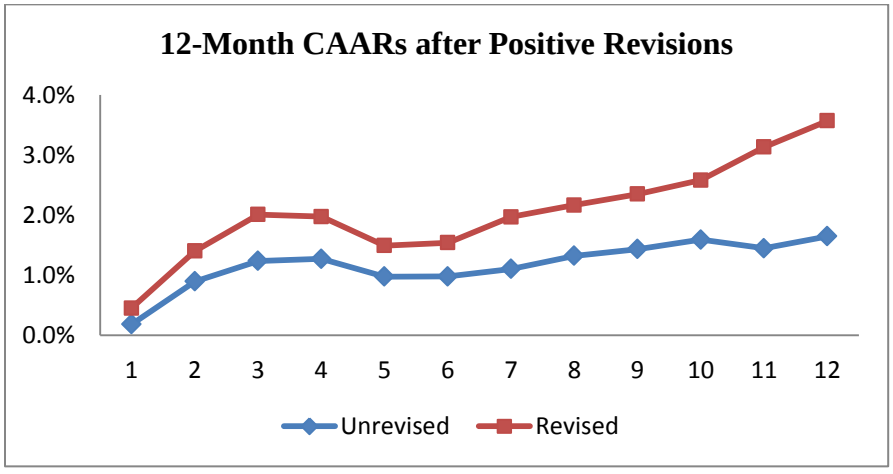
Panel A: 24-Month CAARs for All Revisions



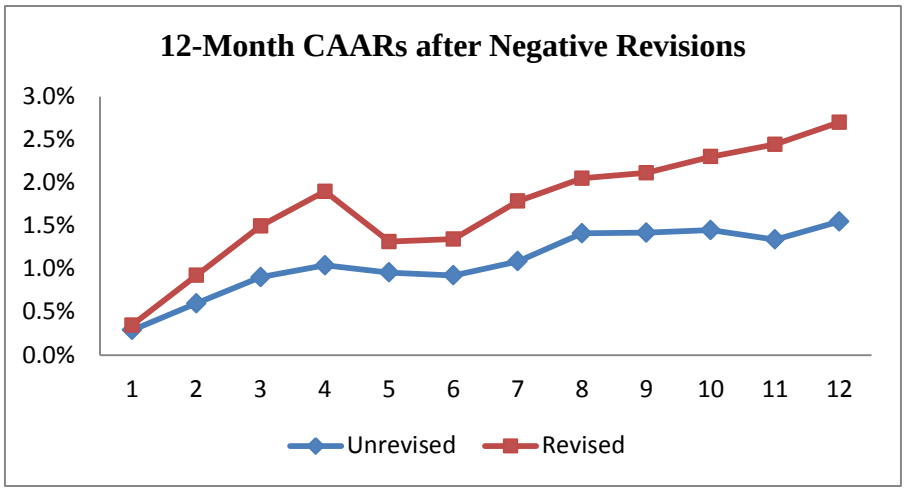
Panel B: 12-Month CAARs after Revisions



Panel C: 12-Month CAARs after Positive Revisions



Panel D: 12-Month CAARs after Negative Revisions



This figure shows the CAARs in the 12 months before and the 12 months after the return revisions that occurred more than three months after the first reports. A revised fund is a hedge fund that revised its return in month *s* to the return of month *t*, where $s - t > 3$ (revision recency $k > 3$). An unrevised fund is a matched fund with the same strategy and the nearest asset size in the same return month and same month as the fund revised its return but that did not revise its return in month *s* to the return of month *t*. This figure reports the results for all the funds and the returns for each fund are the ones that were last reported.

Appendix

Table A.1: Robustness Check: Determinants of Return Revisions at the Individual Fund Level ----- Different Governance Measure

	Ordered Probit		Probit		Probit Increase		Probit Decrease	
Governance2	18.27***	14.54***	18.09***	11.77***	18.97***	11.96***	17.09***	11.16**
Mfee		-8.39**		-4.23		-5.33		-3.78
Ifee		2.09***		2.21***		1.89***		2.42***
Waterid		-1.05		-1.13		-1.45		0.06
Levid		7.19*		10.57**		13.12**		7.41
Notice		0.29***		0.15*		0.19**		0.09
Lockup		0.11		0.61		0.93*		0.33
Personalcapid		10.67**		11.08**		10.97*		13.38**
Theta		-10.72**		-7.94		-15.95***		-2.82
Meanreturn		27.17***		29.41***		30.86***		29.66***
Stdret		-1.54*		-1.3		-4.03***		0.9
Meansize		8.73***		9.64***		11.17***		8.63***
Style effect	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.0340	0.1356	0.0349	0.1186	0.0330	0.1345	0.0253	0.1104

This table reports the effects of covariates on the probability of a hedge fund's return revisions. In the ordered probit regression, the dependent variable has a value of four if the fund changed its returns more than 20 times, three if the number of revisions *n* is between seven and 20, two if *n* is between three and six, one if *n* is one or two, and zero is the fund never revised its returns. In the probit regression, the dependent variable is a dummy variable equal to one if the fund revised its returns at least once and zero otherwise. In the probit increase regression, the dependent variable has a value of one if all the return revisions of a fund sum up to be positive and zero if the fund never revised its returns. In the probit decrease regression, the dependent variable has a value of one if all the return revisions of a fund sum up to be negative and zero if the fund never revised its returns. The revisions in this table occurred more than three months after the return months. The variable Governance2 is calculated as the sum of three individual governance variables: auditing, country of domicile, and SEC registration. The auditing variable is equal to one if a fund reports a completed financial audit in the past six months or in the next six months. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore; SEC is a variable equal to one if the fund is registered with the SEC; Mfee and Ifee are the magnitudes of management and incentive fees, respectively; Waterid is an indicator variable equal to 1 when there is a high-water mark provision for charging incentive fee. and Levid is an indicator variable equal to one when the fund uses leverage. The Notice variable denotes the fund's redemption notice period (in days), Lockup is the period (in months) over which investors cannot withdraw their investment, and Personalcapid is an indicator variable set to one when fund managers invest their personal capital in the fund. The variables Governance2, Mfee, Ifee, Levid, Notice, Lockup, and Personalcapid of a fund that revised its returns are defined by the characteristics in the months prior to the first return revision, while these variables are defined for unrevised funds by the characteristics in the months prior to the last return. The variable Theta denotes fund asset liquidity, which is measured using the equation developed by Getmansky, Lo, and Makarov (2004); Meanreturn for a fund that has revised its returns is the average of the returns in the months prior to the first return revision and Meanreturn for an unrevised fund is the average of the returns in the months prior to the last return; Stdret for a fund that has revised its returns is the standard deviation of its returns in the months prior to the first revision and Stdret for an unrevised fund is the standard deviation of the returns in the months prior to the last return; Meansize for a fund that revised its returns is the average of the sizes in the months prior to the first revision and Meansize for an unrevised fund is the average of the sizes in the months prior to the last return; and Size is defined as the logarithm of AUM. All independent variables are divided by 100. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.2: Robustness Check: Determinants of Return Revisions at the Individual Fund Level ----- Excluding Funds of Funds

	Ordered Probit		Probit		Probit Increase		Probit Decrease	
Governance1	9.17***	4.81	10.45***	2.39	7.63***	0.97	13.06***	2.76
Mfee		-12.08***		-10.85**		-8.89		-13.3**
Ifee		2.21***		2.41***		2.1***		2.65***
Levid		8.07		12.64**		20.72***		4.53
Notice		0.04		-0.1		-0.01		-0.18
Lockup		-0.05		0.61		0.68		0.61
Personalcapid		5.28		4.73		0.24		10.69
Theta		-8.09*		-5.87		-10.85**		-2.25
Meanreturn		24.85***		26.57***		29.23***		26.46***
Stdret		-0.29		-0.53		-2.87**		1.51
Meansize		7.82***		8.1***		9.53***		6.98***
Style effect	Y	Y	Y	Y	Y	Y	Y	Y
R-square	0.0350	0.0862	0.033	0.1032	0.0359	0.1170	0.0307	0.1004

This table reports the effects of covariates on the probability of a hedge fund's return revisions. Funds in this table include all the funds excluding funds of funds. In the ordered probit regression, the dependent variable has a value of four if the fund changed its returns more than 20 times, three if the number of revisions *n* is between seven and 20, two if *n* is between three and six, one if *n* is one or two, and zero is the fund never revised its returns. In the probit regression, the dependent variable is a dummy variable equal to one if the fund revised its returns at least once and zero otherwise. In the probit increase regression, the dependent variable has a value of one if all the return revisions of a fund sum up to be positive and zero if the fund never revised its returns. In the probit decrease regression, the dependent variable has a value of one if all the return revisions of a fund sum up to be negative and zero if the fund never revised its returns. The revisions in this table occurred more than three months after the return months. The variable Governance1 is calculated as the sum of four individual governance variables: auditing, the high-water mark, country of domicile, and SEC registration. The auditing variable is equal to one if a fund reports a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one when there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore; SEC is a variable equal to one if the fund is registered with the SEC; Mfee and Ifee are the magnitudes of management and incentive fees, respectively; and Levid is an indicator variable equal to one when the fund uses leverage. The Notice variable denotes the fund's redemption notice period (in days), Lockup is the period (in months) over which investors cannot withdraw their investment, and Personalcapid is an indicator variable set to one when fund managers invest their personal capital in the fund. The variables Governance1, Mfee, Ifee, Levid, Notice, Lockup, and Personalcapid of a fund that revised its returns are defined by the characteristics in the months prior to the first return revision, while these variables are defined for unrevised funds by the characteristics in the months prior to the last return. The variable Theta denotes fund asset liquidity, which is measured using the equation developed by Getmansky, Lo, and Makarov (2004); Meanreturn for a fund that has revised its returns is the average of the returns in the months prior to the first return revision and Meanreturn for an unrevised fund is the average of the returns in the months prior to the last return; Stdret for a fund that has revised its returns is the standard deviation of its returns in the months prior to the first revision and Stdret for an unrevised fund is the standard deviation of the returns in the months prior to the last return; Meansize for a fund that revised its returns is the average of the sizes in the months prior to the first revision and Meansize for an unrevised fund is the average of the sizes in the months prior to the last return; and Size is defined as the logarithm of AUM. All independent variables are divided by 100. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.3: Robustness Check: Determinants of Return Revisions at the Individual Revision Level ----- Different Governance Measure

Panel A. Characteristics for the Return Month

	$X_{\text{Return Month}}$ 2002-2013		$X_{\text{Return Month}}$ 2002-2007		$X_{\text{Return Month}}$ 2008-2013	
Governance2	8.20***	2.17*	5.98***	2.56	11.29***	3.57*
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0021	0.0055	0.0011	0.0075	0.0042	0.0176

Panel B. Characteristics for the Month before the Revision Month

	$X_{\text{Revision Month-1}}$ 2002-2013		$X_{\text{Revision Month-1}}$ 2002-2007		$X_{\text{Revision Month-1}}$ 2008-2013	
Governance2	13.12***	7.84***	21.73***	14.14***	9.10***	4.61
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0051	0.0143	0.0130	0.0342	0.0025	0.0195

Panel C: Changes in Characteristics between the Return Month and the Month before the Revision Month

	$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2002-2013		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2002-2007		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2008-2013	
Governance2	8.26***	18.10***	0.58	-0.067***	12.00***	27.28
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0010	0.0127	0.0000	0.0149	0.0018	0.0208

This table reports the results of the probit regression of the return revision dummy on fund governance while controlling for other fund characteristics at the individual revision level. We match each hedge fund with size data that revised its return in month *s* to the return of month *t* to a hedge fund with the same strategy and the nearest asset size in the same return month but that did not revise its return in month *s* to the return of month *t*. The dependent variable is a dummy variable equal to one if the fund revised its return in month *s* to the return of month *t* and zero for the matched fund. In Panel A, the independent variables are defined by the fund characteristics in return month *t*. In Panel B, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In Panel C, the independent variables are the differences between the variables defined by the fund characteristics in return month *t* and in month *s* - 1. The variable Governance2 is calculated as the sum of three individual governance variables: auditing, country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore and SEC is a variable equal to one if the fund is registered with the SEC. Controlled characteristics include the fund management fee, the incentive fee, high-water mark provision, leverage, the fund's redemption notice and lockup periods, fund manager investment of personal capital in the fund, the average of the fund's returns in the past 12 months, the first-order autocorrelation of monthly returns in the past 12 months, the standard deviation of the fund's returns in the past 12 months, the capital flow in the past three months, and fund age. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.4: Robustness Check: Determinants of Return Revisions at the Individual Revision Level ----- Excluding Funds of Funds

Panel A. Characteristics for the Return Month

	$X_{\text{Return Month}}$ 2002-2013		$X_{\text{Return Month}}$ 2002-2007		$X_{\text{Return Month}}$ 2008-2013	
Governance1	6.92***	3.33***	6.29***	3.55**	7.6***	5.79***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0023	0.0106	0.0019	0.0138	0.0026	0.0184

Panel B. Characteristics for the Month before the Revision Month

	$X_{\text{Revision Month-1}}$ 2002-2013		$X_{\text{Revision Month-1}}$ 2002-2007		$X_{\text{Revision Month-1}}$ 2008-2013	
Governance1	9.30***	6.86***	17.66***	10.96***	4.13***	2.71
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0038	0.0199	0.0140	0.0362	0.0007	0.0224

Panel C: Changes in Characteristics between the Return Month and the Month before the Revision Month

	$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2002-2013		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2002-2007		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$ 2008-2013	
Governance1	4.70***	15.92***	-2.78	12.54***	8.70***	17.92
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0003	0.0153	0.0001	0.0132	0.0012	0.0208

This table reports the results of the probit regression of the return revision dummy on fund governance while controlling for other fund characteristics at the individual revision level. Funds in this table include all the funds excluding funds of funds. We match each hedge fund with size data that revised its return in month *s* to the return of month *t* to a hedge fund with the same strategy and the nearest asset size in the same return month but that did not revise its return in month *s* to the return of month *t*. The dependent variable is a dummy variable equal to one if the fund revised its return in month *s* to the return of month *t* and zero for the matched fund. In Panel A, the independent variables are defined by the fund characteristics in return month *t*. In Panel B, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In Panel C, the independent variables are the differences between the variables defined by the fund characteristics in return month *t* and in month *s* - 1. The variable Governance1 is calculated as the sum of four individual governance variables: auditing, the high-water mark, country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one if there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore and SEC is a variable equal to one if the fund is registered with the SEC. Controlled characteristics include the fund management fee, the incentive fee, leverage, the fund's redemption notice and lockup periods, fund manager investment of personal capital in the fund, the average of the fund's returns in the past 12 months, the first-order autocorrelation of monthly returns in the past 12 months, the standard deviation of the fund's returns in the past 12 months, the capital flow in the past three months, and fund age. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.5: Robustness Check: Determinants of Revision Direction and Magnitude
----- Different Governance Measure

Panel A. Determinants of Return Revision Direction

	$X_{\text{Return Month}}$		$X_{\text{Revison Month-1}}$		$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$	
	Increase	Decrease	Increase	Decrease	Increase	Decrease
Governance2	2.41	1.94	8.6***	7.73***	21.19***	14.63***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0063	0.0079	0.0130	0.0158	0.0149	0.0120

Panel B. Determinants of Return Revision Magnitude

	$X_{\text{Return Month}}$	$X_{\text{Revison Month-1}}$	$X_{\text{Revison Month-1}} - X_{\text{Return Month}}$
Governance2	36.58***	14.49***	30.03*
Character Control	Yes	Yes	Yes
Pseudo R^2	0.0286	0.0213	0.1135

Panel A reports the results of the probit regression of the direction of the dummy of the return revision on fund governance while controlling for other fund characteristics at the individual revision level. Panel B shows the results of the OLS regression of the magnitude of the return revision on fund characteristics at the individual revision level. We match each hedge fund with size data that revised its return in month *s* to the return of month *t* to the hedge fund with the same strategy and the nearest asset size in the same return month but that did not revise its return in month *s* to the return of month *t*. In Panel A, the dependent variable in the columns of increase is a dummy variable equal to one if the fund reported its return in month *s* to the return of month *t* is greater than what it previously reported and zero for the matched fund. In the columns of decrease, the dependent variable is a dummy variable equal to one if the fund reported its return in month *s* to the return of month *t* is smaller than what it previously reported and zero for the matched fund. In the first two columns, the independent variables are defined by the fund characteristics in return month *t*. In the third and fourth columns, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In last two columns, the independent variables are the differences between the corresponding variables defined by the fund characteristics in month *t* and month *s* - 1. In Panel B, The dependent variable is the absolute value of the revision a fund made in month *s* to the return of month *t*. The dependent variable equals zero for the matched fund. In the first column, the independent variables are defined by the fund characteristics in return month *t*. In the second column, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In last column, the independent variables are the differences between the variables defined by the fund characteristics in return month *t* and month *s* - 1. The variable Governance2 is calculated as the sum of three individual governance variables: auditing, country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore and SEC is a variable equal to one if the fund is registered with the SEC. Controlled characteristics include fund management fees, incentive fees, high-water mark provision, fund leverage, the fund's redemption notice and lockup periods, fund whether managers invested personal capital in the fund, the average of the fund's returns in the past three and 12 months, the first-order autocorrelation in the past 12 months, the standard deviation of the fund's returns in the past 12 months, capital flow in the past three months, and fund age. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.6: Robustness Check: Determinants of Revision Direction and Magnitude
----- Excluding Funds of Funds

Panel A. Determinants of Return Revision Direction

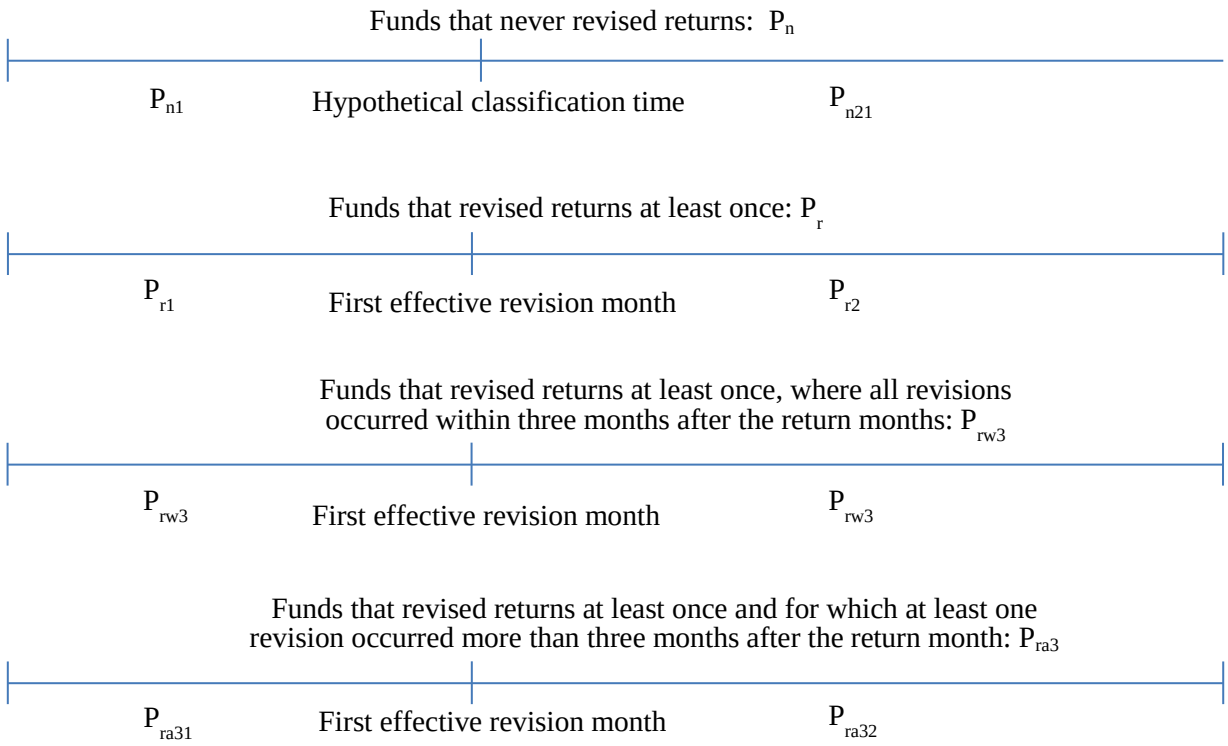
	$X_{Return\ Month}$		$X_{Revison\ Month-1}$		$X_{Revison\ Month-1} - X_{Return\ Month}$	
	Increase	Decrease	Increase	Decrease	Increase	Decrease
Governance1	1.90	4.79***	4.30***	9.24***	18.28***	13.37***
Character Control	No	Yes	No	Yes	No	Yes
Pseudo R^2	0.0114	0.0143	0.0122	0.0215	0.0183	0.0141

Panel B. Determinants of Return Revision Magnitude

	$X_{Return\ Month}$	$X_{Revison\ Month-1}$	$X_{Revison\ Month-1} - X_{Return\ Month}$
Governance1	-7.27*	-13.70***	1.13
Character Control	Yes	Yes	Yes
Pseudo R^2	0.0251	0.0221	0.0079

Panel A reports the results of the probit regression of the direction of the dummy of the return revision on fund governance while controlling for other fund characteristics at the individual revision level. Panel B shows the results of the OLS regression of the magnitude of the return revision on fund characteristics at the individual revision level. Funds in this table include all the funds except funds of funds. We match each hedge fund with size data that revised its return in month *s* to the return of month *t* to the hedge fund with the same strategy and the nearest asset size in the same return month but that did not revise its return in month *s* to the return of month *t*. In Panel A, the dependent variable in the columns of increase is a dummy variable equal to one if the fund reported its return in month *s* to the return of month *t* is greater than what it previously reported and zero for the matched fund. In the columns of decrease, the dependent variable is a dummy variable equal to one if the fund reported its return in month *s* to the return of month *t* is smaller than what it previously reported and zero for the matched fund. In the first two columns, the independent variables are defined by the fund characteristics in return month *t*. In the third and fourth columns, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In last two columns, the independent variables are the differences between the corresponding variables defined by the fund characteristics in month *t* and month *s* - 1. In Panel B, The dependent variable is the absolute value of the revision a fund made in month *s* to the return of month *t*. The dependent variable equals zero for the matched fund. In the first column, the independent variables are defined by the fund characteristics in return month *t*. In the second column, the independent variables are defined by the fund characteristics in the month before the return revision month *s*, that is, month *s* - 1. In last column, the independent variables are the differences between the variables defined by the fund characteristics in return month *t* and month *s* - 1. The variable Governance1 is calculated as the sum of four individual governance variables: auditing, a high-water mark provision, the country of domicile, and SEC registration. The auditing variable is equal to one if the fund reported a completed financial audit in the past six months or in the next six months. The high-water mark variable is equal to one if there is a high-water mark provision for charging an incentive fee. The variable representing the country of domicile is an indicator variable equal to one if the fund is offshore and SEC is a variable equal to one if the fund is registered with the SEC. Controlled characteristics include fund management fees, incentive fees, fund leverage, the fund's redemption notice and lockup periods, fund whether managers invested personal capital in the fund, the average of the fund's returns in the past three and 12 months, the first-order autocorrelation in the past 12 months, the standard deviation of the fund's returns in the past 12 months, capital flow in the past three months, and fund age. The superscripts ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.7: Robustness Check: Fund-Level Performance Comparisons
----- Excluding Funds of Funds



Panel A. Portfolios Based on Actual Revision Points

		Portfolio Mean Return		Portfolio Median Return	
		7-Factor Model	8-Factor Model	7-Factor Model	8-Factor Model
1	P_n_P_{r1} vs. P_{r2}	-0.015	-0.019	-0.044**	-0.050**
		(-0.63)	(-0.79)	(-2.07)	(-2.47)
2	P_n_P_{rw3}_P_{ra31} vs. P_{ra32}	0.014	0.011	-0.019	-0.022
		(0.45)	(0.34)	(-0.76)	(-0.84)
3	P_{r1} vs. P_{r2}	0.093***	0.090***	0.033	0.029
		(3.26)	(3.14)	(1.49)	(1.33)
4	P_{ra31} vs. P_{ra32}	0.204***	0.199***	0.121***	0.121***
		(5.26)	(5.17)	(3.88)	(3.85)
5	P_n vs. P_{r1}	-0.371***	-0.367***	-0.293***	-0.295***
		(-11.66)	(-11.53)	(-11.66)	(-11.69)
6	P_n vs. P_{ra31}	-0.429***	-0.424***	-0.335***	-0.340***
		(-11.77)	(-11.66)	(-11.09)	(-11.31)
7	P_n vs. P_{r2}	-0.155***	-0.157***	-0.141***	-0.149***
		(-5.26)	(-5.35)	(-5.35)	(-5.95)
8	P_n vs. P_{ra32}	-0.101***	-0.104***	-0.095***	-0.101***
		(-2.73)	(-2.84)	(-2.96)	(-3.24)

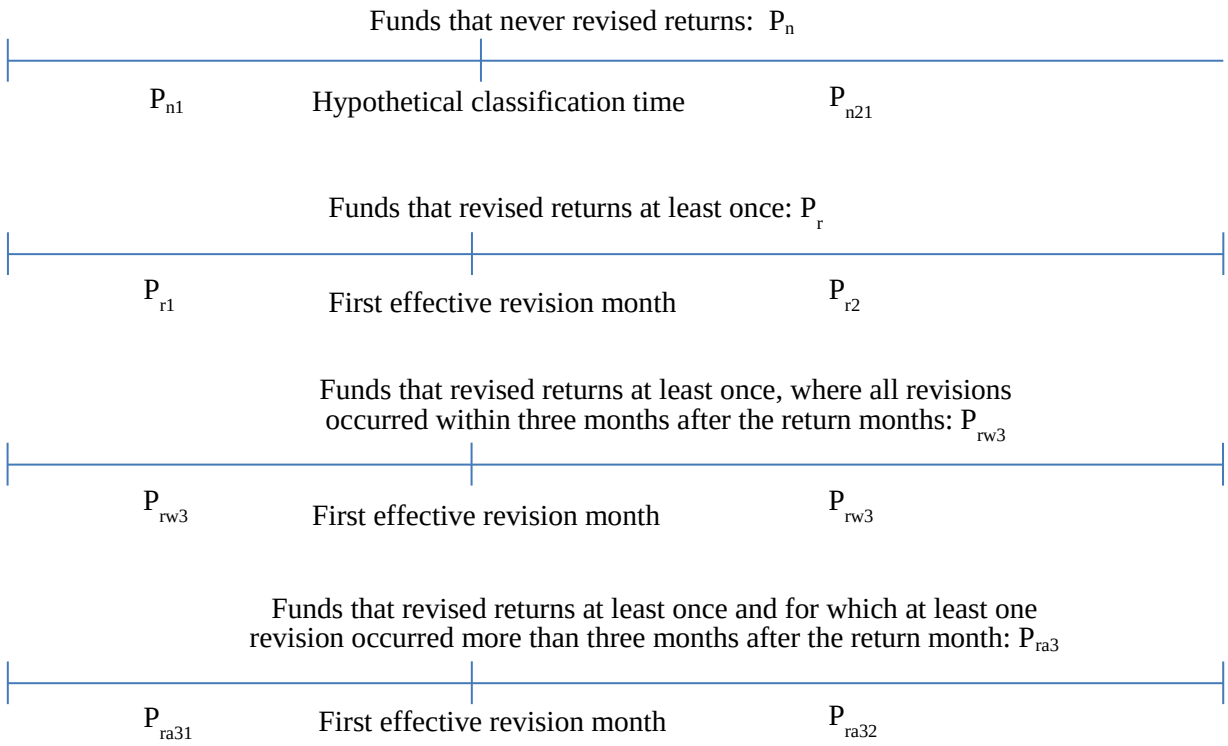
Panel B. Portfolios Based on Average Revision Points and Actual Revision Points

		Portfolio Mean Return		Portfolio Median Return	
		7-Factor Model	8-Factor Model	7-Factor Model	8-Factor Model
9	P_{n1} vs. P_{n2}	0.177***	0.161***	0.130**	0.118**
		(3.00)	(2.78)	92.48)	(2.28)
10	$P_{n1}\_P_{rw31}$ vs. $P_{n2}\_P_{rw32}$	0.197***	0.186***	0.151***	0.143***
		(4.81)	(4.62)	(5.08)	(4.89)
11	$P_{n1}\_P_{r1}$ vs. $P_{n2}\_P_{r2}$	0.154***	0.147***	0.082***	0.079***
		(3.84)	(3.70)	(3.47)	(3.34)
12	$P_{n1}\_P_{rw31}\_P_{ra31}$ vs. $P_{n2}\_P_{rw32}\_P_{ra32}$	0.229***	0.221***	0.149***	0.148***
		(6.72)	(6.63)	(6.17)	(6.08)
13	P_{n1} vs. P_{r1}	-0.200***	-0.204***	-0.140***	-0.149***
		(-3.49)	(-3.54)	(-2.86)	(-3.05)
14	P_{n2} vs. P_{r2}	-0.235***	-0.233***	-0.200***	-0.201***
		(-6.24)	(-6.16)	(-7.07)	(-7.06)
15	$P_{n1\_}P_{rw31}$ vs. P_{ra31}	-0.266***	-0.260***	-0.166***	-0.168***
		(-7.42)	(-7.25)	(-6.42)	(-6.42)
16	$P_{n2}\_P_{rw32}$ vs. P_{ra32}	-0.226***	-0.223***	-0.173***	-0.169***
		(-6.25)	(-6.16)	(-5.89)	(-5.80)

This table reports the estimated alphas from the regression of the difference in mean or median returns between the unrevised fund portfolio and the revised fund portfolio from January 2002 to December 2013 for the Fung–Hsieh seven- and eight-factor models. Funds in this table include all the funds except funds of funds. The difference in returns is between the former and latter portfolios in each row of the first column. The monthly returns are the last reported returns for all the funds. Here, P_n includes funds that never revised their returns during our sample period, P_r includes funds that revised their returns at least once, P_{rw3} includes funds that revised their returns at least once but all within three months after the return months, and P_{ra3} includes funds that revised their returns at least once but more than three months after the return months. In Panel A, funds in P_r and P_{ra3} are classified into the portfolios in the earlier period, P_{r1} and P_{ra31}, as well as in the later period, P_{r2} and P_{ra32}, according to their actual first effective return revision months. In Panel B, funds in P_n and P_{rw3} are classified into the portfolios in the earlier period, P_{n1} and P_{rw31}, as well as in the later period, P_{n2} and P_{rw32}, according to the hypothetical first revision months. The hypothetical first revision months are based on the average revision point calculated from the first revision points of funds that revised their returns. The average revision point is the average of the percentages of the fund lifecycle in our sample period. Funds in P_r and P_{ra3} are classified into the portfolios in the earlier period, P_{r1} and P_{ra31}, as well as in the later period, P_{r2} and P_{ra32}, according to their actual first effective return revision months. Regression alphas are shown, with *t*-statistics in parentheses beneath. The superscripts ***, **, and *, indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table A.8: Robustness Check: Fund-Level Performance Comparisons

----- **First Reported Returns**



Panel A. Portfolios Based on Actual Revision Points

		Portfolio Mean Return		Portfolio Median Return	
		7-Factor Model	8-Factor Model	7-Factor Model	8-Factor Model
1	P_n_P_{r1} vs. P_{r2}	-0.030	-0.034	-0.062***	-0.066***
		(-1.32)	(-1.55)	(-3.61)	(-3.95)
2	P_n_P_{rw3}_P_{ra31} vs. P_{ra32}	-0.004	-0.007	-0.053***	-0.055***
		(-0.14)	(-0.26)	(-2.52)	(-2.58)
3	P_{r1} vs. P_{r2}	0.064**	0.060**	-0.010	-0.014
		(2.55)	(2.40)	(-0.55)	(-0.71)
4	P_{ra31} vs. P_{ra32}	0.177***	0.172***	0.038	0.037
		(4.82)	(4.72)	(1.57)	(1.53)
5	P_n vs. P_{r1}	-0.348***	-0.343***	-0.241***	-0.240***
		(-12.95)	(-12.88)	(-13.44)	(-13.30)
6	P_n vs. P_{ra31}	-0.415***	-0.411***	-0.266***	-0.266***
		(-13.07)	(-12.95)	(-13.73)	(-13.66)
7	P_n vs. P_{r2}	-0.160***	-0.163***	-0.131***	-0.135***
		(-5.93)	(-6.05)	(-6.93)	(-7.31)
8	P_n vs. P_{ra32}	-0.114***	-0.118***	-0.107***	-0.111***
		(-3.51)	(-3.65)	(-4.52)	(-4.71)

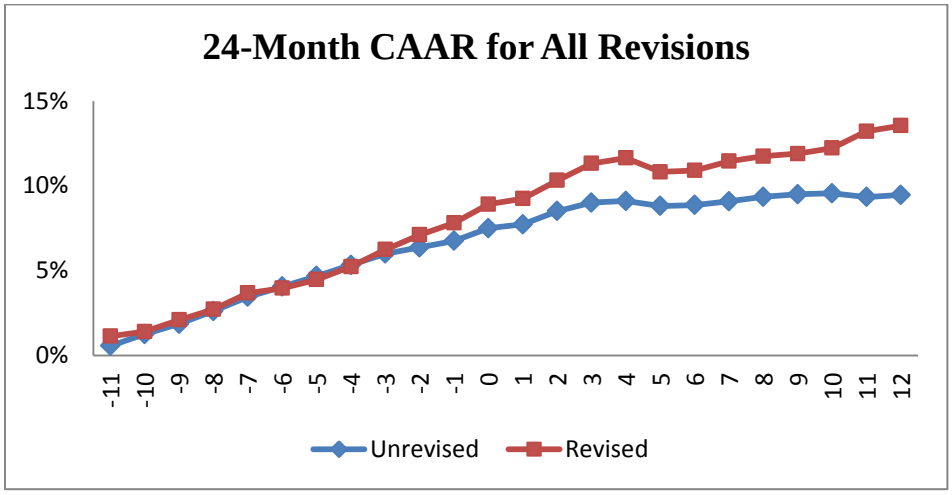
Panel B. Portfolios Based on Average Revision Points and Actual Revision Points

		Portfolio Mean Return		Portfolio Median Return	
		7-Factor Model	8-Factor Model	7-Factor Model	8-Factor Model
9	P_{n1} vs. P_{n2}	0.146***	0.132**	0.092***	0.085**
		(2.70)	(2.47)	(2.66)	(2.46)
10	$P_{n1\_}P_{rw31}$ vs. $P_{n2\_}P_{rw32}$	0.145***	0.134***	0.076***	0.069***
		(3.93)	(3.71)	(3.41)	(3.18)
11	$P_{n1\_}P_{r1}$ vs. $P_{n2\_}P_{r2}$	0.107**	0.099**	0.014	0.010
		(2.60)	(2.44)	(0.64)	(0.47)
12	$P_{n1\_}P_{rw31\_}P_{ra31}$ vs. $P_{n2\_}P_{rw32\_}P_{ra32}$	0.183***	0.176***	0.062***	0.060***
		(5.58)	(5.46)	(3.07)	(2.95)
13	P_{n1} vs. P_{r1}	-0.188***	-0.192***	-0.110***	-0.116***
		(-4.47)	(-4.54)	(-3.60)	(-3.79)
14	P_{n2} vs. P_{r2}	-0.247***	-0.247***	-0.198***	-0.200***
		(-7.29)	(-7.24)	(-9.24)	(-9.30)
15	$P_{n1\_}P_{rw31}$ vs. P_{ra31}	-0.265***	-0.264***	-0.149***	-0.151***
		(-7.94)	(-7.82)	(-8.25)	(-8.25)
16	$P_{n2\_}P_{rw32}$ vs. P_{ra32}	-0.229	-0.227***	-0.189***	-0.187***
		(-7.43)	(-7.34)	(-8.46)	(-8.37)

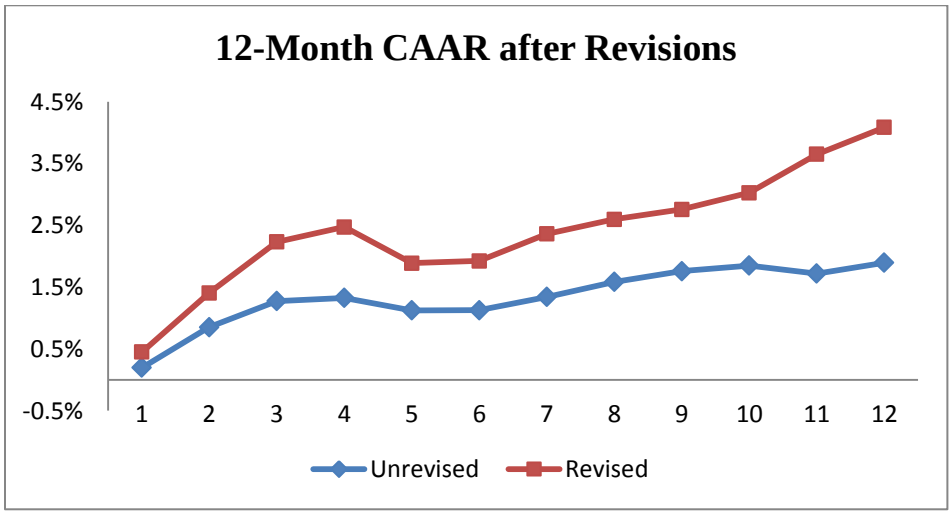
This table reports the estimated alphas from the regression of the difference in mean or median returns between the unrevised fund portfolio and the revised fund portfolio from January 2002 to December 2013 for the Fung–Hsieh seven- and eight-factor models. The difference in returns is between the former and latter portfolios in each row of the first column. The monthly returns are the first reported returns for all the funds. Here, P_n includes funds that never revised their returns during our sample period, P_r includes funds that revised their returns at least once, P_{rw3} includes funds that revised their returns at least once but all within three months after the return months, and P_{ra3} includes funds that revised their returns at least once but more than three months after the return months. In Panel A, funds in P_r and P_{ra3} are classified into the portfolios in the earlier period, P_{r1} and P_{ra31}, as well as in the later period, P_{r2} and P_{ra32}, according to their actual first effective return revision months. In Panel B, funds in P_n and P_{rw3} are classified into the portfolios in the earlier period, P_{n1} and P_{rw31}, as well as in the later period, P_{n2} and P_{rw32}, according to the hypothetical first revision months. The hypothetical first revision months are based on the average revision point calculated from the first revision points of funds that revised their returns. The average revision point is the average of the percentages of the fund lifecycle in our sample period. Funds in P_r and P_{ra3} are classified into the portfolios in the earlier period, P_{r1} and P_{ra31}, as well as in the later period, P_{r2} and $P_{ra32,}$ according to their actual first effective return revision months. Regression alphas are shown, with *t*-statistics in parentheses beneath. The superscripts ***, **, and *, indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Figure A.1:. Robustness Check: Revision-Level Performance Comparisons
----- Excluding Funds of Funds

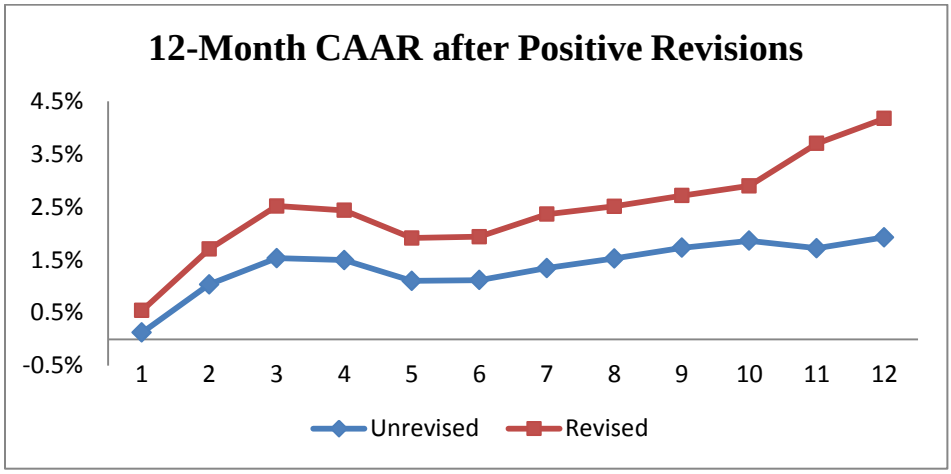
Panel A: 24-Month CAARs for All Revisions



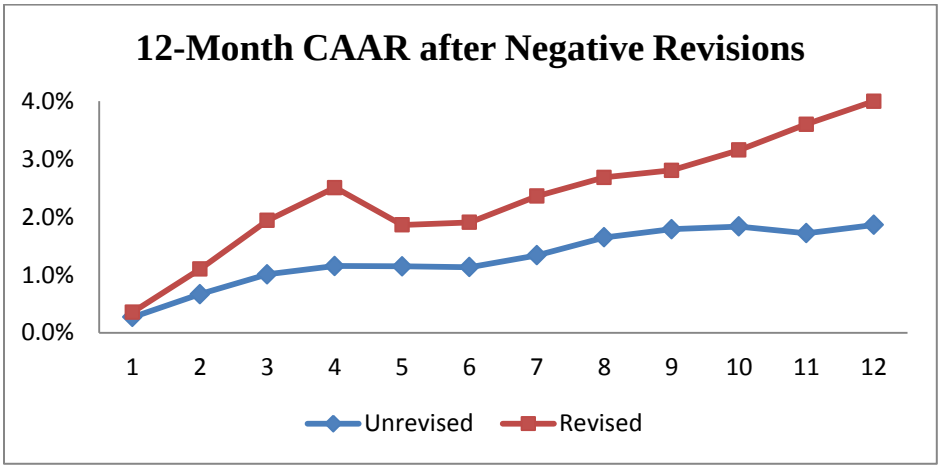
Panel B: 12-Month CAARs after Revisions



Panel C: 12-Month CAARs after Positive Revisions



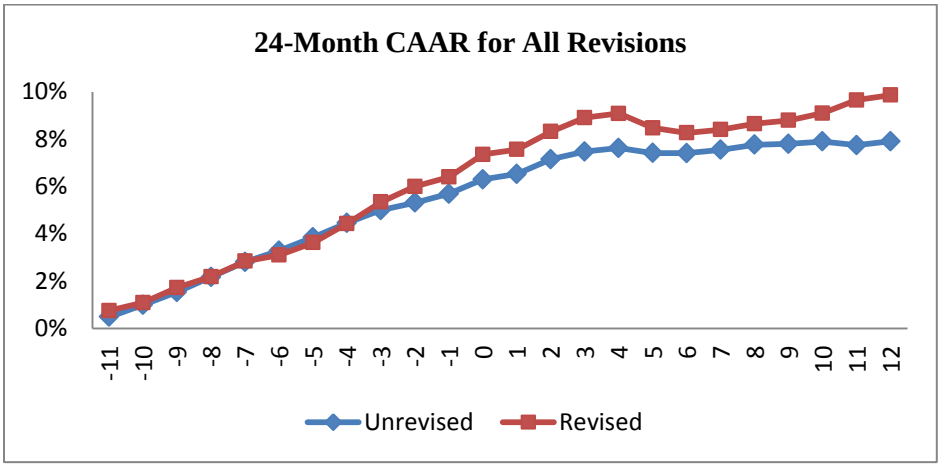
Panel D: 12-Month CAARs after Negative Revisions



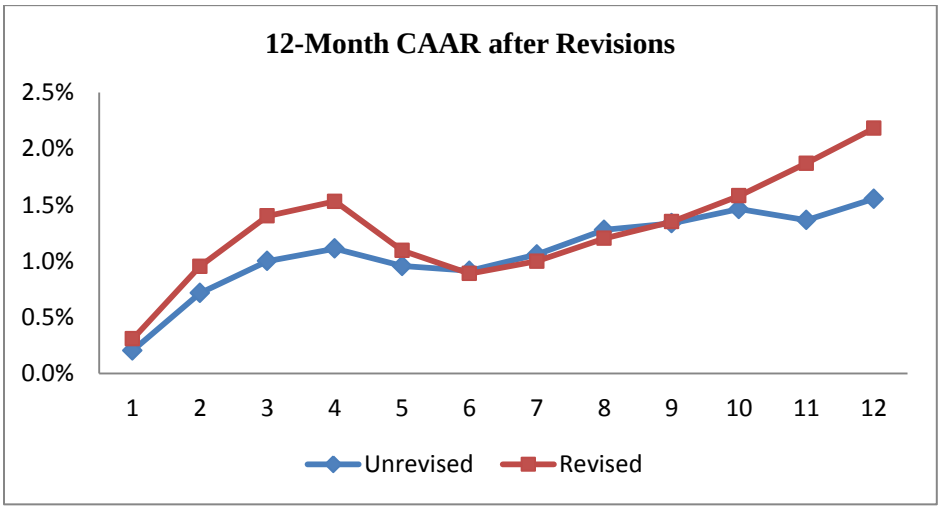
This figure shows the CAARs in the 12 months before and the 12 months after the return revisions that occurred more than three months after the first reports. A revised fund is a hedge fund that revised its return in month *s* to the return of month *t*, where $s - t > 3$ (revision recency $k > 3$). An unrevised fund is a matched fund with the same strategy and the nearest asset size in the same return month and same month as the fund revised its return but that did not revise its return in month *s* to the return of month *t*. This figure reports the results for all the funds except funds of funds and the returns for each fund are the ones that were last reported.

Figure A.2:. Robustness Check: Revision-Level Performance Comparisons
----- First Reported Returns

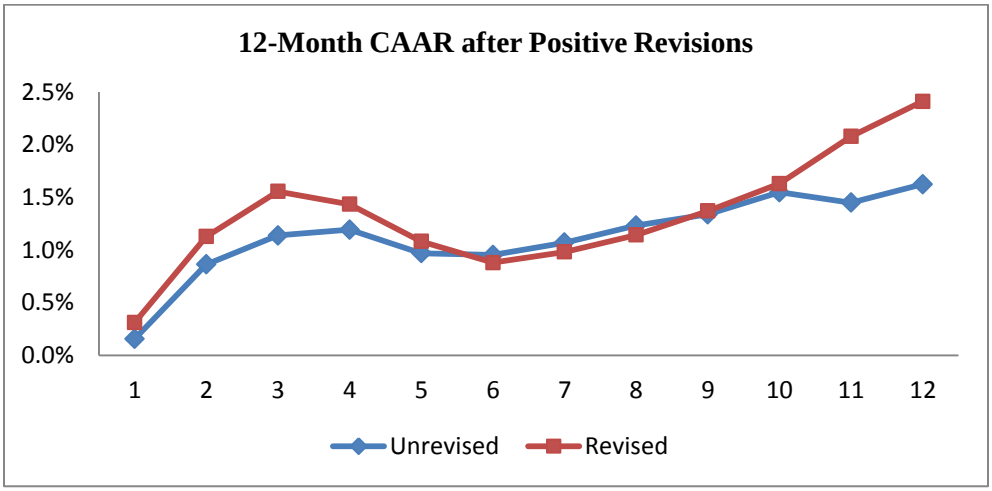
Panel A: 24-Month CAARs for All Revisions



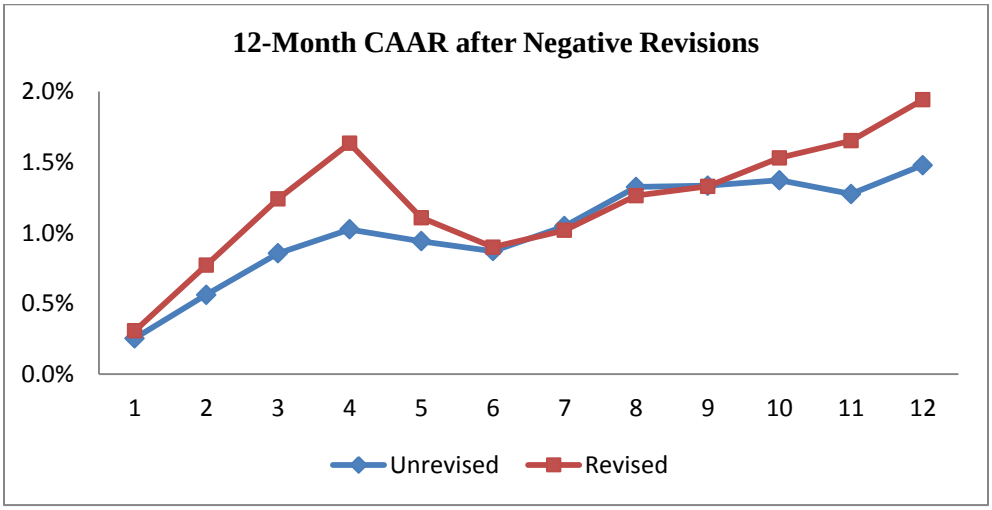
Panel B: 12-Month CAARs after Revisions



Panel C: 12-Month CAARs after Positive Revisions



Panel D: 12-Month CAARs after Negative Revisions



This figure shows the CAARs in the 12 months before and the 12 months after the return revisions that occurred more than three months after the first reports. A revised fund is a hedge fund that revised its return in month *s* to the return of month *t*, where $s - t > 3$ (revision recency $k > 3$). An unrevised fund is a matched fund with the same strategy and the nearest asset size in the same return month and same month as the fund revised its return but that did not revise its return in month *s* to the return of month *t*. This figure reports the results for all the funds and the returns for each fund are the ones that were first reported.