Outcomes, Risk Taking and Incentives: Evidence from Asset Managers*

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February 16, 2025

Abstract

We study incentive contracts used by asset management firms in Norway, focusing on how bonus structures impact performance. The incentive contracts in our sample are heterogeneous, with firms using both quantitative and qualitative targets. We find that higher potential bonuses tied to quantitative targets, such as the information ratio (IR), lead to better year-end IRs. In contrast, placing more weight on qualitative goals tends to reduce IR. Additionally, fund managers at risk of missing mid-year bonus thresholds actively try to boost returns, but these efforts often backfire, resulting in worse overall performance and a lower IR.

Keywords: Incentives, Risk Taking, Asset Management.
JEL classification: G23, J33, D82, D86.

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1 Introduction

How are compensation and incentive schemes structured for fund managers? Do they influence the risk-taking behavior of their employees? Unfortunately, we still know little about the exact structure of these schemes, and even less about those outside the United States. Most of the extant evidence on individuals' employment contracts is anecdotal and centers on (extreme) outcomes, rather than providing an understanding of the incentive effects these contracts have. However, to design incentive schemes that encourage effort and responsible risk-taking in financial institutions in general and asset managers in particular, we need to better understand employees' *ex ante* reactions to these schemes. Therefore, any analysis of these decisions must focus on the incentives at the time of investment, rather than solely on investment outcomes.

Therefore, the aim of this paper is twofold: first, to document the existing incentive contracts for fund managers and assess how they align with current financial contracting theories; and second, to analyze the impact of these contracts on actual outcomes and risk-taking behavior. We find that incentives matter for both outcomes and risk taking. The fund´s information ratios (IR) is the metric three out four asset managers in our sample use to evaluate performance, and managers who are rewarded for higher information ratios (IR) tend to deliver higher IRs. Interestingly, they achieve this through better portfolio selection and not through taking more risk. In fact, our results suggest they take on less risk, but if their bonus scheme encourages them not exploit risk taking. We also find that fund managers that are underwater, i.e. have not earned any bonus by the middle of the year attempt to increase excess returns but end up having worse overall returns and lower IR at the end of the year relative to not changing anything at all.

We use confidential data from four Norwegian asset managers to conduct our analysis. Each manager provided detailed information about their actual (*ex-ante*) incentive contracts, *ex-post* outcomes, a breakdown of asset responsibilities, as well as the risk

and returns of the assets under management. Our contributors represent a broad and representative cross-section of the Norwegian asset management market.

The three larger asset managers use schemes very similar to the one proposed by Baker et al. (1994), combining both quantitative (objective) and qualitative (subjective) elements. The quantitative bonus is always an *ex-ante* scheme, meaning the rules are clearly defined at the beginning of the year or bonus cycle, with no *ex-post* discretion. In one of our three cases, the qualitative bonus is based on a subjective *ex-post* assessment of the individual's performance relative to expectations, outcomes, and peers. In two other cases, the qualitative bonus is defined by individual *ex-ante* goals that need to be met, with less ex-post discretion. In contrast, the fourth and smallest manager in our sample has a scheme that is entirely subjective.[1].

Multitasking concerns seem to be prominent which can be seen both by looking at structure of the schemes and from the feedback we received while gathering our data. In general, there is little variation within schemes and enormous variation across firms, though regulation sets limits on bonus size and enforces a "bonus bank", representing delayed and 'at risk" bonus payments, at all asset managers. We find that bonus schemes are considered a critical component of the operation of these asset managers and both their design and execution are handled by the CEOs, often in interaction with the Board of Directors.

Following the 2010 EU rules on boni payments and the implementation in Norway, all firms differentiate between bonus awarded and bonus paid out. Only about 50% of boni are paid out immediately, whereas the rest accumulates and is paid out over the next three years. Unpaid boni are kept in a "bonus bank," which is typically tied to the performance of the portfolios that generated the bonuses. However, the specific practices regarding this vary across firms.

[1]The explanation we received was that, as a small firm, they do not require an elaborate scheme, as managers are able to directly monitor all employees

Firms use bonus banks as a form of "golden handcuff", where future payments are conditional on continued employment. Additionally, unpaid bonuses may be forfeited in cases of serious underperformance, although this occurs very rarely[2]

We complement this descriptive study by using our detailed data to investigate the quantitative relationship between bonus schemes, outcomes and risk. First, we note that most managers are paid relative to the risk-adjusted or relative performance of their fund. Risk-adjusted performance, is always the fund's information ratio ($IR = \frac{r_a - r_b}{TE}$, where r_a is the fund's return, r_b is the return of its benchmark, and TE is the tracking error of the fund's return relative to the benchmark). The numerator represents the fund's performance relative to the benchmark, while the denominator captures the risk associated with the fund's return compared to the benchmark. Fund managers influence both parts of this equation, although the maximum, and sometimes minimum, tracking error is often defined in the portfolio mandates.

Our analysis proceeds in two steps. First, we examine the effect of the bonus scheme established at the beginning of the year on outcomes and risk. We find that managers with a possibility for a higher (individual and team) bonus actually deliver higher IRs, higher returns, lower tracking errors. This suggests that offering managers a higher bonus potential leads to better performance by achieving the same level of returns with less risk. In other words, outperformance is achieved by controlling risk better than others, which challenges the standard notion from option pricing theory and the common view during the financial crisis that higher powered incentives always lead to more risk taking. However, it's important to note that the bonus "goal," the IR, is already a risk-adjusted measure, which makes our results less surprising. We also have (indirect) evidence that suggests that a bonus mechanism that does not control for risk leads to higher volatility.

Our initial analysis does not provide insight into whether asset managers with higher

[2]During our data collection, the CEOs we interviewed specifically highlighted this as one of the benefits of using bonus banks.

powered incentives (and with more weight on the IR) attract better employees or simply motivate existing employees to work harder. In the second part of our analysis, we address this question by looking at fund managers that are underwater, that is they would not earn any bonus based on their performance. As we know the exact bonus allocation rule, we can determine exactly which manager is actually underwater or not. We find that these managers perform *even worse* during the rest of the year as their IR and returns deteriorate further. This suggests that when these managers attempt to adjust their investment strategies, they end up worsening their results compared to doing nothing at all. By including person fixed effects, we rule out the possibility of selection effects.

A large body of literature has examined how asset management firms should structure their compensation to align incentives with those of their investors. However, few studies have access to data on actual contracts. Starks (1987) is one of the early papers in this literature. This literature mainly focuses on the first stage of the double-sided moral hazard problem—the relationship between investors and asset managers. However, the other part of the moral hazard problem, which involves the relationship between the asset management firm and its employees (who manage the assets), has received much less attention.

Only a few studies examine the contracts between asset managers and the fund managers who manage the funds on their behalf. Ma and Gomez (2019) uses aggregated data on performance pay in US mutual funds reported to the Securities and Exchange Commission (SEC) to primarily study what compensation structures are used by which asset managers: variable vs. fixed pay, performance pay based on returns or Assets under Management (AuM), and, in case of performance pay, actual benchmark needs to be reported, as well as the period over which the performance is measured. They show that 79% of asset managers have performance pay, with an average performance measurement period of 3 years. Additionally, 50% of firms offer profit participation, and 30% provide

deferred compensation. Half of the sample voluntarily disclose their maximum bonus, obviously inducing a selection bias. However, the data does not include specific bonus rules or individual risk-taking behavior. Similarly, Bai et al. (2024) uses U.S. census data to infer compensation practices, but they do not have access to actual contracts or outcomes.

Farnsworth and Taylor (2006) conducted a survey in 2003 with 396 U.S. asset managers, asking about their bonus contracts. They found that the profitability of the asset management firm was generally more important than the portfolio performance in determining bonuses. Their results also highlight the subjective nature of actual bonus outcomes, particularly the role of qualitative assessments, which aligns with the practices observed in our sample of asset managers. Brown et al. (1996) as well as Chevalier and Ellison (1997) are the first to study the relationship between fund performance and interim risk taking, and find that asset managers that have fallen behind their peers after the middle of the year increase risk taking in the second half of the year. Compared to our analysis, the theoretical model of Brown et al. (1996) predicts individual asset manager behavior, but the empirical analyses in both studies are limited to overall asset management *firm* portfolio risk and returns.

The remainder of the paper is organized as follows. Section 2.2 provides a brief institutional background, and Section 3 details the data sources. Section 4 describes the incentive schemes, while Section 5 presents the impact of the introduction of bonus schemes on risk-taking by fund managers. Section 6 concludes the paper.

2 The Norwegian Asset Management Industry

2.1 The Norwegian Asset Managers

Our data is from Norway, a country with an advanced asset management industry, but internationally more known for its 1 Trillion USD Sovereign Wealth Fund[3]. The asset management industry in Norway consists of managers of mutual funds as well as discretionary asset managers, the customers are individuals, municipalities, companies and financial institutions like insurance companies, and the assets in the public markets cover all classes with a far share invested abroad. The main industry association is the Norwegian Fund and Asset Management Association[4] which has 22 member companies, and the assets in mutual funds managed by their members are NOK 2,024 billion (USD 179 Bn.) (End-2024), in addition comes discretionary assets, in particular for the large insurance and pension providers. Each management company usually manages a large number of funds with different investment profiles. Within the mutual funds sector, 60% are equity funds, 35% fixed income funds and 5% in combined mandates. The Norwegian investors in these funds are 24% individuals, 49% institutional and 22% from defined contribution pension contracts. Foreign investors own 5% of the mutual funds managed by Norwegian asset managers.

2.2 Institutional Background

Norway is not a member of the European Union but has been a member of the European Economic Area (EEA) since 1994. The EEA agreement includes regulations of financial institutions and markets, and thus the rules and regulations on boni for asset managers discussed here are effectively EU-law implemented in Norway. In 2011, the EU introduced

[3]See https://www.nbim.no/en/the-fund/market-value/

[4]See `www.vff.no`

new rules to curb excessive risk-taking that contributed to the financial crisis[5]. These rules set limits on boni and required that they be paid out over time. Specifically, a maximum of 50% of any obtained bonus can be paid in the year it's earned, with the rest spread out over three years. Additionally, no bonus can exceed three times an employee's fixed salary. These rules apply to employees who can expose the firm's capital and have been interpreted to cover all employees involved in making asset management decisions, not just unit leaders, or the firm's CEO. These regulations are uniform across the EU and the EEA, covering countries such as Germany, France, and the UK. According to the European Fund and Asset Management Association European Fund and Asset Management Association (2018), the total size of the European Asset Management Market was about €25 trillion, and was comparable in size with the US Market.

Our contributing asset managers are regulated by Finanstilsynet, the Norwegian financial sector supervisory agency. This agency is responsible for both the implementation of compensation regulations, as well as subsequent supervision. These regulations allow relatively little discretion by the firms and thus add to the internal comparability of our data.

3 Data

3.1 Bonus schemes

We hand-collected data over at least four years from four Norwegian asset management firms, focusing on 37 employees involved in investment decisions. The core of our data covers the period from 2011 to 2014, where we have specific information from each asset

[5]See the EU Commission's regulations "Commission Delegated Regulation (EU) No 604/2014 of 4 March 2014 supplementing Directive 2013/36/EU of the European Parliament and of the Council with regard to regulatory technical standards with respect to qualitative and appropriate quantitative criteria to identify categories of staff whose professional activities have a material impact on an institution's risk profile Text with EEA relevance"

manager about their internal assets, and the related compensation structures and outcomes. Additionally, for some individuals, we have data from the years before and after this period.

We have asked each contributor to give us information about the responsibilities of their individual fund managers and the structure of their *ex-ante* bonus schemes as well as *ex-post* outcomes. Since each firm has its own bonus scheme, we dedicated significant time to understanding the specific structure of each one and consolidating that information into a standardized format. Each data collection process began with several meetings with the individuals responsible for overseeing the bonus schemes at each firm to develop a custom data collection template. The schemes differ across several dimensions, including whether they are based on individual or team performance, the performance metrics used, the evaluation period, the range of maximum, expected, and actual outcomes, the reliance on indicators beyond investment returns, and the degree of discretion exercised by management after performance is assessed.

Once a data-template was finalized, we used several sources of data to populate it. We have asked each firm to provide details over time about each each employee's responsibilities within the firm including which funds they manage and how these responsibilities are weighted for bonus calculations. Additionally, we collected information on the overall structure of the ex-ante bonus scheme, such as the maximum possible bonus, the relevant metrics for calculating bonuses, and the actual *ex-post* outcomes. We also received any written, individual, qualitative criteria used in determining boni. As each firm maintains a bonus bank we have also tracked annual combined payout for each person. Summary statistics for our data can be found in Table 3.

3.2 Assets

The assets managed by individuals in our sample primarily consist of publicly traded securities held for institutional investors or mutual funds. Some of these funds are available to the general public, allowing individual investors to buy shares, while others are managed internally, funded by the asset managers' own resources. These assets are mainly Norwegian or Nordic (from Norway, Denmark, Finland, or Sweden) and span across fixed income, equities, and money market securities. We have excluded private equity, real estate, and hedge fund assets from our analysis, as these lack regular market pricing, comparable benchmarks, and require longer investment commitments, making them less suitable for comparison.

Our fund return data primarily comes from Datastream, and where possible, we also use Datastream's benchmark returns. However, for the internal funds in our sample, neither Datastream nor Morningstar tracks these returns. In such cases, we rely on performance and benchmark data provided directly by the firms. Typically, this data is only available on a monthly, rather than daily, basis. The same limitation often applies to benchmark data, as firms may adjust internal benchmarks to account for specific constraints within a fund's investment universe.

We construct our dataset by combining monthly and daily return observations with benchmark data. Next, we incorporate data on bonus schemes and calculate each person's monthly "bonus status" based on their individual bonus contract. Although the bonus schemes operate on an annual cycle, we use specific formulas to determine each person's year-to-date bonus status for the quantitative portion of the schemes.

3.3 Persons and Time

All but one participant in our sample are men, so to protect the anonymity of the single female manager, we do not include gender in the data. For privacy reasons, we also did

not collect information on educational background or tenure with the firm.[6]

Our dataset includes 37 fund managers, covering the years 2011 to 2015. This provides 143 person-year and 1,637 person-month observations. Given that we often see managers run more than one fund, we have a maximum of 3,358 observations. In practice, we lose about one-third of these observations due to various factors leaving us with 2362 fund-month and 216 fund-year observations.

4 Bonus Schemes for Asset Managers

We begin by outlining the structure of the bonus schemes before conducting a qualitative analysis to link these schemes with existing findings from contracting theory. Table 1 provides an overview of the bonus schemes across the four asset managers. The first panel of the table describes the setup in detail.

Each asset manager receives a base salary, with any bonus serving as an additional incentive on top of this fixed pay. The bonus schemes apply consistently across all 37 asset managers in our sample, unless otherwise stated. This uniform application likely imposes an additional constraint compared to CEO compensation, specifically the requirement of equal pay for equal tasks.

4.1 Description

4.1.1 Quantitative Bonus

All four firms incorporate both quantitative and qualitative components into their bonus schemes, though with varying emphasis (see "Percentage Weight" in Panel 2), which ranges from 50% to 80%. These weights, with one exception, are fixed and disclosed to employees at the start of the bonus period.

In Panel 1, we see significant variation in how the quantitative bonus is structured.

[6] One fund specifically requested this exclusion, so the data would not have been available even if we had asked.

Firm 1 relies entirely on a team-based measure, while Firm 2 places a 25% weight on individual performance, and Firm 3 places an 80% weight on it ("Panel 1: Individual Component"). Three firms also include a firm-wide performance measure, which accounts for the entire bonus in Firm 3 ("Firm Component" in Panel 1).

Panel 1 highlights two additional details. First, the performance metrics used vary: active equity funds use the Information Ratio (IR), passive funds are evaluated by relative performance (ΔR), and fixed income funds by absolute performance in Firms 1, 2, and 4. Firm 3 stands out, as its bonus is based on overall firm profits rather than individual fund performance, making it the only firm where assets under management (AUM) directly influence the bonus.[7] This arrangement is absent in the other firms.

Finally, the period over which the bonus is calculated ("Bonus Horizon" in Panel 1) is also heterogeneous. Only one firm combines an IR-based bonus with a one-year horizon (Firm 2). Firm 1 uses a three-year horizon, while Firm 4 employs a two-year horizon. This contrasts sharply with much of the U.S.-focused literature on bonus schemes, such as Starks (1987) or Chevalier and Ellison (1997)), which typically assumes that bonuses are computed on an annual basis.

4.1.2 Qualitative Bonus

Panel 2 shows how the qualitative bonus is structured. All firms incorporate a qualitative element, but they vary in whether these criteria are clearly defined at the start of the year. The first two rows in Panel 2 ("Ex-ante Milestones" and "Ex-post Judgement") outline this information. For example, Firm 1 does not set explicit milestones at the beginning of the year, whereas Firm 4 does. Most firms use only one approach, either pre-set milestones or post-performance assessment, with the exception of Firm 3, which uses a mix. Firm 4 also includes a "good faith" clause alongside its explicit goals. Table

[7] Firm 3 offers between 5-10 individual funds though we cannot disclose the exact number for confidentiality reasons.

2 presents examples of these qualitative targets. Our impression is that the expectations driving the qualitative boni to a large degree incentivizes the firm and only more indirectly the customers.

4.1.3 Other components

In compliance with EU regulations, each firm operates a "bonus bank" (see Panel 3: "Bonus Bank"). Under this system, only 50% of the annual bonus awarded is paid out immediately. The remaining 50% is placed into the bonus bank and is paid out over the next three years, with one-third of the remaining amount paid each year.

Three out of the four firms cap the bonus at the legal maximum of three times fixed salary. Firm 1 shares carry for those funds that charge it, while firm 3 does not. Firm 2 and 4 do not have funds that charge carry.

4.2 Bonus Scheme Analysis

4.2.1 Overall Structure

A first observation is due - as the previous sections shows and like others have demonstrated before (i.e. Kole (1997)), that there is large between firm-heterogeneity in the bonus schemes (though, little within firms or over time). While we see many common elements we see that these elements are combined in different ways across the firms.

Having said that, we note that three out of the four schemes we describe are essentially a variation of the scheme proposed by Baker (1992) in the sense that they combine a fixed salary with a variable bonus ("piece-rate" in Baker). In addition, these three schemes are consistent with survey results for the US Farnsworth and Taylor (2006) and with theory as Baker et al. (1994) predict, with contracts that combine objective and subjective incentive components. A general formulation applied to our setting looks as follows:

$$S = F + \alpha * max\{3 * F, f(a * IR)\} + (1 - \alpha) * max\{3 * F, g(b * Q)\}, \qquad (1)$$

with S the overall compensation, F the agent's fixed salary, α the weight on the quantitative bonus and a and b the percentage to which the maximum bonus for each category has been earned. $f(\cdot), g(\cdot)$ represent the functions that transform the bonus metric into an actual bonus, where IR is the information ratio and Q represents the qualitative bonus goals.[8] Though not stated in the table we see that there are (usually) no adjustments made for career stage.[9]

Interestingly, one firm uses a completely different setup, namely a bonus scheme where the CEO assigned a bonus purely based on a subjective performance evaluation. The bonus each year was a predetermined share of the firm's profit, and as such the total size of the bonus pool was observable. When interviewing the CEO of the firm, we received the answer that their relatively small size (less than 30 employees) allows the CEO to essentially monitor all employees contribution to the firm. In addition, we were told that the firm is small enough so that employees feel that their actions directly affect firm profit ("Business class flights are less tempting when you know that they are coming out of firm profits").

Given that most quantitative bonuses we find are measured relative to a benchmark, we would expect to see reduced incentives for "herding" behavior as "herding" will leave the manager closer to the benchmark, something that might reduce his bonus. When we asked why some managers did not use benchmarks, the absence of such benchmarks in their portfolio mandates(?) was identified as the main reason for not adopting them.

4.2.2 Use of bonus pay

The use of bonus pay is in line with Ma and Gomez (2019) who reports that about 98% of all US fund managers receive some form of bonus pay. We note that all measures

[8] We do not see restricted stock or stock options grants, though we are not sure whether these elements are not used at all or are not used as the sample firms are not listed in Norway.

[9] Our interview partners stated that given how the bonus bank works, that switchers or new employees can only get a full bonus after being employed for more than three years.

described in the last section are at least indirectly positively correlated with profits, as the literature has documented a positive relationship between assets under management (AUM) and fund level returns.[10]

The use of the IR and relative performance measures rather than absolute performance is also consistent with the informativeness principle proposed by Holmström (1979). He argues that "by using additional information about the state of nature, contracts can generally be improved."

We also note that the shape of the (quantitative) bonus function is not necessarily linear. Firms 2 and 4 use a linear function but have upper and lower limits for the IR, whereas firm firm 1 uses a non-linear form. Unlike findings in the CEO compensation literature (i.e. Edmans et al. (2017) or Bettis et al. (2018)), we do not observe any sudden increases in bonuses. Specifically, there are no hurdle rates or abrupt jumps in the bonuses within the contracts we examined.

4.2.3 Tradeoff between risk and incentives or the tradeoff between quantitative and qualitative elements

The importance of the qualitative bonus can vary quite considerably, even within firms. Firm 4 for example varies the size of the qualitative bonus for active managers to 1/5 from 1/2 for passive managers. This variation also means that the relative proportion of the bonus tied to quantitative goals is increasing in the riskiness of the agent's task and not decreasing as a standard contracting view would predict. It is consistent with Prendergast (2002) who predicts this correlation. It is also consistent with the necessary condition that he raises: good measures of performance are available.

When asked why firms had qualitative boni, we uniformly received an explanation that is consistent with a multitasking explanation a la Holmström and Milgrom (1991). In one case, we heard that they feared that a bonus scheme based only on investment

[10]We implicitly model each of our firm's profit function to be a percentage free charged for AUM minus costs: $P = f * AUM - c$

results would lead to under-investment into shared tasks and resources.

4.2.4 Milestones vs Discretion

Another interesting question is how exactly are qualitative boni awarded? Are they based on *ex-post* judgment or on *ex-ante* defined milestones? There are advantages and disadvantages to both approaches. *Ex-ante* commitment may lead to more effort by the agent, but it could also result in more gaming. *Ex-post* assessment is more flexible in nature but may reduce the agent's belief that they will actually receive the bonus, leading to a weaker incentive (Bienz and Hirsch (2012)). We find both arrangements. As we have a small sample, it is impossible to use statistical methods to determine why a particular arrangement is chosen, but we note that *ex-post* judgment is more prevalent in firms with less widespread ownership. Hence, this issue seems to stem more from the differing demands of external accountability than from concerns about optimal contracts.

4.2.5 Maximum Bonus size

New EU regulations enacted after the financial crisis cap maximum bonus awards (and payouts) at three times an employee's fixed salary for those classified as risk takers within their firm. This effectively limits potential bonus claims and transforms the previous call option-like schemes into a more complex structure. Notably, all such schemes remain asymmetric: employees are not liable to compensate the firm for significant underperformance—they simply forfeit bonuses or payments from their bonus banks. The new structure can be represented as $c(b_l) - p(b_h)$, where $c(b_l)$ denotes the bonus portion that increases beyond the lower bound of the scheme, and $p(b_h)$ is akin to a put option that employees effectively sell, which activates once the bonus cap is reached.

In derivatives terminology, this structure resembles a "bull spread," which has notable implications for risk-taking behavior. Unlike a simple call option, whose Vega ($\frac{\partial c(b_l)}{\partial \sigma}$)—the sensitivity of an option's price to changes in the volatility of the underlying asset—is

always positive, a bull spread's Vega can vary, being positive or negative depending on the option's moneyness. Specifically, around the upper bonus threshold, the bull spread's Vega turns negative, likely dampening incentives for risk-taking once this cap is reached. Furthermore, the introduction of the bonus cap removes the convexity of the bonus function, further mitigating risk-taking incentives.

Unfortunately, the intuition from derivatives theory does not directly apply to our setting. As Ross (2004) notes, "... compensation schedules move the evaluation of any given gamble to a different part of the original domain of the utility function, where the utility function can exhibit greater or lesser risk aversion."

Thus, accurately predicting the impact of a bonus scheme requires the principal to understand the precise shape of the agent's utility function. Without this knowledge, it is impossible to make definitive predictions about how a bonus scheme will influence risk-taking. This uncertainty makes the question inherently empirical.

4.2.6 Other Considerations

One firm awards boni not only based on investment performance but also to fund flows. Specifically, fund managers share the net fee increases generated by higher assets under management (AUM), creating an additional incentive to attract and retain investors.

Multiple firms have funds that have profit-sharing agreements with their ultimate investors. However, only one firm directly extends these agreements to the fund managers responsible for the funds. Another firm shares overall profits with employees, but this link to individual fund manager performance appears indirect and relatively weak.

Interestingly, we find no evidence of a "ratchet effect," where performance targets are adjusted upward over time, making bonuses harder to achieve. This absence contrasts with theoretical predictions suggesting that repeated interactions between principals and agents should lead to better assessments of agent ability, and, in turn, to tighter performance thresholds or reduced bonuses.

The financial crisis prompted significant changes to bonus scheme designs. Previously, some funds were obligated to pay bonuses to fund managers despite the firm incurring substantial losses, as the schemes lacked provisions tying bonus payouts to overall firm profitability.[11] Now, nearly all schemes include such clauses, ensuring that bonuses are paid only if the firm itself generates a profit.

Another common feature in bonus schemes is a "good behavior" clause, which makes bonus payouts conditional on appropriate conduct. These clauses are deliberately broad to cover a wide range of situations where misconduct might be difficult to define explicitly. For instance, one firm's scheme includes the requirement to "run the FX business in a good manner," as detailed in Table 2.

4.2.7 Bonus Bank

The bonus bank can lead to a substantial accumulation of individual "skin in the game" within firms. However, instances of withheld payments due to underperformance or deviations are rare. In practice, the prevalence of bonus banks across the industry appears to diminish their effectiveness in restricting employee mobility. For larger employers, the primary concern tends to be the net impact of releasing bonus bank amounts for departing employees while allocating new amounts to incoming hires.

5 Incentives and Risk Taking

In this section, we study the relationship between incentives schemes, risk taking, and outcomes. We start by analyzing how the components of each manager's bonus scheme relate to performance—specifically, whether a higher promised bonus payment results in improved outcomes based on the metrics specified in the scheme. This initial analysis is essentially static, focusing on whether the structure of the bonus scheme alone influences

[11] The CFO of one contributing firm highlighted this notable aspect of bonus schemes.

behavior. In the subsequent analysis, we will explore how expected bonus payouts affect behavior dynamically.

5.1 Risk Taking and Bonus Schemes

To examine how incentives set at the beginning of the year influence outcomes, we perform regressions with various outcomes as dependent variables and bonus scheme components as independent variables. The primary outcome of interest is the fund's information ratio (IR), as it is the metric on which bonuses are most commonly based.[12] Additionally, we analyze the two components of the IR: the return difference between the fund and its benchmark and the fund's tracking error ($TE = \sigma(R_a - R_b)$). Finally, we assess the overall volatility of the fund. Hence, we use two different risk measures commonly found in the asset management literature. Although these measures are related, they capture different aspects of risk. The tracking error quantifies the deviation of the fund's returns from its benchmark, with a theoretical minimum of zero if the fund mirrors the benchmark exactly. In contrast, the standard deviation measures the total risk of the fund, regardless of any benchmark. We use both these measures to better understand how a bonus scheme affects risk-taking.

We analyze four bonus components: individual (*Ind*), team (*Team*), firm (*Firm*) bonus weight, and the weight of the qualitative component (*Qual*).[13] Together, these components represent the entire bonus allocation and sum to one. We omit the variable due to multicollinarity. Additionally, since the overall bonus level in our sample can range from half to three times the fixed salary, we scale these components accordingly. We control for fund type (equity, fixed income, or money market funds) and fund size. We also include year dummies to capture time-specific effects and cluster standard errors

[12]Firm 4 uses the return difference for passively managed equity funds instead of the information ratio. Although this affects only a small number of observations, we include them in our sample and also consider the return difference as an outcome variable.

[13]See Table 6 for detailed variable definitions.

by person.[14] We then get the following equation:

$$Outcome_{i,j} = \alpha + \beta Ind_{i,j} + \gamma Team_{i,j} + \delta Qual_{i,j} + \zeta Controls_{i,j} + \theta_t + \epsilon_{i,j} \qquad (2)$$

where i indexes each person and j each fund.

Table 4 reports the results. Column one shows that both the individual and team bonus amounts are positively related to the fund's performance or IR, whereas a higher weight on the qualitative bonus component (which is unrelated to the IR) reduces performance. In columns two and three, we examine the two components of the IR: the return difference and the fund's tracking error. In both columns we find a positive and significant effect of the individual bonus component and team component, but the effect is stronger when we focus on the tracking error. The qualitative bonus component has the right sign but is not significant. Both individual and team bonus sizes are negatively related to tracking error, while a higher emphasis on the qualitative bonus component increases the tracking error. The opposite pattern holds when we examine overall portfolio volatility. Our results are in line with the naive interpretation of higher-powered bonuses leading to more risk-taking, despite the fact that the bonus goal, the fund's IR, is a risk adjusted measure. It is also, to say the least, interesting to see that we see lower tracking error but higher volatility at the same time.

The results regarding the information ratio and the return difference between the fund and its benchmark align with standard incentive theory, where higher-powered incentives should lead to better outcomes.

These results suggest that the bonus scheme influences both performance and risk, although the exact channel is unclear. There are two potential explanations: either a higher bonus encourages more effort, improving the information ratio (IR), or firms with more "lavish" quantitative bonus schemes attract better fund managers. Our results

[14] Firm or individual fixed effects cannot be included, as the bonus schemes remain constant over time.

support both interpretations, as higher incentives are associated with higher IR, higher risk and lower tracking error indicating that a larger bonus leads to better outcomes. However, since we do not observe changes to bonus schemes during the sample period, we are limited in the tests we can conduct to further explore this question. We will revisit this issue in the next section.

A major issue in our analysis is asset management firm three, which uses end-of year firm (not fund) profit rather than fund IR. In order to see how this different metric affects our results we omit this firm (and all their funds) in Panel 2 of Table 4.

We lose the team bonus size variable in this regression due to multicollinarity but note that the signs of the other two dependent variables do not change, with two exceptions, namely the effect of the individual bonus on the tracking error that loses significance and flips signs and and while volatility becomes insignificant. However the sign on volatility flips, suggesting that the omission of fund manager three affects risk taking. The flipped sign is consistent with fund managers in the omitted fund taking on more risk due to a lack of a risk adjusted bonus measure, while those that remain in their sample have no incentive to increase risk and hence refrain from doing so.

The fact that we get different outcomes when we omit the one fund manager with a different bonus scheme is also a hint into the direction that selection might not be the driving factor behind our results, though it does not fully eliminate our concern.

In a second test, we analyze monthly results rather than yearly ones. Table 5 displays the results. As we need enough observations to compute both tracking error and standard deviation, we use all monthly observations from July through to December. Our results are almost identical to the yearly results and support the findings in our previous table.

Overall our results clearly show a link between incentives, returns and risk taking.

5.2 Mid-Year Bonus Position and Behavior

Next, we focus on whether mid-year performance, assessed in June, influences fund managers' efforts to improve their information ratio (IR) by December to increase their chances of receiving a bonus. Given that we focus on IR, we eliminate firm three from our analysis.[15]

To examine this relationship, we define two key explanatory variables. The first, *Bonus Underwater*$_{June}$, measures the gap between the mid-year IR (calculated at the end of May) and the level required to qualify for a year-end bonus. Higher values of this variable indicate that a fund manager is significantly "underwater" or far from achieving bonus eligibility. The second variable, *Dummy Underwater*$_{June}$, is a binary indicator that equals one if the mid-year IR is insufficient to qualify for a bonus by December and zero otherwise. These variables help quantify the extent of the performance shortfall and its implications for fund manager behavior.

We estimate the following equation:

$$\Delta Outcome_{June \to t,\, i,j} = \alpha + \beta\, Underwater_{June,\, i,j} + \theta_i + \epsilon_{i,j} \tag{3}$$

where i indexes each person and j each fund. We use three dependent variables, each measured as the change from June to subsequent months t: the Information Ratio (IR), the numerator of the IR (the change in excess return of the fund over its benchmark), and the denominator of the IR (the change in tracking error). *Underwater*$_{June}$ corresponds to either *Bonus Underwater*$_{June}$ or *Dummy Underwater*$_{June}$. We also control for Assets Under Management (AUM), fund type dummies, and person fixed effects to account for unobserved individual-level heterogeneity. The results are presented in Table 6.

The results in Panel 1 show clear patterns of incentive-driven behavior. When the

[15] Employees in this firm will be by and large unaware about the firm's profit as this is an accounting measure that is only available at the end of the year. Our results, while weaker, mostly hold if we include them in the analysis.

variable *Bonus Underwater*$_{June}$ is used, we observe a significant negative effect at the 5% level on changes in IR. This suggests that managers who are further from meeting their bonus targets mid-year take action to improve their performance by December. A negative effect is also observed on the numerator of the IR, which reflects the fund's excess return over its benchmark, albeit not significant. Additionally, there is no significant effect on tracking error, indicating that managers do not appear to adjust risk levels in their efforts to improve performance.

When *Bonus Underwater*$_{June}$ is replaced with *Dummy Underwater*$_{June}$, the results remain consistent regarding IR, which continues to show a significant negative effect (at the 10% level). However, the effect on the numerator of the IR becomes significant, suggesting that managers classified as underwater actively seek and fail to improve returns relative to their benchmark. As before, there is no significant effect on tracking error, reinforcing the idea that managers focus on improving performance rather than altering risk levels.

To test whether these effects persist over shorter time horizons and to address potential bias from using an arbitrary starting point, we use daily data to recalculate the *Bonus Underwater* and *Dummy Underwater* variables for each month after June and rerun the regressions. The results, presented in Panel 2 of Table 6, confirm the robustness of our findings. *Bonus Underwater*$_{June}$ continues to show significant negative effects on changes in IR (at the 1% level) and excess returns (at the 5% level) and its impact on tracking error remains negligible. Similarly, *Dummy Underwater*$_{June}$ show highly significant negative coefficients for both changes in IR and its numerator, but no significant effect on tracking error.

Finally, fully leveraging daily data, we recalculate all variables in each month after January and regress them on *Bonus Underwater* and *Dummy Underwater* computed in the prior month. The results, reported in Panel 3 of Table 6, remain consistent with our

earlier findings, reinforcing the conclusion that fund managers respond to bonus incentives by attempting to improve performance metrics when they are underwater.

These findings highlight the substantial impact of performance-based compensation on managerial behavior in the asset management industry. Fund managers who risk missing out on bonus eligibility actively work to improve excess returns, suggesting that enhancing performance metrics is their primary strategy. However, the lack of significant effects on tracking error suggests that managers do not focus on altering risk levels as part of their efforts. Unfortunately, these incentive-driven adjustments appear to backfire, leading to worse overall returns and lower IR.

Additionally, the use of person fixed effects in our analysis allows us to conclude that incentive schemes influence behavior beyond simply attracting high-quality employees with attractive compensation packages. While selection effects cannot be fully ruled out, our findings suggest that at least some of the observed effects are driven by managers' responses to their current bonus position.

6 Conclusion

We have investigated the relationship between outcomes, risk-taking and fund managers' bonus schemes in the fund management industry, using data from four Norwegian asset management companies.

We provide a detailed description of the bonus schemes used within these firms, an aspect that has not been directly explored in previous research. To our knowledge, no other study has specifically examined how bonuses are structured internally within fund management firms. While earlier studies like Farnsworth and Taylor (2006) and Ma and Gomez (2019) offer insights based on surveys or aggregated data, our study focuses on the actual bonus schemes used by asset management firms.

We find that bonus schemes have no within firm variation, aside from some differences

based on the type of management (active vs. passive) or the asset class (fixed-income vs. equity). However, there is significant variation across firms. Specifically, three firms use the fund's information ratio to determine bonuses, while one uses a simpler profit-split model. All firms have some form of qualitative bonus, but the approach varies: some use *ex-ante* milestones, while others use *ex-post* judgment. Overall, bonus schemes are similar to what is proposed in Baker et al. (1994) in the sense that they combine several types of activities.

We find that the overall structure of the bonus scheme affects both risk taking and returns. A higher potential bonus is associated with better performance, as measured by the fund's IR. On the risk side, we observe that employees whose pay is linked to risk adjusted bonus measures deliver higher bonuses while simultaneously lowering lower risk-taking, as indicated by the fund's tracking error and volatility. One possible reason for this finding is that the tracking error is part of the bonus formula for most asset managers. We have also indirect evidence that if this link between bonus and risk-taking is not taken into account, traditional risk taking happens. Interestingly, we also find that a greater emphasis on qualitative bonuses (a bonus not tied to financial results) is associated with higher risk-taking by the fund.

Finally, we find that the actual performance of the fund during the year also influences managers' behavior, not just the structure of the bonus scheme. Fund managers who are not on track to earn a bonus (i.e., those who are "underwater") take steps to improve performance, indicating that the incentive schemes affect behavior beyond just hiring or selecting high-performing managers.

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Table 1: **Bonus Scheme Description**

This table presents descriptive statistics for four incentive schemes from Norwegian asset managers, categorized into quantitative, qualitative, and other components. Panel 1 summarizes quantitative measures, including weights for individual, team, and firm performance, metrics, and bonus duration. Panel 2 highlights qualitative criteria, such as milestones, judgment, and allocation. Panel 3 outlines additional features, including bonus banking, caps, and carry sharing.

Firm	1	2	3	4	
				Active	Passive
Panel 1: **Quantitative Bonus**					
Individual Component	0%	25%	0%	80%	80%
Team Component	100%	50%	0%	10%	10%
Firm Component	0%	25%	100%	10%	10%
AUM Component	yes	no	yes	no	no
Metric	IR	IR	Profit	IR	ΔR
Bonus Duration	3	1	1	2	2
Panel 2: **Qualitative Bonus**					
Ex-ante Milestones	no	yes	yes	yes	yes
Ex-post Judgement	yes	no	yes	no	no
Individual only	yes	yes	yes	no	no
Percentage weight of qualitative bonus	2/5	1/3	1/2 (3/5)	1/5	1/2
Panel 3: **Other Components**					
Bonus Bank	yes	yes	yes	yes	yes
Bonus bank length in years	3	3	3	3	3
Bonus Cap (in x times fixed salary)	3	0.5	3	3	3
Carry sharing (if fund charges carry)	yes	na	no	na	na
Fund Flow based bonus	yes	na	no	na	na
Bonus scheme inception	na	2011	na	na	na
Weights	Ex-post	Ex-ante	na	Ex-ante	Ex-ante

Table 2: **Examples of Qualitative Goals**

This table details the qualitative goals of two individuals, categorized by areas with assigned weights and corresponding activities. For Person 1, focus areas include Foreign Exchange, Interest Rate Hedging, Default Handbook, and Competence, with tasks such as developing hedging methods, collaborating with teams, and transferring skills. For Person 2, responsibilities include Contributing to Functioning Markets, Improving Operations, and Updating the Strategic Plan for Fixed Income Operations, involving activities like establishing forums, presenting strategies, and advising on strategic initiatives.

Person	**Area**	**Weight**	**Activity**
Person 1	Foreign Exchange	35%	Develop alternative hedging methods
			Present the chosen method to the investment committee
			Try to automate certain types of orders
			Run the FX business in a good manner
	Interest Rate Hedging	30%	Assume some tasks from the fixed income team in a constructive manner
			Work together with the fixed income team in a constructive manner
			Establish the possibility to use short-duration swaps for the treasury portfolio (<1 yr)
			Run the IRH business in a good manner
	Default Handbook	25%	Set up the default handbook together with Person X
	Competence	10%	Transfer forex skills to Person X
			Transfer skills in IHR to others in the group
			Participate in at least one course/seminar and implement at least one thing you learned during the course/seminar
Person 2	Contribute to functioning markets and present our firm as a professional actor	40%	Establish/further develop a forum for market participants, if possible
			Present opinions externally to showcase our firm as a significant market actor
			Present the result of above activities to the investment committee, board, etc.
	Improve Operations	20%	Evaluate joint management for Norway/Nordics, conclude
			Alternatively evaluate the High Yield Market in the Nordics, conclude
			Operationalize decisions
	Update the strategic plan for fixed income operations	40%	Secure acceptance internally (Investment committee and board) and externally
			Assess adding new items to the strategy, potentially by offering advice to the Ministry of Finance

Table 3: **Summary Statistics**

This table presents descriptive statistics for Norwegian asset managers, covering performance and incentive metrics. Panel 1 shows data for the full sample of funds, including performance measures (e.g., Information Ratio, Fund Return), bonus structures (e.g., individual and team bonus sizes), and fund characteristics (e.g., AUM). Panel 2 focuses on yearly data, while Panel 3 highlights changes in key metrics (e.g., change in IR and fund return) from June to December. The definitions of all the variables can be found in the Appendix.

Panel 1: **All Data**					
	N	Mean	SD	Min	Max
Informatio Ratio (IR)	2362	0.24	0.76	-1.68	3.94
Fund Return (Ret)	2362	0.00	0.07	-0.43	0.51
Tracking Error (TE)	2362	0.11	0.11	0.00	0.75
Fund Volatility (Vol)	2362	0.06	0.05	0.00	0.19
Bonus Underwater	2362	0.08	0.56	0.00	8.72
Dummy Underwater	2362	0.10	0.30	0.00	1.00
Individual Bonus Size	2362	0.46	0.54	0.00	1.44
Team Bonus Size	2362	0.86	0.68	0.00	1.80
Qualitative Bonus Size	2362	0.96	0.33	0.30	1.20
AUM (in NOK $bn)	2362	15.48	23.43	0.04	90.68
Fund Type Dummy					
Equity	2362	0.38	0.49	0.00	1.00
Money Market	2362	0.11	0.31	0.00	1.00
Fixed Income	2362	0.51	0.50	0.00	1.00
Panel 2: **Yearly Data**					
Informatio Ratio (IR)	216	0.26	0.69	-1.02	2.73
Fund Return (Ret)	216	0.01	0.07	-0.20	0.22
Tracking Error (TE)	216	0.11	0.10	0.00	0.42
Fund Volatility (Vol)	216	0.07	0.05	0.00	0.19
Individual Bonus Size	216	0.46	0.53	0.00	1.44
Team Bonus Size	216	0.87	0.68	0.00	1.80
Qualitative Bonus Size	216	0.96	0.33	0.30	1.20
AUM (in NOK $bn)	216	15.90	24.09	0.04	89.11
Panel 3: **Jun-Dec Data**					
ΔIR	1497	0.03	0.50	-2.07	3.62
Δ Ret	1497	0.00	0.04	-0.14	0.23
ΔTE	1497	-0.00	0.05	-0.12	0.20
Bonus Underwater$_{June}$	1503	0.06	0.42	0.00	4.59
Dummy Underwater$_{June}$	1503	0.08	0.27	0.00	1.00

Table 4: **Fund Results and Bonus Schemes Part 1**

This table shows the regression results from Equation (2) on an annual basis for Norwegian asset managers, analyzing the impact of different incentive schemes on fund performance and characteristics. Panel 1 presents results for all firms, while Panel 2 excludes Firm 3. Standard errors are presented in parentheses and clustered at the Fund level. All regressions include year and fund-type fixed effects. Significance levels are indicated by *, **, and *** for 10%, 5%, and 1%, respectively.

Panel 1: **All Firms**				
	(1)	(2)	(3)	(4)
	IR	Ret	TE	Vol
Individual Bonus Size	1.516***	0.145**	-0.633***	0.0870***
	(0.465)	(0.0607)	(0.0913)	(0.0275)
Team Bonus Size	0.909**	0.0988*	-0.545***	0.0846***
	(0.417)	(0.0557)	(0.0868)	(0.0238)
Qualitative Bonus Size	-1.806*	-0.186	0.981***	-0.184***
	(0.906)	(0.111)	(0.166)	(0.0473)
AUM	-0.000422	7.99e-05	0.000278	-0.000274**
	(0.00182)	(0.000249)	(0.000443)	(0.000124)
Constant	0.0266	0.0260	-0.0560	0.202***
	(0.371)	(0.0353)	(0.0470)	(0.0113)
Fund Type Dummy	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Observations	216	216	216	216
R-squared	0.319	0.168	0.516	0.735
Panel 2: **Without Firm 3**				
	(1)	(2)	(3)	(4)
	IR	Ret	TE	Vol
Individual Bonus Size	0.470***	0.0345**	-0.0252	-0.00822*
	(0.140)	(0.0144)	(0.0166)	(0.00425)
Qualitative Bonus Size	-1.103***	-0.0627	0.402***	-0.0996***
	(0.339)	(0.0531)	(0.0792)	(0.0230)
AUM	-0.000923	0.000142	0.000299	-0.000317**
	(0.00169)	(0.000252)	(0.000450)	(0.000128)
Constant	0.746*	0.0650	-0.335***	0.248***
	(0.382)	(0.0633)	(0.0948)	(0.0234)
Fund Type Dummy	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Observations	175	175	175	175
R-squared	0.342	0.155	0.270	0.696

Table 5: **Fund Results and Bonus Schemes Part II**

This table presents the regression results from Equation (2) on a monthly basis for Norwegian asset managers, analyzing the impact of different incentive schemes on fund performance and characteristics. Panel 1 shows results for all firms, while Panel 2 excludes Firm 3. Standard errors, clustered at the fund level, are reported in parentheses. All regressions include year and fund-type fixed effects. Statistical significance is denoted by *, **, and *** for significance at the 10%, 5%, and 1% levels, respectively. Data covers the period from June to December each year.

Panel 1: **All Firms**				
	(1)	(2)	(3)	(4)
	IR	Ret	TE	Vol
Individual Bonus Size	0.937**	0.0808*	-0.592***	0.0910***
	(0.351)	(0.0420)	(0.0909)	(0.0270)
Team Bonus Size	0.494	0.0493	-0.515***	0.0881***
	(0.331)	(0.0393)	(0.0856)	(0.0235)
Qualitative Bonus Size	-0.880	-0.0933	0.890***	-0.191***
	(0.704)	(0.0780)	(0.166)	(0.0467)
AUM	-0.000964	8.51e-05	0.000460	-0.000295**
	(0.00147)	(0.000190)	(0.000472)	(0.000124)
Constant	-0.128	0.0109	-0.0211	0.204***
	(0.292)	(0.0239)	(0.0469)	(0.0114)
Fund Type Dummy	yes	yes	yes	yes
Year FE	yes	yes	yes	yes
Observations	1,503	1,503	1,503	1,503
R-squared	0.233	0.127	0.490	0.736
Panel 2: **Without Firm 3**				
	(1)	(2)	(3)	(4)
	IR	Ret	TE	Vol
Individual Bonus Size	0.360***	0.0237**	-0.0189	-0.00827*
	(0.0911)	(0.00995)	(0.0168)	(0.00417)
Qualitative Bonus Size	-0.669***	-0.0271	0.347***	-0.103***
	(0.230)	(0.0399)	(0.0840)	(0.0226)
AUM	-0.00152	0.000126	0.000472	-0.000339**
	(0.00124)	(0.000193)	(0.000476)	(0.000126)
Constant	0.425	0.0261	-0.286***	0.251***
	(0.286)	(0.0458)	(0.0957)	(0.0234)
Observations	1,218	1,218	1,218	1,218
R-squared	0.259	0.102	0.187	0.699
Fund Type Dummy	yes	yes	yes	yes
Year FE	yes	yes	yes	yes

Table 6: **Bonus Situation**

This table presents the regression results examining how fund managers' mid-year performance impacts their efforts to improve their Information Ratio (IR) and its components by year-end. Panel 1 shows the effects of the variables being underwater at mid-year on monthly changes in IR, its numerator (excess return over benchmark), and its denominator (tracking error) from June to December. Panel 2, using daily data, recalculates the Bonus Underwater and Dummy Underwater variables for each month after June and repeats the analysis. In Panel 3 IR, Ret and TE are computed within month and the Bonus Underwater and Dummy Underwater variables are recalculate for each month after January. Standard errors, clustered at the fund level, are reported in parentheses. All regressions include person and fund-type fixed effects. Statistical significance is denoted by *, **, and *** for significance at the 10%, 5%, and 1% levels, respectively.

Panel 1: **June to EOY**						
	(1)	(2)	(3)	(4)	(5)	(6)
	Δ IR	Δ Ret	Δ TE	Δ IR	Δ Ret	Δ TE
Bonus Underwater	-0.0877**	-0.00344	-0.00620			
	(0.0392)	(0.00563)	(0.00366)			
Dummy Underwater				-0.206*	-0.0136*	-0.000443
				(0.114)	(0.00741)	(0.00780)
AUM_bil_w	-0.00112	0.000710***	0.00204***	-0.00103	0.000718***	0.00204***
	(0.000832)	(0.000213)	(0.000568)	(0.000848)	(0.000213)	(0.000569)
Constant	0.154	0.00470	-0.0176	0.231*	0.00987**	-0.0177
	(0.129)	(0.00412)	(0.0125)	(0.133)	(0.00437)	(0.0146)
Fund Type Dummy	yes	yes	yes	yes	yes	yes
Person FE	yes	yes	yes	yes	yes	yes
Observations	1,212	1,212	1,212	1,212	1,212	1,212
R-squared	0.186	0.205	0.390	0.191	0.213	0.387
Panel 2: **Rolling Underwater Proxy**						
	(1)	(2)	(3)	(4)	(5)	(6)
	Δ IR	Δ Ret	Δ TE	Δ IR	Δ Ret	Δ TE
Bonus Underwater	-1.257***	-0.0132**	0.00141			
	(0.282)	(0.00490)	(0.00237)			
Dummy Underwater				-1.952***	-0.0228***	0.00559
				(0.528)	(0.00708)	(0.00393)
AUM	0.128	-0.000592	-0.000474	0.125	-0.000635	-0.000456
	(0.146)	(0.00134)	(0.00203)	(0.145)	(0.00134)	(0.00200)
Constant	1.049*	0.00963	-0.00716	1.024	0.0102	-0.00826
	(0.595)	(0.00618)	(0.00781)	(0.621)	(0.00626)	(0.00781)
Fund Type Dummy	yes	yes	yes	yes	yes	yes
Person FE	yes	yes	yes	yes	yes	yes
Observations	540	540	540	540	540	540
R-squared	0.405	0.309	0.257	0.391	0.309	0.261
Panel 3: **Rolling Underwater Proxy**						
	(1)	(2)	(3)	(4)	(5)	(6)
	IR_t	Ret_t	TE_t	IR_t	Ret_t	TE_t
Bonus Underwater	-0.108***	-0.000850	-0.000291			
	(0.0153)	(0.000623)	(0.00159)			
Dummy Underwater				-0.277***	-0.00414**	0.00336
				(0.0457)	(0.00184)	(0.00469)
AUM	0.0271	0.000123	-0.000798	0.0274	0.000110	-0.000765
	(0.0290)	(0.000332)	(0.00201)	(0.0288)	(0.000325)	(0.00197)
Constant	0.197	-0.00194	0.00330	0.00868	-0.00223	0.000323
	(0.157)	(0.00338)	(0.00872)	(0.138)	(0.00272)	(0.00745)
Fund Type Dummy	yes	yes	yes	yes	yes	yes
Person FE	yes	yes	yes	yes	yes	yes
Observations	861	861	861	861	861	861
R-squared	0.345	0.187	0.895	0.346	0.188	0.895

Appendix

Variable Definitions

Information Ratio (IR)	The fund's information ratio, calculated as the within-year difference between fund returns and benchmark returns, scaled by the within-year standard deviation of this difference.
Fund Return (Ret)	The return of the fund minus the benchmark return.
Tracking Error (TE)	The rolling within-year standard deviation of the difference between fund returns and benchmark returns.
Volatility (Vol)	The rolling within-year standard deviation of fund returns.
Bonus Underwater	A positive continuous measure of how far the fund's performance is from meeting the bonus eligibility threshold (either in terms of IR or return relative to a specific target).
Dummy Underwater	A binary variable indicating whether a fund manager is currently "underwater" (i.e., below the performance threshold required to earn a bonus).
Individual Bonus Size	The size of the bonus based on individual performance.
Team Bonus Size	The size of the bonus based on team performance.
Qualitative Bonus Size	The size of the bonus based on qualitative performance metrics.
AUM	The total assets under management by the fund, measured in billions of NOK.