Portfolio Manager Compensation in the U.S. Mutual Fund Industry*

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ABSTRACT

This paper empirically studies portfolio manager compensation structures in the mutual fund industry. We find that (i) over ninety-five percent of portfolio managers have salary-plus-bonus type of compensation contracts; (ii) about three-quarters of portfolio managers receive explicit performance based incentives from investment advisors; and (iii) the average performance evaluation period is about three years. Our cross-sectional investigation suggests that portfolio manager compensation structures are broadly consistent with an optimal contracting equilibrium. Particularly, explicit performance based incentives are more prevalent in scenarios where an investment advisor's direct monitoring is more costly and/or where alternative, implicit incentives are less effective. Specifically, our results show that (i) investment advisors with more assets under management, larger number of advisory employees, a more diverse clientele, and more financial industry affiliations tend to use performance based incentives more frequently; (ii) larger investment advisors use longer performance evaluation periods; (iii) portfolio managers who are the stakeholders (e.g., control owners) of the advisors receive performance based incentives less often and have shorter evaluation periods; (iv) portfolio management teams are more likely to receive performance based incentives; (v) longer manager tenure decreases the probability of receiving any incentives, including performance based contracts. Overall, our study provides novel empirical evidence on optimal contracting in the delegated asset management industry.

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Portfolio Manager Compensation in the U.S. Mutual Fund Industry

Mutual funds are important investment vehicles that pool money from many investors for the purpose of investing in securities such as stocks, bonds, and money market instruments. As of 2010, U.S. mutual funds manage $11.8 trillion total net assets and about half of U.S. households own mutual funds. Mandated by the Investment Company Act of 1940, mutual funds have a distinctive organization structure. A mutual fund consists of shareholders and a board of directors, who delegate the portfolio management to an investment advisor through an advisory contract. Portfolio managers, hired and compensated by the investment advisor, make the investment decisions for the fund.

While the advisory contracts between fund shareholders and the investment advisors have received much attention in the literature (e.g., Coles, Suay, and Woodbury (2000), Deli (2002), Elton, Gruber, and Blake (2003)), not much is known about the compensation contracts between the investment advisors and the portfolio managers due to data limitation. Beginning in March 2005, mutual funds are required by the Securities and Exchange Commission (SEC) to disclose the structure of, and the method used to determine the compensation of the portfolio managers in its Statement of Additional Information (SAI).[1] This new disclosure requirement was introduced to "help investors to better understand a portfolio manager's incentives in managing a fund." In this study, we hand-collect the information on portfolio manager compensation structures from SAI of U.S. open-end mutual funds in the year of 2009. Using this novel dataset, we document the features of portfolio manager compensation contracts and examine the cross-sectional determinants of these contract features.

According to the disclosure requirement, mutual funds need to disclose whether portfolio manager compensation is fixed, whether (and, if so, how) the compensation is based on fund

[1] See SEC Rule S7-12-04, Disclosure Regarding Portfolio Managers of Registered Management Investment Companies, http://www.sec.gov/rules/final/33-8458.htm

performance, and whether (and, if so, how) the compensation is based on fund assets under management (AUM). Based on a sample of 4,112 mutual funds with 669 investment advisors and 4,010 portfolio managers, we find the following stylized facts. First, over ninety-five percent of portfolio managers receive a salary-plus-bonus type of compensation contract. Second, about three-quarters of portfolio managers receive explicit performance based incentives from the investment advisors. This percentage is much higher than the one of performance based incentives in the advisory contract between fund shareholders and the investment advisor.[2] Third, the average performance evaluation period is about three-years. Fourth, about one fifth of portfolio manager compensation is directly linked to the fund's assets under management. Lastly, about thirty percent of portfolio managers have deferred compensation and about half of portfolio managers receive stock and/or option grants.

Having documented the features of portfolio manager compensation contracts, we next examine the cross-sectional determinants of these contract features. Delegated portfolio management relationship falls naturally in the principal-agent paradigm. Since portfolio managers' effort in information collection and investment decisions are not perfectly observable, conflicts of interest may emerge between the investment advisor (the principal) and the portfolio manager (the agent). Theory posits that a compensation contract that links the agent's payoff to her performance may alleviate agency conflicts (e.g., Harris and Raviv (1979), Holmstrom (1979), Grossman and Hart (1983)). However, performance based incentives are costly because they can distort the efficiency of the risk sharing between the principal and the agent. Given this cost-benefit trade-off, we should expect more explicit performance based incentives in scenarios where an investment advisor's direct monitoring is more costly and where alternative, implicit incentives (e.g., career concerns) are less effective. To test this prediction, we relate portfolio manager compensation structures to several

[2] According to Golec (1992), Deli (2002), and Elton, Gruber, and Blake (2003), the percentage of performance based advisory contracts ranges from 2% to 6% in their sample funds.

categories of investment advisor and portfolio manager characteristics. Our results show systematic patterns that are broadly consistent with an optimal contracting equilibrium between the investment advisor and the portfolio manager. We discuss our main findings below.

First, we find that investment advisors with more assets under management, larger number of employees performing advisory functions, a more diverse clientele, and more financial industry affiliations tend to use more performance based incentives. For instance, a one-standard deviation increase in the advisor assets under management is associated with a 9.9 percentage point increase in the probability of performance based incentives. Moreover, larger investment advisors also employ longer performance evaluation periods. A one-standard deviation increase in the advisor assets under management is associated with a 3.6 month increase in the average evaluation period. The above evidence is consistent with the prediction that larger advisors face higher monitoring costs (e.g., Garen (1985) and Holmstrom (1989)) and therefore use explicit performance based incentives more often.

Second, portfolio managers who are the stakeholders (e.g., control owners) of the advisors receive fewer performance based incentives and have shorter performance evaluation periods. This evidence is consistent with the idea that ownership alleviates agency conflicts and hence reduces the need for explicit performance based incentives (Jensen and Meckling (1976)). In addition, these managers receive less deferred compensation and fewer stock and option grants. Moreover, the status of being a stakeholder has large economic effects. For instance, a change from non-stakeholder to stakeholder status reduces the probability of performance based incentives by 25.2 percentage points and reduces the average evaluation period by about 1.2 years.

Third, performance based incentives are more prevalent among team-managed funds. In terms of economic significance, a switch from a solo-managed to a team-managed fund is associated with a 4.7 percentage point increase in the probability of using performance based incentives. This

evidence supports the idea of Holmstrom (1982) that the free-riding problem in a team distorts managerial incentive for providing effort and hence requiring more explicit performance based incentives.

Lastly, we find that portfolio managers with shorter tenure are more likely to receive performance based incentives. A one-standard deviation increase in average manager tenure is associated with a 4.8 percentage point drop in the probability of using performance based incentives. This evidence rejects the prediction that longer-tenure portfolio managers use their bargaining power over the advisor to signal their ability by selecting performance based contracts (Heinkel and Stoughton (1994)). In contrast, the negative relation between manager tenure and the use of performance based contracts is consistent with a competitive market for managerial talent where the bargaining power remains with the investment advisor who uses performance based contracts to screen out more talented managers in early stages.

Our paper contributes to the large literature on portfolio delegation in the mutual fund industry. While many studies focus on the advisory contracts between fund shareholders and investment advisors (e.g., Coles, Suay, and Woodbury (2000), Deli (2002), Elton, Gruber, and Blake (2003), Golec and Starks (2004), Massa and Patgiri (2009), Warner and Wu (2011)), our paper investigates the compensation contract between the investment advisor and the portfolio manager, rarely studied in the literature. To our best knowledge, this study is the first to systematically analyze the portfolio manager compensation in the mutual fund industry. [3]

An important debate in this literature is whether (relative) performance based contract provides managers with the right incentives for effort expenditure (e.g. Battacharya and Pfleiderer (1985), Starks (1987), Stoughton (1993), Admati and Pfleiderer (1997), Gómez and Sharma (2006),

[3] Farnsworth and Taylor (2006) study the factors that affect the portfolio manager compensation using a survey data of only about 400 managers. We are the first to study portfolio manager compensation using the audited information from the Statement of Additional Information (SAI) of over 4,000 funds, free of self-reporting and sample selection problems.

Dybvig, Farnsworth and Carpenter (2010), Agarwal, Gómez and Priestley (2011)) and whether they are useful devices to screen out more skilled managers (e.g., Heinkel and Stoughton (1994)). The low frequency of performance based fees in the advisory contract between fund shareholders and the investment advisor has been puzzling.

One explanation is based on regulatory constraints about the symmetric shape of these contracts (e.g., Das and Sundaram (2002), Golec and Starks (2004)), Cuoco and Kaniel (2011)).[4] An alternative explanation is based on the substitution effect between explicit contract incentives and implicit flow-performance incentives (e.g., Sirri and Tufano (1998) and Basak, Pavlova and Shapiro (2008)). Our paper contributes to this debate by showing that in an unregulated environment,[5] performance based incentives are the dominant form of compensation contract between the investment advisor and the portfolio manager. Moe importantly, our study shows that this compensation contract design is broadly consistent with an optimal contracting equilibrium. Our evidence is supportive to the idea that the regulation constraint in place is indeed related to the low frequency of performance based advisory contracts in place between fund shareholders and investment advisors.[6]

The remainder of the paper is organized as follows. Section I discusses the institutional background. Section II develops the hypotheses. Section III presents the data, variable construction, and sample description. Section IV discusses the empirical methodology and analyzes the cross-sectional determinants of portfolio manager compensation structures. Section V concludes the paper.

[4] According to section 205 (a) (1) of the Investment Advisers Act of 1940, the incentive fees received by the investment advisor must be symmetric relative to the benchmark, with any increase in fees for above-benchmark performance matched by a symmetric decrease in fees for below-benchmark performance.

[5] The observed performance based incentives for portfolio managers are unconstrained and asymmetric. We are not aware of any specific regulatory restriction on the format of contracts between the advisory firm and the manager.

[6] We cannot rule out that the observed differences in contracts between the first and second layers in the mutual fund industry are jointly optimal in a full equilibrium model. See Gervais, Lynch, and Musto (2005) for a model of the multi-layer principal-agent structure in the mutual fund industry.

I. Institutional Background

Mutual funds are investment companies that pool money from many investors and invest it in a diversified portfolio of assets such as stocks, bonds and money market instruments. According to the Investment Company Institute 2011 Fact Book, U.S. mutual funds manage $11.8 trillion total net assets by year-end 2010. In 2010, 44% of U.S. households own mutual funds and 23% of the households' financial assets are invested in the mutual funds.

Mandated by the Investment Company Act of 1940, mutual funds have a distinctive organization structure. A typical mutual fund consists of shareholders and board of directors. Shareholders, who are the owners of the funds, have specific voting rights to elect a board of directors who represent their interests. The board of directors is legally empowered to govern the fund, and their primary responsibility is to review and approve the advisory contract with an investment advisor who handles the day-to-day management of the fund. The portfolio manager is the employee of the investment advisor, and their selection, compensation and removal is at the advisor's discretion.

Mutual fund shareholders do not contract directly with those who make the investment decisions, i.e. the portfolio managers. Instead, they contract with an investment advisor, which employs portfolio managers to make the investment activities for the fund. Investment advisors receive compensation through advisory fees for providing portfolio management services to fund shareholders. In the majority cases, the advisory fee is specified as a percentage of the fund's total net assets (e.g., Deli (2002)). Only a small portion of mutual funds compensate their investment advisors using incentive fees that are based on fund investment performance relative to some pre-specified benchmark. The advisory contract between fund shareholders and the investment advisor is constrained by regulation that prohibits asymmetric incentive fees. According to section 205 (a) (1) of the Investment Advisers Act of 1940, the incentive fees received by an investment advisor must be

symmetric relative to the benchmark, with any increase in fees for above-benchmark performance matched by a symmetric decrease in fees for below-benchmark performance.

While the advisory contract between fund shareholders and the investment advisor has been studies in the literature, not much is known about the compensation contract between the investment advisor and the portfolio manager. Starting in March 2005, mutual funds are required by Securities and Exchange Commission (SEC) to disclose the structure of, and the method used to determine the compensation of the portfolio manager in its Statement of Additional Information (SAI). This new disclosure requirement is part of a series of regulations introduced by the SEC in 2004 to improve the transparency of the mutual fund industry and "help investors to better understand a portfolio manager's incentives in managing a fund".

Regarding the disclosure requirement, portfolio manager "Compensation" includes, without limitation, salary, bonus, deferred compensation, retirement plans and whether the compensation is cash or non-cash. For each type of compensation, a fund is required to describe with specificity the criteria on which that type of compensation is based. For example, whether the compensation is fixed, whether (and, if so, how) the compensation is based on the fund's pre- or after-tax performance over a certain period, and whether (and, if so, how) the compensation is based on the value of assets held in the fund's portfolio. In the case of performance based bonus, a fund is required to identify any benchmark used to measure performance and state the length of the period over which performance is measured. It is important to note that mutual funds are required to disclose only the criteria upon which the compensation is based on, not the dollar value of compensation received by the portfolio managers. We illustrate the description of portfolio manager compensation using the following example taken from the SAI of Vanguard Managed Payout Funds:

"*As of December 31, 2009, a portfolio manager's compensation generally consists of base salary, bonus, and payments under Vanguard's long-term incentive compensation program.…… A portfolio manager's base salary is generally a fixed amount that may change as a result of an annual*

review, upon assumption of new duties, or when a market adjustment of the position occurs. A portfolio manager's bonus is determined by a number of factors. One factor is gross, pre-tax performance of the fund relative to expectations for how the fund should have performed, given the fund's investment objective, policies, strategies, and limitations, and the market environment during the measurement period. This performance factor is not based on the value of assets held in the fund's portfolio. For the Managed Payout Funds, the performance factor depends on how closely the portfolio manager outperforms these expectations and maintains the risk parameters of the fund over a three-year period. …… Under the long-term incentive compensation program, all full-time employees receive a payment from Vanguard's long-term incentive compensation plan based on their years of service, job level and, if applicable, management responsibilities."

II. Hypotheses Development

In this section, we analyze how investment advisor and portfolio manager characteristics help, according to the theory, to explain the cross section of portfolio manager compensation structures observed in practice. We mainly focus on two dimensions of the contract between the investment advisor and the portfolio manager: the use of performance based incentives and the performance evaluation period.

A. Hypotheses related to Investment Advisor Characteristics

Delegated portfolio management relationship falls naturally in the principal-agent paradigm. Arguably, a portfolio manager's effort in searching for valuable information and her investment decisions are not perfectly observed by the investment advisor. When managerial actions are only imperfectly observable, a first-best contract that the manager's compensation is directly determined by her actions is suboptimal. In this case, theory posits that linking a portfolio manager's payoffs to her performance (affected by the portfolio manager's investment decisions and effort expenditure) may be optimal (e.g., Mirrlees (1974, 1976), Holmstrom (1979), Shavell (1979), Harris and Raviv

(1979) and Grossman and Hart (1983)). Holmstrom (1979) shows that this second-best solution, although useful in aligning the incentives of the principal and the agent, is costly in terms of welfare since it distorts the efficient risk sharing allocation of the firs-best contract. Given this cost-benefit trade-off, we should expect the use of performance-based compensation contracts to increase with the difficulty of and the costs associated with monitoring portfolio managers' effort and investment decisions.

We consider several categories of characteristics at the advisor level that proxy for the cost of monitoring. The first measure is the advisor size. Organizational diseconomies of scale have been commonly assumed to constraint firm size (e.g., Kaldor (1934), Coase (1937)). In particular, the advantage of smaller firms in screening and monitoring workers has been recognized for a long time since Stigler (1962).[7] We postulate that larger investment advisors, unable to monitor portfolio managers' actions and ability as accurately as that smaller ones, will find it more beneficial to employ performance-based compensation schemes.

Hypothesis H1*: If monitoring portfolio managers' actions is more costly in larger advisory firms, we should observe that the use of performance-based contracts increases in the size of the investment advisor.*

Next, we consider the second set of advisor characteristics of monitoring costs: take diversity. Holmstrom (1989) argues that, "larger firms are at a comparative disadvantage in conducting highly innovative research, because of the costs associated with managing a heterogeneous set of tasks." In particular, we consider two dimensions of task diversity of an investment advisor: client heterogeneity and financial industry affiliations.

First, investment advisors may specialize in serving one single type of client, mutual funds,

[7] Williamson (1975, 1985), Garen (1985), Bishop (1987), Holmstrom (1989), Brown and Medoff (1989), and Rasmusen and Zenger (1990) analyze and document the positive relation between monitoring costs and firm size.

for instance. Alternatively, they may have a diversified business model, with various types of clients: individual investors, mutual funds, pension funds, hedge funds, banks, governmental institutions, etc. The more heterogeneous an investment advisor's clientele is, arguably, the larger the comparative disadvantage it has as Holmstrom (1989) predicts.

Hypothesis H2*: If monitoring costs increase with clientele heterogeneity, performance based contracts should be used more frequently by investment advisors with more diverse clientele.*

The second aspect of task diversity we consider is the number of financial industry affiliations of an investment advisor. This measure is defined as the number of affiliations or activities in the financial industry in which any person, an individual or a company, "under common control" with the advisor may be involved, based on the information retrieved from Form ADV. An investment advisor that involved in multiple types of financial activities is a more complex structure where monitoring portfolio managers may, arguably, be more difficult. Interestingly, the SEC identifies these activities as areas in which "conflicts of interest" may occur between the investment advisor and its clients. The investment advisor, for instance, may be affiliated to a broker-dealer, which generates revenues from buying or selling securities for the advisor's clients. In this case, the investment advisor may use performance based incentives signal that potential conflicts of interest across the advisor's different business units are properly addressed and that portfolio managers are focused on portfolio performance.

Hypothesis H3*: An increase in the number of affiliated activities of an investment advisor makes monitoring more costly; moreover, it increases the potential conflicts of interest between portfolio management and other activities related to the advisor. We expect the probability of performance based contracts increase in the number of financial industry affiliations.*

B. Hypotheses related to Portfolio Manager Characteristics

Portfolio managers' actions are not only affected by the explicit incentives in their compensation contracts, but also implicit incentives such as career concerns. Fama (1980) suggests that discipline from the labor market (i.e., career concerns) can reduce agency problems. Holmstrom (1999) confirms that, if optimal dynamic managerial contracts are not enforceable, career concerns affect managerial decisions. Almazán et al (2004) claim that "career concerns should be more compelling in the case of individually managed funds, where a specific manager's reputation will be affected more strongly by the success or failure of the fund." In addition, labor market discipline will be less effective in the case of a team-managed fund, because in team-managed fund case, it is difficult to determine who is responsible for the fund success or failure. We argue that performance based contracts can be useful in compensating portfolio management teams where there is a lack of implicit, career-driven incentives.

Hypothesis H4A*: Assuming that portfolio managers working in team-managed funds are less disciplined by career concerns than the ones in solo-managed funds, we should expect to see more performance based contracts among the former.*

An opposite view in the literature argues that errors in performance measurement should reduce the use of performance contingent compensation (e.g., Bishop (1987), Brown (1990) and Zenger (1994)). Admittedly, performance measurement is noisier in team-managed funds than in solo-managed funds. In addition, it is well known (Holmstrom (1982)) that team-managed funds can create a free-rider problem in the provision of effort. If performance measurement accuracy and fee-riding are relevant issues for portfolio manager compensation design, we should expect performance based contracts to be less prevalent among team-managed funds. Alternatively, investment advisors may still use performance based incentives and increase the performance evaluation period. Longer periods of evaluation, arguably, should help investment advisors to disentangle the marginal contribution of each team member and alleviate the free-rider problem.

Hypothesis H4B*: If the difficulty in assessing portfolio manager performance and the incentives for free-riding are higher in team-managed funds, we should observe longer evaluation periods for portfolio managers in team-managed funds.*

So far we have focused on the role of performance based contracts in effort inducement under the moral hazard framework. Another important dimension in the principal-agent relationship between the investment advisor and the fund manager is the adverse selection problem. In theory, strong performance based incentives should help an investment advisor to select the skilled portfolio managers: only the ones with high ability will be willing to tie a sizeable part of their compensation to fund performance.

Under an adverse-selection setting, Heinkel and Stoughton (1994) argue that investment advisors may find it optimal to offer low performance adjusted contracts to junior portfolio managers and grant performance based contracts only to managers that are retained after having achieved sufficient performance data to be evaluated. The intuition is as follows. Lower performance adjustment in the early stages induces higher effort on skilled portfolio managers, who want to distinguish themselves from unskilled managers through performance. Higher incentives in the later stages are due to a shift in the bargaining power from the advisor to the retained portfolio manager, who signals her ability through a performance based contract. We use portfolio manager tenure in the fund to empirically test the following hypothesis.[8]

Hypothesis H5: *If successful (i.e. outperforming) portfolio managers use their bargaining power to negotiate the contract terms, we should expect that the use of performance based fees increases in portfolio manager tenure in the fund.*

A well studied mechanism that alleviates agency conflicts is managerial ownership. In their

[8] We would like to emphasize that portfolio manager tenure is not equivalent to portfolio manager age. Older managers may have short tenure in a new fund that they joined recently. This distinction is important since manager age has different implications in terms of career concerns (see, for instance, Chevalier and Ellison (1999)) to the hypothesis that we are testing.

seminal paper, Jensen and Meckling (1976) argue that "as the manager's ownership claim falls, his incentive to devote significant effort to creative activities such as searching out new profitable ventures falls."

We first consider the ownership of portfolio managers in the investment advisors. If a portfolio manager is the stakeholder (i.e., a control owner) of the advisor, agency conflicts due to the separation of ownership and control is largely reduced. In this case, we expect that the status of being a stakeholder leads to a lower incidence of performance based contracts. Even if portfolio managers who are stakeholders receive performance based contracts, the attenuation in agency conflicts and, arguably, the higher accuracy in performance evaluation will results in shorter evaluation periods. Moreover, as we will discuss in the description of the contract features in Section III.C, we analyze two retention mechanisms: stocks/options and deferred compensation. If the portfolio manager and the owner of the advisor coincide, the use of these retention mechanisms should decrease. We resume these implications in the following hypothesis.

Hypothesis H6*: If the portfolio manager owns a controlling stake in the investment advisor, we should expect a lower frequency of performance based contracts and shorter evaluation periods in case they are used. Moreover, retention mechanisms such as stocks, options, and deferred compensation will be less used.*

Lastly, we consider portfolio manager ownership in the fund that they manage, which has been studied by Khorana, Servaes and Wedge (2007) and Ma and Tang (2012). Whether portfolio managers are required by investment advisors to co-invest some of their personal wealth in the funds that they manage or portfolio manager ownership mostly reflect her personal portfolio decisions is an open question. We postulate that if portfolio manager ownership in the managed fund is used by investment advisors as an incentive mechanism, we would expect performance based contracts to be negatively correlated with the beneficial ownership of portfolio manager in the fund.

Hypothesis H7A*: If portfolio manager ownership in the managed fund and performance based incentives are used by the investment advisor as substitutes in the provision of incentives, we should expect that as the portfolio manager ownership increases, the use of performance based contracts decreases.*

One alternative view is that portfolio manager ownership in the managed fund and explicit performance based incentives are used by the advisor as complements rather than substitutes. In that case, portfolio manager ownership in the managed fund may not result in a lower use of performance based contracts. Rather, it should decrease portfolio manager's incentives to alter the fund's risk.[9] In such a context, we would expect that the performance evaluation period, an alternative venue for taming portfolio manager's risk appetite, may be reduced for portfolio managers with beneficial ownership in the fund.

Hypothesis H7B*: If portfolio manager ownership in the managed fund and performance based incentives used by the investment advisor as complements in the provision of incentives, we should expect shorter evaluation periods for portfolio managers with beneficial ownership in the fund.*

III. Data, Variable Description, and Sample Overview

A. Data

We obtain data from several sources. Our first data source is the Morningstar Direct Mutual Fund database. This database covers the U.S. open-end mutual funds and provides information about fund names, manager names, manager tenure, assets, inception dates, expense ratios, turnover ratios, investment objectives, fund's tickers, and other fund characteristics. For the purpose of our study, we include all the U.S. open-end mutual funds that existed by the year-end of 2009. Multiple share

[9] A recent study by Ma and Tang (2012) provides empirical evidence on the effects of portfolio manager ownership on mutual risk taking.

classes are listed as separate funds in the Morningstar Direct Mutual Fund database. To avoid multiple counting, we aggregate the share-class level to portfolio level data. Specifically, we calculate total assets under management as the sum of assets across all share classes. Our initial sample consists of 5,688 unique funds managing by 794 investment advisors.

Information about portfolio manager's compensation structures and ownership is hand-collected from mutual funds' Statement of Additional Information (SAI) in the SEC Edgar Database. For each fund in our initial sample, we collect its SAI for 2009 whenever available. Then we retrieve the information on the structure of, and the method used to determine the compensation of the portfolio managers as well as the beneficial ownership of portfolio managers in the fund. Among the initial sample of 5,688 funds, we are able to obtain information on portfolio manager's compensation for 5,579 funds and information on portfolio manager's ownership for 5,418 funds.

We obtain the investment advisor's characteristics from Form ADV in the SEC Edgar Database. Form ADV is the uniform form used by investment advisors to register with SEC and specify their business practices, ownership, assets, clients, employees, affiliations and other advisor-level characteristics. The form must be updated annually and available as public record for investment advisors that managing in excess of $ 25 million assets. To match the investment advisors in our initial sample to the sample of advisors filed Form ADV in 2009, we use fund ticker to obtain the SEC File Number, a unique identifier SEC assigned to each investment advisor. Our final sample consists of 4,112 open-end mutual funds. It covers 4,010 unique portfolio managers working for 669 investment advisors.

B. Variable Constructions

B.1. Compensation Structures

As discussed earlier, mutual funds are not required to disclose the actual compensation

received by the portfolio managers. Instead, they only need to disclose the structure of, and the method used to determine the compensation of the portfolio manager. To capture different aspects of portfolio manager's compensation structure, we construct the following measures. [10]

Fixed Salary Only: Portfolio manager's compensation can be a fixed salary or a fixed salary plus a variable component commonly referred to as bonus. To differentiate those two different types of compensation structure, we use an indicator variable *Fixed Salary Only* that equals to one if the portfolio manager's compensation is fixed and zero if the compensation has both a fixed and variable component.

Bonus/Salary Ratio: For those of the funds who pay their portfolio managers a fixed salary plus bonus, SEC does not require them to disclose the ratio between the bonus and the salary, i.e. *Bonus/Salary Ratio*. Yet, 1,087 out of 4,112 release some information on this. Among 1,087 funds who release the ratio between the bonus and the salary, 1,065 stated that the bonus outweighs the fixed salary in the total compensation. In the majority of cases, funds do not disclose an actual *Bonus/Salary Ratio*. However, in limited cases, we observe the *Bonus/Salary Ratio* ranges from 10% to 300%.

Performance Incentive: For those portfolio managers that have both a fixed salary and a variable bonus, the SEC requires the fund to disclose whether the bonus is based on the fund's pre- or after-tax performance over a certain period. We use the indicator variable *Performance Incentive* to identify whether portfolio managers' compensation is tied to the investment performance of the fund. The variable *Performance Incentive* equals to one if the bonus is based on the fund performance and zero otherwise.

Evaluation Period: In the case of performance based bonus, a fund is required to state the length of the period over which performance is measured. In many cases, the funds report multiple

[10] Except for *Fixed Salary Only*, the variables describing the manager's compensation are not mutually exclusive. This means that performance based and AUM based incentives may coexist for the same manager.

evaluation windows. For example, for Vanguard Dividend Growth Fund, the portfolio manager's investment performance is evaluated "over one- and three-year periods, with an emphasis on three-year results". We construct four *Evaluation Period* methods: *Evaluation Period Mean* which takes the simple average of all the evaluation windows; *Evaluation Period Most* which only takes the evaluation window whose importance has been emphasized in the compensation description; *Evaluation Period Min* which takes the shortest evaluation window and *Evaluation Period Max* which takes the longest evaluation window. Regarding the example of Vanguard Dividend Growth Fund, the *Evaluation Period Mean* is two-year; the *Evaluation Period Most* is three-year; the *Evaluation Period Min* is one-year and the *Evaluation Period Max* is three-year.

AUM Incentive and Advisor Profit Incentive: For those portfolio managers that have both a fixed salary and a variable bonus, the SEC also requires them to disclose whether the bonus is based on the value of assets held in the fund's portfolio (AUM) and the advisor's profits. We construct indicator variables *AUM Incentive* (*Adviser Profit Incentive*) that equals to one if managerial compensation is tied to the portfolio's assets (adviser profits) and zero otherwise.

Deferred Compensation: For the purpose of retention and tax benefits, investment advisors can impose some vesting period before a bonus is actually paid to the portfolio managers. Sometimes, investment advisors add a hurdle condition that must be met in the future before the payment becomes effective. A dummy variable, *Deferred Compensation*, is set to one if we observe the existence of a deferred compensation plan in the compensation description and zero otherwise.

Stock/Option: At times, investment advisors reward portfolio managers with restricted stocks and options. The purpose of this practice is two-fold. On one hand, it helps to align the portfolio managers' interests with the investment advisors'; on the other, since most of the stocks and options vest over time, it also creates effective "handcuffs" to discourage managerial departures. A dummy variable, *Stock/Option*, is set to one if stocks/options are rewarded to the portfolio managers and zero

otherwise.[11]

B.2. Advisor Characteristics

Adviser Size: To proxy for the advisor size, we use three variables obtained from Form ADV. The first variable *Advisor Size* measures the assets under management of the investment advisor.[12] The second variable *#Employees* is the number of employees that perform investment advisory function in the investment advisor firm. Naturally, we expect these two variables to be positively correlated. We therefore consider a relative measure, namely *Accounts per Employee*, which measures the average number of accounts per employee who performs investment advisory service.

Clientele Heterogeneity: While some investment advisors may specialize in serving one single type of client, mutual funds, for instance; others may prefer diversified clientele types. In the Form ADV, the investment advisors need to specify their clientele types into following ten categories: individuals, high net worth individuals, banks, investment companies (including mutual funds), pension plans, other pooled investment vehicles (like hedge funds), charitable organizations, corporations, government entities and others (including, for example, family officers, private foundations, universities and labor unions). To capture the heterogeneity in the advisor's clientele composition, we construct the Herfindahl-Hirschman Index (HHI) style variable *Clientele Heterogeneity*. It is defined as the sum of squares of the percentage of clients the advisor has in each particular clientele type.[13] *Clientele Heterogeneity* is equal to one when there is only a single clientele type and it is bounded below by 0. The variable decreases as the number of client types

[11] Based on the description in the SAI, these stocks and options are usually on the investment advisor or its parent company, rather than on the mutual funds.

[12] The SEC states that the assets under management comprise those securities portfolios for which the advisory firm provides "continuous and regular supervisory or management services." If the advisory firm manages a portion of the client's assets, only the proportion effectively managed by the advisory should be included. An account is a securities portfolio if at least 50% of the total value of the account consists of securities.

[13] A More accurate measure of clientele heterogeneity can be defined as the sum of squares of the percentage of assets under management in each clientele type. The SEC requires advisors to report this information in their ADV filings starting November 2011. Unfortunately, this information is not available for 2009.

increases and the proportion are more evenly distributed across types.

#Affiliations: The SEC requires the investment advisors, in the Form ADV, to disclose the number of affiliations or activities in the financial industry in which any person, an individual or a company, "under common control" with the advisor may be involved.[14] There are eleven affiliations enumerated in Form ADV: broker-dealer or dealer for municipal or government securities, investment company (including mutual funds), other investment advisor, futures or commodities trader, banking or thrift institution, accountant or accounting firm, lawyer or law firm, insurance company, pension consultant, real estate broker or dealer, sponsor or syndicator of limited partnerships. *#Affiliations* is the number of financial affiliations of the advisor.

As control variables, in most of our empirical analysis, we include variables *Advisor Age* and *Organization Types*. The *Advisor Age* is calculated based on the first date that investment advisors register with the SEC, which is referred to as Effective Date in Form ADV. In form ADV, investment advisors also report their *Organization Types* into the following six categories: corporation, sole proprietorship, limited liability partnership (LLP), partnership, limited liability company (LLC), and others. We create dummies variables for each of the organization forms and include them in our empirical analysis to control for potential fixed effects.

B.3. Manager Characteristics

Stakeholder: This is an indicator variable that equals to one if the manager is an important stakeholder of the firm and zero otherwise. We obtain this information from the manager description in SAI. We identify the manager as a *stakeholder* when she is the founder, owner, partner, or

[14] According to the SEC, "control means the power, directly or indirectly, to direct the management or policies of a person, whether through ownership of securities, by contract, or otherwise." This includes: the advisor's officers, partners, or directors exercising executive responsibility; any person who, directly or indirectly, has the right to vote 25 percent or more of a class of the corporation's voting securities; any person who has the right to receive after dissolution of a partnership or limited liability company, or has contributed 25 percent or more of the capital; a trustee or a management agent of a trust.

blockholder of the investment advisor.

Managerial Ownership: The SEC requires mutual funds to disclose in the SAI their portfolio managers' beneficiary ownership in the fund. To capture manager's personal investment in the fund, we construct a dummy variable that equals to one if the beneficiary ownership is reported to be positive and zero otherwise.

Managerial Tenure: The information on managerial tenure is obtained from Morningstar Direct Mutual Fund database. For a fund that has multiple managers, we compute the *Managerial Tenure* as the average of all the managers' tenures.

Team Management: This is an indicator variable that set to one if the fund is managed by a team of portfolio managers and zero if the fund is managed by a single manager.

B.4. Fund Characteristics

Following Chen, Hong and Kubik (2011), a fund is categorized as being subadvised if the investment advisors are not affiliated with mutual fund family.[15] We begin categorizing a fund as being subadvised if the family name does not match the advisor name (both provided by Morningstar Direct Mutual Fund database). Because fund families and investment advisors with different names may still be affiliated, we check SAI to see whether any affiliation exist between the two. Therefore, the dummy variable *Subadvised* is set to one only if there is absolutely no affiliation between the mutual fund family and the investment advisors otherwise we will set it to zero.

Following Sirri and Tufano (1998), *Net Flows* is defined as the net growth in fund assets beyond reinvested dividends. It reflects the percentage growth of a fund in excess of the growth that would have occurred had no new funds flowed in and had all dividends been reinvested. *Fund Size* is the sum of assets under management across all share classes of a fund. *Fund Age* is the age of the

[15] The SEC defines affiliated as having either ownership of or some controlling interest in the other party.

oldest share class in the fund. *Expense* and *Turnover* is calculated as the average expense and turnover ratios across all the share classes of a fund.

C. Sample Overview

Our final sample consists of 4,112 unique funds with 669 unique investment advisors and 10,057 manager-fund-adviser observations. Panel A of Table I reports the summary statistics for the main variables we use to describe the compensation contract of the portfolio managers. We find that overall, the compensation structure is subjective and discretionary rather than objective and formula based. This is consistent with the survey evidence in Farnsworth and Taylor (2006). Fixed salary is rarely observed in our sample. Only in 1.7% of the sample funds, the investment advisors pay a fixed amount to portfolio managers. In the majority of cases, portfolio manager compensation consists of both a fixed base salary and a variable component namely, a bonus. The weights of the base salary and the bonus in the total compensation, however, are generally not publicly available since the SEC does not require this information to be disclosed. Based on the 1,087 funds that release some information on the ratio of the bonus to the salary, we find a large variation: the bonus can be as large as three times of the base salary and can be as small as only one tenth of the base salary.

For those portfolio managers that have both a fixed salary and a variable bonus, the SEC requires them to disclose whether the bonus is based on the fund's pre- or after-tax performance over a certain period and whether the bonus is based on the value of assets held in the fund's portfolio. We find that in about three quarters of our sample funds, portfolio manager compensation is tied to the investment performance of the fund. The high frequency of performance incentives in portfolio manager compensation contract is in sharp contrast to the low frequency of performance based incentives in the advisory contract between fund shareholders and the investment advisor. As for the

length of the period over which performance is measured, we observe that the average evaluation window is about three years. The variation in the evaluating periods is significant, with the longest evaluation window being 10-year and the shortest being one-quarter.

Contrary to the pattern in advisory contracts, portfolio manager compensation does not strongly tie to the assets under management of a fund. Only in 21.4% of the funds, it is explicitly mentioned that the investment advisor considers the assets under management of the fund when deciding portfolio manager compensation. This is a surprising finding given the fact that the asset-based incentive is widely used in the advisory contract between fund shareholders and the investment advisor (e.g., Deli (2002)); we do not find that the same pattern in portfolio manager's compensation contract. Moreover, we find that in 41.8% of the funds of our sample, portfolio manager compensation is explicitly stated to be linked to the profitability of the investment advisor. Arguably, for those portfolio managers, their compensation is indirectly tied to the assets under management of the fund since the profitability of the advisor depends on the advisory fee rate and the assets under management.

About one quarter of portfolio managers received deferred compensation. The vesting period can range from one-year to five-year.[16] In some cases, investment advisors add a hurdle condition that must be met in the future before the payment becomes effective. In the rest of cases, advisors simply defer manager's compensation to a future date. Most investment advisors believe that deferred compensation plans create incentives to retain key talent. Investment advisors also reward portfolio managers with restricted stocks and options that vested over time. In about half of our sample funds, investment advisors grant stocks and/or options to portfolio managers. The vesting period ranges from one-year to five-year. One interesting pattern that we observe from our sample is that since many investment advisors are subsidiaries of their parent companies, it is the parent

[16] We do not obverse the vesting period for all deferred compensation plans as the SEC does not require mutual fund to disclosure. The same point applies to the stock and option grants in portfolio manager compensation.

company's stocks and options that are granted to the managers. This pattern suggests that in the mutual fund industry, at least for those investment advisors that are subsidiaries of a financial conglomerate, stocks and options are used more as a retention mechanism than an incentive mechanism.

Panel A of Table II reports the summary statistics on investment advisor, portfolio manager and fund characteristics. A typical investment advisor has $40,127 million assets under management, 150 employees who perform investment advisory functions and about 6 accounts per employee. The average clientele heterogeneity, a HHI style measure, is 0.33, suggesting the clientele for a typical investment advisor is not greatly heterogeneous. The investment advisors on average are associated with 5 other financial industry affiliations. The average fund is 278 months (23-year) old. The majority of our sample investment advisors are corporations (51%) and Limited Liability Companies (33%), followed by Partnerships (6%) and others.

About 15% of portfolio managers in our sample are stakeholders of the investment advisor and in 50% of the sample funds, they have positive managerial ownership. The average manager tenure is 62.6 months (5.2 years). About 65.7% of the funds in our sample are team-managed. Similar to the findings in Chen, Hong and Kubik (2011), about 20.7% sample funds are Subadvised by an unaffiliated subadvisor. A typical fund in our sample has $675.3 million assets under management and is 151 months (about 13 years) old.

IV. Cross-Sectional Determinants of Portfolio Manager Compensation

A. Empirical Methodology

In our empirical tests, we employ the logistic model to investigate the cross-sectional determinants of the compensation structure of portfolio managers. The model specification is as

follows:

$$y^*_{i,j} = \beta AdvisorChar_j + \gamma MgrChar_{i,j} + \lambda FundChar_{i,j} + \alpha_{org} + \delta_{style} + \varepsilon_{i,j}$$

$$y_{i,j} = 1\,[y^*_{i,j} > 0] \qquad (3)$$

where *i* indexes mutual funds; *j* indexes investment advisors. $y_{i,j}$ is a dummy variable equal to one if the portfolio managers that manage fund *i* have certain features (i.e. performance based incentives) in their compensation from advisor *j*. $AdvisorChar_j$ is a vector of advisor characteristics, including the total assets under management, the number of employees who perform investment advisory functions, the advisor age, the number of accounts per employee, clientele heterogeneity, and the number of affiliations in the financial industry. $MgrChar_{i,j}$ is a vector of portfolio manager characteristics at fund level, including the average manager tenure, team management, portfolio manager ownership in the fund, and a dummy variable for portfolio manager to be the stakeholder (owner, founder, blockholder, or partner) of the advisor. $FundChar_{i,j}$ is a vector of fund characteristics, including a dummy for funds managed by unaffiliated subadvisors, fund size, age, expense ratio, turnover ratio, and fund flow. α_{org} and δ_{style} are dummy variables for the organization types of the advisors (e.g., partnership, limited liability company, corporation etc.) and fund categories (e.g., equity, bond, global funds etc.). Since the compensation structures of funds from the same investment advisor tend to be correlated, we adjust standard errors accounting for heteroskedasticity and clustering at the advisor level.

In addition to the above specification, we further employ the following OLS specification to examine the cross-sectional determinants of the evaluation period in compensation contracts, conditional on performance based incentives:

$$EvPeriod_{i,j} = \beta AdvisorChar_j + \gamma MgrChar_{i,j} + \lambda FundChar_{i,j} + \alpha_{org} + \delta_{style} + \varepsilon_{i,j} \quad (4)$$

where *i* indexes mutual funds; *j* indexes investment advisors. $EvPeriod_{i,j}$ is the evaluation period in

the compensation contract by advisor *j* to portfolio managers that manage fund *i*. We employ two measures for evaluation period: the average evaluation period (*Evaluation Period Mean*) and the evaluation period with highest weights (*Evaluation Period Most*). We include the same set of independent variables as in Model (3) on advisor, manager, and fund characteristics. Again, we adjust standard errors accounting for heteroskedasticity and clustering at the advisor level.

An alternative empirical specification is to estimate Models (3) and (4) at the advisory-fund-manager level. Our results in the later sections are robust to this alternative approach. The reason is that for over 98% of our sample funds, we do not obverse any variation in the compensation structures of portfolio managers of within the same fund.

B. Performance based Incentives

In this section, we examine the cross-sectional determinants of fund performance based incentive in the portfolio manager compensation provided by the investment advisor.

We first perform a univariate comparison to examine the differences in characteristics of advisor, portfolio managers, and funds associated to performance based contract. Panel A of Table III reports the summary statistics of the variables at fund level separately for performance based and non performance based contracts. The results show several patterns consistent with an optimal contracting equilibrium as we hypothesized. First, investment advisors with large assets under management and more advisory employee tend to use performance based incentive more frequently. Second, investment advisors with more client heterogeneity and more affiliations in the financial industry are more likely to use performance based incentive. Third, portfolio managers who are the stakeholder of the advisor and/or have beneficial ownership in the fund use less performance based incentives, while those with lower tenure in the fund use more performance based incentives. Fourth, older and larger funds tend to use more performance based incentive while funds managed by

an unaffiliated subadvisor tend to use less performance incentive. The differences in the two subsamples along the dimensions mentioned above are significant at the 5% level or better, after accounting heteroskedasticity and clustering at the advisor level.

Next, we investigate the cross-sectional determinants of performance based incentives by estimating Logistic Model (3). The dependent variable is a dummy variable equal to one if there is incentive based on fund performance in the compensation contract of portfolio managers. The unconditional mean of performance based incentives in the sample funds is 75.2%. Table III reports the logistic regression estimations and the marginal effects of the independent variables (at the sample averages). Generally, our results show that investment advisors optimally provide explicit performance based incentives to portfolio managers in their compensation contract.

[Insert Table III here]

We next discuss the results related to each of our hypotheses as follows. First, we find that larger advisors use performance based incentives more frequently. Our evidence is consistent with Hypothesis H1 that large advisors face higher monitoring costs and thus use more explicit performance based incentives. As shown in column (3a), the coefficient on *Log*(*Advisor Size)* is 0.310 (t-stat.= 2.91), significant at the 1% level, and the one on *Log(#Employees)* is 0.356 (t-stat.= 2.36), significant at the 5% level. These effects are also economically meaningful. As shown in column (3b), one-standard deviation increases in *Log*(*Advisor Size)* and *Log(#Employees)* are associated with increases in the probability of performance based incentives by 9.9% (=2.35*4.21%) and 6.9% (=1.43*4.83%) respectively.[17]

Second, we find some evidence that the use of performance based incentives increases in task diversity as measured by client heterogeneity (*Clientele Dispersion*) and the number of financial industry affiliations (*#Affiliations*). The results support Hypothesis H2 that clientele heterogeneity

[17] The economic effect of a variable of interest calculated as the std. of the variable times the corresponding marginal effect. The economic significance of other variables in the later part is calculated similarly.

increases monitoring costs and thus the need for explicit performance based incentives and Hypothesis H3 that potential conflicts of interests between portfolio management and other affiliated activities of the advisor require more explicit performance based incentives. As shown in column (2a), the coefficient on *Clientele Dispersion* is negative and significant and the one on *#Affiliations* are positive and significant. In terms of economic significance, based on results in column (2b), a one-standard deviation increase in *#Affiliations* is associated with an increase in probability of performance based incentives by 9.7%, while a one-standard deviation drop in *Clientele Dispersion* is associated with an increase in the probability by 4.1%.

Third, our results show that team-managed funds tend to receive performance based incentives more frequently. The coefficient on *Team Management* is 0.332 (t-stat.=1.69), significant at the 10% level, as in column (3a). In terms of economic effects, the probability of performance based incentives will increase by 4.7% for a switch from a single-manager to a team-managed fund. This result is consistent with Hypothesis 4A: portfolio management teams are less disciplined by career concerns, compared to single manager funds, thus they need more explicit performance based incentives,

Fourth, we find that portfolio managers with shorter tenure are more likely to receive performance based incentives. The coefficient on *Log(Manager Tenure)* is -0.355 (t-stat. =-3.37), significant at the 1% level. It implies that one-standard deviation drop in *Log(Manager Tenure)* is associated with an increase in the probability of performance based incentives by 4.8%. This piece of evidence rejects Hypothesis 5 that longer tenure results in more performance based contracts as predicted by Heinkel and Stoughton (1994). Our results show the opposite: shorter-tenure managers are more likely to receive performance adjusted fees than longer-tenure managers. This rejection suggests that the shift in bargaining power from the advisor to the retained manager assumed by the model is not taking place in practice. On the contrary, the negative relation between manager's tenure

and the use of performance based contracts would be consistent with advisors keeping the bargaining power and using performance based fees to screen out more able managers as early as possible (i.e., among shorter-tenure fund managers). Once the manager's ability is revealed by the contract choice, retained (i.e. longer-tenure) managers would be disciplined by the threat of removal in a competitive market for managerial talent: performance-based contacts become then less relevant as the manager's tenure increases. .

Fifth, we find that portfolio managers who are the stakeholders of the advisors receive less performance based incentives, supporting Hypothesis H6 that a lower level of separation between ownership and control reduces the need for explicit performance based incentives. The coefficient on *Stakeholder* is -1.397 (t-stat.=-3.78) in column (3a), significant at the 1% level. The economic magnitude of *Stakeholder*'s effect is also significant: the probability of performance based incentives will decrease by 25.2% if portfolio managers change to be the stakeholder of the advisors.

Sixth, we find a positive but insignificant coefficient on the portfolio manager ownership variable in the multivariate regressions, which does not seem to support Hypothesis H7A that advisors designs it as part of the optimal contract.[18] Further investigation in Section IV.C shows that portfolio manager ownership is associated with longer evaluation period in the compensation contract of portfolio managers (against the prediction of Hypothesis H7B). Taken together, these results are consistent with the view that fund ownership mostly reflects the personal portfolio decision of portfolio managers, rather than being part of the compensation contract designed by the investment advisors (e.g., Khorana, Servaes, and Wedge (2007), Ma and Tang (2012)).

Lastly, we find that portfolio managers of funds with unaffiliated subadvisors are associated with explicit performance based incentives being used less frequently, even after including many advisor and fund characteristics in the regressions. Recent studies by Cashman and Deli (2009) and

[18] Jensen and Murphy (1990) document a similarly puzzling evidence of no correlation between CEO's stock ownership in the firm and the performance adjustment in her compensation.

Chen, Hong and Kubik (20012)) suggest that subadvising the fund's management to an independent advisory firm entails risks and costs which are only justified if the information added by the subadvisor is specific enough (either in terms of geography or asset characteristics). Our evidence seems to be consistent with the idea that subadvisors have developed some specialization in managing certain types of funds. Hence, they are probably smaller in size and more concentrated in terms of clientele than other advisors. According to our hypotheses this should reduce their monitoring costs explaining this way why they use less often explicit performance based incentives to compensate their managers.

To summarize, we find systematic patterns in advisor and portfolio manager characteristics that are mostly consistent with an optimal contracting equilibrium between the advisor and the manager. In particular, explicit performance based incentives are more prominent in scenarios where direct monitoring by the advisor is more costly and where alternative, implicit incentives are less effective. We provide new evidence in the U.S. asset management industry (i.e., mutual fund industry) consistent with optimal contracting theory (e.g., Harris and Raviv (1979), Holmstrom (1979, 1989, 1999), Grossman and Hart (1983)). Moreover, our evidence resolves the puzzle that Farnsworth and Taylor (2006) documented using survey data that investment performance of the portfolio managers are not used in the compensation contract in an optimal way as theory would suggest.

C. Evaluation Period of Performance based Incentives

In this section, we further examine the cross-sectional determinants of the evaluation period in portfolio manager compensation contracts, conditional on performance based incentives. Specifically, we estimate the OLS specification as in Model (4) to investigate whether the evaluation period in the compensation contract increases in monitoring costs as theory suggests. In our sample,

average evaluation period and evaluation period with the highest weight of a typical fund are both three years.

Table IV presents the regression results. We use *Evaluation Period Mean* in columns (1)-(3) and *Evaluation Period Most* in columns (4)-(6) as the dependent variables. Our results suggest that the evaluation period in the compensation contract tend to increase in monitoring costs. First, large advisors tend to use longer evaluation period in portfolio manager compensation contract, which, indirectly, provides support to Hypothesis H1. The coefficients on *Log(Advisor Size)* are 0.129 (t-stat.=1.92) in column (3) and 0.222 (t-stat.=2.37) in column (4). The effect of advisor size on evaluation period is also economically significant. Based on the results in columns (3) and (6), a one-standard deviation increase in *Log(Advisor Size)* is associated an increase in *Evaluation Period Mean* by 0.30 standard deviations and an increase in *Evaluation Period Most* by 0.42 standard deviation, respectively.

[Insert Table IV here]

Second, we find that portfolio managers who are stakeholders of the advisors are associated with shorter evaluation period, which is consistent with Hypothesis H6. The coefficients on *Stakeholder* are negative and significant at the 5% or better in all six columns of Table IV. The effect of *Stakeholder* on evaluation period is also economically large. For instance, based results in columns (3) and (6), a change from non-stakeholders to stakeholders of the investment advisor is associated with a drop in average evaluation period by 1.15 years, or 0.92 standard deviations, and evaluation period with the highest weight by 0.77 years, 0.64 standard deviations, respectively.

Lastly, we find strong evidence that portfolio managers with beneficial ownership in the funds that they manage tend to have longer evaluation period. The coefficients on *Fund Ownership* are positive and significant at the 1% level in all six specifications in Table IV. In terms of economic magnitude, a switch from a fund without portfolio manager ownership to otherwise is associated with

a drop in average evaluation period by 0.31 years, or 0.30 standard deviations, and evaluation period with the highest weight by 0.42 years, 0.34 standard deviations, respectively. Thus, our results reject Hypothesis H7B which postulates that if fund ownership and explicit performance incentives are complements and jointly decided by investment advisors, higher ownership should result into a shorter evaluation period. In contrast, the results suggest that fund ownership tends to reflect the personal portfolio decision of portfolio managers, consistent with recent studies by Khorana, Servaes, and Wedge (2007) and Ma and Tang (2012).

D. Fixed Salary Only Compensation

Out of 4,112 funds in our sample, we observe portfolio managers of 68 funds, or 1.7%, have a fixed salary only compensation contract. In this section, we investigate the cross-sectional determinants of this type of compensation contract. We estimated the logistic regression Model (3) with the dummy for fixed salary only contract as the dependent variable.

Table V reports the estimation results. First, we find that advisors with lower number of employees performing investment advisory functions, more concentrated clientele, and lower number of financial industry affiliations and activities tend to use more fixed salary only contracts. For instance, the coefficient on *Log(#Employees)* in column (3a) is -0.654 (t-stat.=-2.00), significant at the 5% level. In terms of economic magnitude, as shown in column (3b), a one-standard deviation decrease in *Log(#Employees)* is associated with an increase in the probability of fixed salary only contract by 0.25% (over one seventh of the unconditional sample mean 1.7%). These results provide further support to Hypotheses H1, H2, and H3.

[Insert Table V here]

Second, portfolio managers with longer tenure are more likely to have fixed salary only contracts. The coefficient on *Log(Manager Tenure)* is -0.665 (t-stat.=-2.68), significant at the 1%

level. Economically, as shown in column (3b), a one-standard deviation increase in *Log(Manager Tenure)* is associated with an increase in the probability of fixed salary only contracts by 0.18% (about one tenth of the unconditional sample mean 1.7%). This evidence seems to support Hypothesis H5 that longer manager tenure reduces the need for providing incentives (e.g., Heinkel and Stoughton (1994)).

Second, portfolio managers with longer tenure are more likely to have fixed salary only contracts. The coefficient on *Log(Manager Tenure)* is -0.665 (t-stat.=-2.68), significant at the 1% level. Economically, as shown in column (3b), a one-standard deviation increase in *Log(Manager Tenure)* is associated with an increase in the probability of fixed salary only contracts by 0.18% (about one tenth of the unconditional sample mean 1.7%). This evidence rejects Hypothesis H5 and is consistent with the explanation offered in the previous section. In a competitive market for managerial talent, fixed-salary-only type of compensation is more frequently used for portfolio managers with longer tenure. The use of any bonus, in particular performance based bonus, becomes less relevant after the manager's ability has been identified for short-tenure managers.

E. AUM based Incentives

In this section, we attempt to understand the cross-sectional determinants of AUM based incentives in portfolio manager compensation contracts. To test our idea, we estimated the logistic regression Model (3) with the dummy for AUM based incentives as the dependent variable.

Table VI present our estimation results. We find that portfolio managers with shorter tenure are less likely to use AUM based incentives. The coefficient on *Log(Manager Tenure)* in column (3a) is -0.170 (t-stat.=-2.20), significant at the 5% level. In terms of economic significance, a one-standard deviation increase in *Log(Manager Tenure)* is associated with an increase in the probability of AUM incentives by 2.6%. These results confirm that, contrary to the prediction of hypothesis H5,

in a competitive market of portfolio managers, not only performance adjusted incentives but also incentives based on AUM become redundant as portfolio manager tenure in the fund increases.

[Insert Table VI here]

Interestingly, we also find that portfolio managers of funds with higher net fund flow are less likely to have AUM incentives. The effects are both statistically and economically significant. For instance, the coefficient on *Fund Flow* in column (3a) is -0.031 (t-stat.=-2.26), significant at the 5% level. In terms of economic magnitude, a one-standard deviation increase in *Fund Flow* is associated with a drop in the probability of AUM incentives by 3.9%.

F. Deferred Compensation and Stock/Option

As we described in Section III, we observe that 28.8% of the funs in our sample have some deferred compensation and 47.3% of them have stock or option compensation. In this section, we examine the cross-sectional determinants of AUM based incentives in portfolio manager compensation contracts. As discussed in Section III.C, we argue that these two mechanisms are mostly used for retention purposes for the following reasons. One reason is that stocks and/or option provided to portfolio manager are usually as of the parent company of the investment advisor, which can serve well as a retention mechanism rather than incentive mechanism. To test our hypothesis, we estimated the logistic regression Model (3) with the dummy for deferred compensation or stock/option compensation as the dependent variable.

Panel A and B of Table VII present the estimation results for deferred compensation and stock/option compensation respectively. We find the following patterns in our results. First, consistently with the predictions of hypothesis H6, portfolio managers who are stakeholders of investment advisors are less like to have deferred compensation and stock/option compensation. The coefficients on *Stakeholder* in all specifications of both panels are negative and significant at the 5%

or better. In terms of the economic magnitude, a change of portfolio managers from non-stakeholders to stakeholders of the investment advisor is associated with a drop in the probability of deferred compensation by 21.0% as in column (3b) of Panel A and a drop in the probability of stock/option compensation by 21.0% as in column (3b) of Panel B.

[Insert Table VII here]

Second, large advisors tend to use stock/option compensation more frequently. For instance, as shown in column (3a) of Panel B, the coefficient on *Log(Advisor Size)* is 0.313 (t-stat.= 2.15), significant at the 5% level, and the one on *Log(#Employees)* is 0.357 (t-stat.=1.84), significant at the 10% level. These effects are also economically large. Based on results in column (3b) of Panel B, one-standard deviation increases in *Log(Advisor Size)* and *Log(#Employees)* are associated with an increase in the probability of stock/option compensation by 23.0% and 12.2%, respectively.

V. Concluding Remarks

Mandated by the Investment Company Act of 1940, mutual funds have a distinctive organization structure. A typical mutual fund consists of shareholders and a board of directors, who delegate the portfolio management to an investment advisor through an advisory contract. Portfolio managers, hired and compensated by the investment advisor, make the investment decisions for the fund. This paper examines the compensation contract between the investment advisor and the portfolio manager, which has been rarely studied in the literature. We hand-collect the information on portfolio manager compensation structures from Statements of Additional Information of over 4,000 mutual funds in the year of 2009. Using this unique dataset, we provide new evidence on the compensation structure of portfolio managers in the U.S. mutual fund industry.

Our paper complements the extant literature on the advisory contracts between fund shareholders and the investment advisor. In particular, the contract between the investment advisor

and the portfolio manager is, contrary to the fund-advisor advisory contract, largely unregulated, which makes it a better test-field for portfolio delegation theory and optimal contract theory in general. Our results uncover systematic patterns in the portfolio manager compensation that are broadly consistent with optimal contracting theory.

In particular, performance based incentives are extensively used to compensate portfolio managers, much more than the frequency observed in advisory contracts between the fund shareholders and the investment advisor. Moreover, their design (including, for instance, the evaluation period) is consistent with the theory. Performance based incentives align the interests of the principal and the agent, while bearing the cost of distorting the efficiency of the risk sharing between the two. Consistent with this cost-benefit trade-off, we find more explicit performance based incentives in scenarios where an investment advisor' direct monitoring is more costly and where alternative, implicit incentives are less effective. Our study adds to the debate of unintended consequences of regulation on contracting in the mutual fund industry aimed at protecting investors' welfare.

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Table I Summary Statistics of Portfolio Manager Compensation Structures

This table reports the summary statistics (in Panel A) and the correlation matrix (in Panel B) of the main variables we use to describe the compensation contract of the portfolio managers. Information about portfolio manager compensation structure is hand-collected from fund Statement of Additional Information (SAI) available in the SEC EDGAR database. *Fixed Salary Only* is an indicator variable that equals to one if the fund pays the portfolio manager only a fixed base salary and zero otherwise. *Bonus/Salary Ratio>=1* is a dummy variable that equals to one if the fund disclose that their bonus outweighs the base salary in manager's compensation contract and zero otherwise. *Performance Incentive* is a dummy variable that set to be one if the bonus is tied to the investment performance of the fund and zero otherwise. *Evaluation Period* is the length of the period over which performance is measured. When funds report multiple evaluation windows, *Evaluation Period Mean* takes the simple average of all the evaluation windows; *Evaluation Period Most* takes the evaluation window whose important has been explicitly emphasized in the compensation description; *Evaluation Period Min* takes the shortest evaluation window and *Evaluation Period Max* takes the longest evaluation window. *AUM (Assets under Management) Incentive* is an indicator variable that equals to one if portfolio manager's compensation is tied to the portfolio's assets and zero otherwise. *Advisor Profits Incentive* is a dummy variable that set to be one if the portfolio manager's compensation depends on the advisor profits and zero otherwise. *Deferred Compensation* is a dummy variable that set to be one if we observe the existence of a deferred compensation plan in the compensation description and zero otherwise. *Stock/Option* is an indicator variable is set to be one if the stocks/options are rewarded to be portfolio managers and zero otherwise. Our sample consists of 4,112 funds in year 2009.

Panel A. Summary Statistics

Variables	***Obs.***	***Mean***	***Median***	***Std. Dev.***	***Min***	***Max***
Fixed Salary Only	4,112	0.017	0	0.128	0	1
Bonus/Salary Ratio>=1		25.90%				
Performance Incentive	4,112	0.752	1	0.432	0	1
Evaluation Period Mean	2,525	2.71	3.00	1.01	0.25	7.50
Evaluation Period Most	2,525	2.97	3.00	1.24	0.25	7.50
Evaluation Period Min	2,525	1.29	1.00	0.78	0.25	5.00
Evaluation Period Max	2,508	4.26	5.00	2.01	0.25	10.00
AUM Incentive	4,112	0.214	0	0.410	0	1
Advisor Profit Incentive	4,112	0.418	0	0.493	0	1
Deferred Compensation	4,112	0.288	0	0.453	0	1
Stock/Option	4,112	0.473	0	0.499	0	1

Panel B. Correlation Matrix

	Fixed Salary Only	Performance Incentive	Evaluation Period Mean	Evaluation Period Most	Evaluation Period Min	Evaluation Period Max	AUM Incentive	Advisor Profit Incentive	Deferred Compensation	Stock/ Option
Fixed Salary Only	1.000									
Performance Incentive	-0.226	1.000								
	0.000									
Evaluation Period Mean	-	0.046	1.000							
		0.020								
Evaluation Period Most	-	0.045	0.899	1.000						
		0.025	0.000							
Evaluation Period Min	-	0.024	0.446	0.288	1.000					
		0.231	0.000	0.000						
Evaluation Period Max	-	0.033	0.904	0.836	0.044	1.000				
		0.097	0.000	0.000	0.029					
AUM Incentive	-0.049	0.081	-0.092	-0.060	-0.050	-0.072	1.000			
	0.002	0.000	0.000	0.003	0.012	0.000				
Advisor Profit Incentive	-0.106	0.062	0.015	0.124	0.018	-0.043	0.047	1.000		
	0.000	0.000	0.466	0.000	0.377	0.030	0.002			
Deferred Compensation	-0.078	0.170	-0.088	-0.061	0.032	-0.137	0.157	-0.042	1.000	
	0.000	0.000	0.000	0.002	0.109	0.000	0.000	0.007		
Stock/Option	-0.069	0.343	0.247	0.200	0.043	0.250	0.072	0.064	-0.078	1.000
	0.000	0.000	0.000	0.000	0.029	0.000	0.000	0.000	0.000	

Table II Summary Statistics of Investment Advisor and Portfolio Manager Characteristics

This table reports the summary statistics (in Panel A) and the correlation matrix (in Panel B) of the advisor, portfolio manager, and fund-level characteristics. *Advisor Size* measures the assets under the investment advisor's management. *#Employees* is the number of employees that perform investment services. *Accounts per Employee* measures the average accounts managed by a single employee. *Clientele Heterogeneity* is defined as the sum of squares of the percentage of clients the advisor has in each particular clientele type. *#Affiliations* is the number of other business activities conducted by the investment advisor. *Advisor Age* is calculated based on the first date that investment advisors register with the SEC. *Stakeholder* is an indicator variable that equals to one if the manager is an important stakeholder of the firm and zero otherwise. *Managerial ownership* is an indicator variable that equals to one if the portfolio managers invest their personal investment in the fund and zero otherwise. *Manager Tenure* is the average tenure portfolio managers have with the fund. *Team Management* is a dummy variable that equals to one if fund is managed by multiple managers and zero otherwise. *Subadvised* is a dummy variable that equals to one if the investment advisors are not affiliated with mutual fund families and zero otherwise. *Net Flows* is defined as the net growth in the fund assets beyond reinvested dividends. *Fund Size* is the sum of assets under management across all share classes of a fund. *Fund Age* is the age of the oldest share class in the fund. *Expense* and *Turnover* is calculated as the average expense and turnover ratios across all the share classes. Our sample consists of 4,112 funds in the year of 2009.

Panel A. Summary Statistics

Variables	***Obs.***	***Mean***	***Median***	***Std. Dev.***	***1st***	***99th***
Advisor Characteristics						
Advisor Size (Millions)	4,112	122,673.4	40,127.6	190,677.5	18.0	824,536.5
#Employees	4,112	126.2	150.0	150.5	3.0	750.0
Accounts per Employee	4,084	73.8	6.1	240.3	0.1	1727.1
Clientele Heterogeneity	4,112	0.333	0.195	0.268	0.124	1.000
#Affiliations	4,112	5.15	5.00	2.54	0.00	10.00
Advisor Age (Months)	4,112	277.7	253.0	167.1	18.0	829.0
Manager Characteristics						
Stakeholder	4,112	0.150	0.000	0.357	0.000	1.000
Managerial Ownership	4,112	0.500	0.000	0.500	0.000	1.000
Managerial Tenure (Months)	4,101	62.6	47.0	50.4	1.0	224.5
Team Management	4,100	0.657	1.000	0.475	0.000	1.000
Fund Characteristics						
Subadvised	4,112	0.207	0.000	0.405	0.000	1.000
Fund Size (Millions)	4,110	675.3	146.4	1626.8	0.7	10438.8
Fund Age (Months)	4,112	151.12	134.00	123.88	3.00	709.00
Expense (%)	4,112	1.15	1.15	0.53	0.00	2.64
Turnover (%)	4,112	100.23	56.00	142.73	2.17	919.00
Fund Flow (%)	4,112	1.96	0.11	8.38	-6.39	58.69

Panel B. Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Log(Advisor Size) (1)	1.000												
Log(#Employees) (2)	0.766	1.000											
	0.000												
Log(Accounts per Employee) (3)	0.031	-0.020	1.000										
	0.048	0.195											
Clientele Heterogeneity (4)	-0.239	-0.377	-0.379	1.000									
	0.000	0.000	0.000										
#Affiliations (5)	0.554	0.498	-0.019	-0.168	1.000								
	0.000	0.000	0.229	0.000									
Log(Advisor Age) (6)	0.391	0.348	0.004	-0.119	0.160	1.000							
	0.000	0.000	0.813	0.000	0.000								
Stakeholder (7)	-0.326	-0.277	0.021	-0.031	-0.359	-0.088	1.000						
	0.000	0.000	0.177	0.051	0.000	0.000							
Managerial Ownership (8)	-0.266	-0.201	0.016	-0.027	-0.257	-0.006	0.209	1.000					
	0.000	0.000	0.322	0.080	0.000	0.689	0.000						
Log(Managerial Tenure) (9)	0.005	-0.022	-0.056	0.046	-0.095	0.040	0.073	0.169	1.000				
	0.730	0.162	0.000	0.003	0.000	0.011	0.000	0.000					
Team Management (10)	0.010	0.014	0.043	-0.065	0.078	-0.044	0.022	0.049	-0.096	1.000			
	0.505	0.376	0.006	0.000	0.000	0.005	0.166	0.002	0.000				
Subadvised (11)	-0.124	-0.180	0.011	-0.015	-0.103	-0.178	0.124	-0.139	-0.083	0.055	1.000		
	0.000	0.000	0.491	0.342	0.000	0.000	0.000	0.000	0.000	0.000			
Log (Fund Size) (12)	0.444	0.324	-0.097	-0.054	0.148	0.204	-0.100	0.080	0.342	-0.018	-0.131	1.000	
	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.242	0.000		
Log (Fund Age) (13)	0.153	0.128	-0.052	-0.027	0.049	0.164	-0.051	0.075	0.525	-0.074	-0.097	0.505	1.000
	0.000	0.000	0.001	0.090	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	

Table III Fund Performance Incentives in Portfolio Manager Compensation

Panel A of this table reports the summary statistics of the sample funds with performance incentives in portfolio manage compensation contract and the ones without. The differences in each of the variables for the two subsamples are reported in the last two columns. The standard errors of the two sample t-tests are adjusted for clustering at the advisor level. Panel B of this table provides the results of logistic regressions modeling the likelihood of performance based incentives in portfolio manager compensation contract. Variables are defined as in Table II. Our sample consists of 4,112 funds in year 2009. We control for both the business organization and investment objective (style) fixed effects in the logistic regressions. Both the estimated coefficients and marginal effects are reported. The standard errors are clustered at the advisor level. Statistical significance of 1%, 5%, and 10% is indicated by ***, **, and * respectively.

Panel A. Univariate Comparison

	Performance Incentive=1				*Performance Incentive=0*					
Variables	Mean	Median	Std. Dev.	Obs.	Mean	Median	Std. Dev.	Obs.	Diff. in Mean	t-stat.
Advisor Characteristics										
Advisor Size (Millions)	153,797	61,917	207,084	3,094	28,079	4,725	68,136	1,018	125,718***	4.70
#Employees	152.7	150.0	159.7	3,094	45.6	30.0	73.0	1,018	107.1***	6.15
Accounts per Employee	76.9	6.1	248.8	3,070	64.3	6.1	212.5	1,014	12.6	0.53
Clientele Heterogeneity	0.308	0.195	0.247	3,094	0.407	0.240	0.312	1,018	-0.099***	-2.66
#Affiliations	5.71	6.00	2.33	3,094	3.46	3.00	2.39	1,018	2.25***	7.86
Advisor Age (Months)	296.3	259.0	172.7	3,094	221.4	210.0	134.0	1,018	74.9***	3.14
Manager Characteristics										
Stakeholder	0.073	0.000	0.261	3,094	0.382	0.000	0.486	1,018	-0.309***	-6.75
Managerial Ownership	0.470	0.000	0.499	3,094	0.590	1.000	0.492	1,018	-0.120***	-2.69
Managerial Tenure (Months)	59.7	46.0	48.0	3,091	71.3	54.5	56.1	1,010	-11.6***	-2.91
Team Management	0.672	1.000	0.469	3,090	0.609	1.000	0.488	1,010	0.064	1.39
Fund Characteristics										
Subadvised	0.157	0.000	0.364	3,094	0.358	0.000	0.480	1,018	-0.200***	-4.11
Fund Size (Millions)	761.1	187.8	1732.7	3,093	414.4	56.8	1214.6	1,017	346.7**	2.49
Fund Age (Months)	157.4	140.0	126.4	3,094	131.9	114.0	113.7	1,018	25.5***	3.24
Expense (%)	1.111	1.125	0.507	3,094	1.267	1.262	0.585	1,018	-0.156**	-2.30
Turnover (%)	95.65	57.00	126.68	3,094	114.15	51.28	182.44	1,018	-18.5	-0.99
Fund Flow (%)	1.71	0.08	7.79	3,094	2.75	0.23	9.91	1,018	-1.043	-1.13

Panel B. Logistic Regressions

	Performance Incentive		*Performance Incentive*		*Performance Incentive*	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
VARIABLES	*Coeff.*	*ME*	*Coeff.*	*ME*	*Coeff.*	*ME*
Advisor Characteristics						
Log(Advisor Size)	0.370***	5.10%			0.310***	4.21%
	(3.50)				(2.91)	
Log(#Employees)	0.374**	5.15%			0.356**	4.83%
	(2.56)				(2.36)	
Log(Accounts per Employee)	0.091	1.26%			0.097	1.32%
	(1.39)				(1.22)	
Clientele Heterogeneity			-1.046**	-15.10%	-0.066	-0.89%
			(-2.07)		(-0.09)	
#Affiliations			0.263***	3.80%	0.110	1.49%
			(3.91)		(1.60)	
Log(Advisor Age)	-0.018	-0.24%	0.406**	5.88%	0.004	0.05%
	(-0.07)		(2.13)		(0.02)	
Manager Characteristics						
Stakeholder	-1.499***	-27.80%	-1.571***	-30.30%	-1.397***	-25.20%
	(-4.23)		(-4.38)		(-3.78)	
Managerial Ownership	0.123	1.70%	-0.103	-1.50%	0.185	2.51%
	(0.69)		(-0.55)		(0.98)	
Log(Managerial Tenure)	-0.358***	-4.94%	-0.389***	-5.63%	-0.355***	-4.82%
	(-3.35)		(-3.91)		(-3.37)	
Team Management	0.366*	5.24%	0.323*	4.83%	0.332*	4.67%
	(1.90)		(1.69)		(1.69)	
Fund Characteristics						
Subadvised	-0.953***	-15.70%	-1.019***	-17.60%	-0.941***	-15.20%
	(-3.42)		(-3.57)		(-3.23)	
Log (Fund Size)	0.082	1.13%	0.217***	3.14%	0.090	1.22%
	(1.49)		(4.18)		(1.64)	
Log (Fund Age)	0.065	0.89%	0.048	0.70%	0.064	0.87%
	(0.60)		(0.47)		(0.60)	
Expense	0.680**	9.38%	0.279	4.03%	0.654**	8.88%
	(2.08)		(0.97)		(2.09)	
Turnover	-0.001	-0.01%	-0.000	0.00%	-0.001	-0.01%
	(-1.00)		(-0.45)		(-0.92)	
Fund Flow	-0.012	-0.16%	-0.006	-0.09%	-0.011	-0.15%
	(-1.42)		(-0.79)		(-1.34)	
Constant	-4.387***		-1.683		-4.360**	
	(-2.81)		(-1.14)		(-2.48)	
Organization Type Dummies	Yes		Yes		Yes	
Fund Style Dummies	Yes		Yes		Yes	
Observations	4,064		4,095		4,064	
Pseudo R-squared	0.324		0.273		0.329	

Table IV Evaluation Periods

This table reports our OLS estimation results of the evaluation periods as a function of advisor, portfolio manager, and fund-level characteristics. Variables are defined as in Table II. Our sample consists of 2,519 funds in year 2009. We control for both the business organization and investment objective (style) fixed effects in the logistic regression. The standard errors are clustered at the advisor level. Statistical significance of 1%, 5%, and 10% is indicated by ***, **, and * respectively.

	Evaluation Period Mean			Evaluation Period Most		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Advisor Characteristics						
Log(Advisor Size)	0.099		0.129*	0.218**		0.222**
	(1.51)		(1.92)	(2.48)		(2.37)
Log(#Employees)	0.001		-0.035	-0.040		-0.061
	(0.02)		(-0.36)	(-0.35)		(-0.54)
Log(Accounts per Employee)	0.035		0.005	0.005		-0.005
	(0.73)		(0.11)	(0.10)		(-0.09)
Clientele Heterogeneity		-0.725*	-0.662		-0.388	-0.261
		(-1.75)	(-1.25)		(-0.71)	(-0.41)
#Affiliations		-0.033	-0.058		0.041	-0.002
		(-1.00)	(-1.54)		(1.01)	(-0.03)
Log(Advisor Age)	0.302	0.371**	0.275	0.385**	0.542***	0.378**
	(1.57)	(2.16)	(1.56)	(2.08)	(3.00)	(2.13)
Manager Characteristics						
Stakeholder	-0.950***	-1.143***	-1.147***	-0.747***	-0.761**	-0.771**
	(-4.08)	(-4.48)	(-4.35)	(-2.65)	(-2.41)	(-2.49)
Managerial Ownership	0.349***	0.259**	0.306***	0.428***	0.342***	0.422***
	(3.05)	(2.37)	(2.94)	(3.23)	(2.63)	(3.41)
Log(Managerial Tenure)	-0.004	-0.003	-0.011	0.012	0.024	0.012
	(-0.14)	(-0.12)	(-0.41)	(0.33)	(0.65)	(0.35)
Team Management	0.240	0.228	0.258	0.293	0.233	0.289
	(1.33)	(1.31)	(1.45)	(1.59)	(1.26)	(1.55)
Fund Characteristics						
Subadvised	0.178	0.118	0.125	0.175	0.162	0.164
	(1.23)	(0.82)	(0.89)	(1.09)	(0.96)	(1.04)
Log (Fund Size)	0.031	0.074**	0.041	0.013	0.081	0.019
	(0.97)	(2.00)	(1.50)	(0.32)	(1.61)	(0.55)
Log (Fund Age)	-0.078*	-0.105**	-0.089**	-0.064	-0.100*	-0.068
	(-1.94)	(-2.59)	(-2.25)	(-1.22)	(-1.84)	(-1.36)
Expense	0.150	0.054	0.144	0.367	0.197	0.351
	(0.74)	(0.29)	(0.78)	(1.50)	(0.88)	(1.53)
Turnover	-0.001***	-0.001***	-0.001***	-0.002***	-0.001***	-0.002***
	(-3.60)	(-3.57)	(-3.65)	(-3.37)	(-3.48)	(-3.51)
Fund Flow	-0.002	-0.001	-0.002	-0.000	0.001	-0.000
	(-0.37)	(-0.24)	(-0.47)	(-0.05)	(0.29)	(-0.00)
Constant	0.194	1.177	0.979	-0.976	-0.349	-0.688
	(0.20)	(1.30)	(1.24)	(-0.91)	(-0.32)	(-0.61)
Organization Type Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Fund Style Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,495	2,519	2,495	2,495	2,519	2,495
R-squared	0.20	0.21	0.23	0.26	0.22	0.27

Table V Fixed Salary Only

This table provides the results of logistic regressions modeling the likelihood of fixed-salary-only type of compensation contract of portfolio managers. Variables are defined as in Table II. Our sample consists of 4,112 funds in year 2009. We control for both the business organization and investment objective (style) fixed effects in the regression. Both the estimated coefficients and marginal effects are reported. The standard errors are clustered at the advisor level. Statistical significance of 1%, 5%, and 10% is indicated by ***, **, and * respectively.

	Fixed Salary Only		*Fixed Salary Only*		*Fixed Salary Only*	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
VARIABLES	*Coeff.*	*ME*	*Coeff.*	*ME*	*Coeff.*	*ME*
Advisor Characteristics						
Log(Advisor Size)	0.108	0.04%			0.228	0.06%
	(0.58)				(1.13)	
Log(#Employees)	-0.945***	-0.34%			-0.654**	-0.18%
	(-3.46)				(-2.00)	
Log(Accounts per Employee)	-0.094	-0.03%			0.048	0.01%
	(-0.78)				(0.42)	
Clientele Heterogeneity			1.706**	0.64%	1.721	0.47%
			(2.48)		(1.55)	
#Affiliations			-0.390***	-0.15%	-0.325*	-0.09%
			(-2.69)		(-1.86)	
Log(Advisor Age)	-0.346	-0.12%	-0.430	-0.16%	-0.419	-0.11%
	(-0.91)		(-1.43)		(-1.02)	
Manager Characteristics						
Stakeholder	0.758	0.36%	0.556	0.26%	0.652	0.23%
	(1.06)		(0.91)		(0.99)	
Managerial Ownership	0.866	0.32%	0.629	0.24%	0.821	0.23%
	(1.61)		(1.31)		(1.51)	
Log(Managerial Tenure)	0.657***	0.23%	0.648**	0.24%	0.665***	0.18%
	(2.78)		(2.25)		(2.68)	
Team Management	0.013	0.00%	0.029	0.01%	0.105	0.03%
	(0.03)		(0.07)		(0.25)	
Fund Characteristics						
Subadvised	0.148	0.05%	0.261	0.11%	0.120	0.03%
	(0.33)		(0.56)		(0.26)	
Log (Fund Size)	0.007	0.00%	-0.000	0.00%	-0.029	-0.01%
	(0.08)		(-0.00)		(-0.32)	
Log (Fund Age)	-0.377	-0.13%	-0.398	-0.15%	-0.372	-0.10%
	(-1.17)		(-1.18)		(-1.13)	
Expense	1.024**	0.36%	0.998**	0.37%	1.112**	0.30%
	(2.09)		(2.04)		(2.25)	
Turnover	-0.000	0.00%	-0.000	0.00%	-0.000	0.00%
	(-0.14)		(-0.39)		(-0.11)	
Fund Flow	0.004	0.00%	-0.005	0.00%	-0.003	0.00%
	(0.22)		(-0.23)		(-0.16)	
Constant	-3.001**		-4.068**		-4.740**	
	(-1.99)		(-2.34)		(-2.03)	
Organization Type Dummies	Yes		Yes		Yes	
Fund Style Dummies	Yes		Yes		Yes	
Observations	4,044		4,075		4,044	
Pseudo R-squared	0.253		0.257		0.281	

Table VI AUM Based Incentives in Portfolio Manager Compensation Contract

This table provides the results of logistic regressions modeling the likelihood of AUM based incentives in portfolio manager compensation contract. Variables are defined as in Table II. Our sample consists of 4,112 funds in year 2009. We control for both the business organization and investment objective (style) fixed effects in the regression. Both the estimated coefficients and marginal effects are reported. The standard errors are clustered at the advisor level. Statistical significance of 1%, 5%, and 10% is indicated by ***, **, and * respectively.

	AUM Incentive		*AUM Incentive*		*AUM Incentive*	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
VARIABLES	*Coeff.*	*ME*	*Coeff.*	*ME*	*Coeff.*	*ME*
Advisor Characteristics						
Log(Advisor Size)	0.023	0.35%			0.011	0.16%
	(0.22)				(0.09)	
Log(#Employees)	0.054	0.81%			0.013	0.20%
	(0.33)				(0.07)	
Log(Accounts per Employee)	-0.082	-1.25%			-0.101	-1.52%
	(-0.93)				(-0.97)	
Clientele Heterogeneity			-0.221	-3.32%	-0.390	-5.89%
			(-0.31)		(-0.46)	
#Affiliations			0.041	0.62%	0.026	0.39%
			(0.68)		(0.34)	
Log(Advisor Age)	0.359	5.42%	0.371	5.57%	0.361	5.45%
	(1.40)		(1.59)		(1.41)	
Manager Characteristics						
Stakeholder	0.289	4.64%	0.325	5.24%	0.296	4.75%
	(0.77)		(0.87)		(0.77)	
Managerial Ownership	-0.038	-0.57%	-0.039	-0.58%	-0.040	-0.60%
	(-0.19)		(-0.19)		(-0.21)	
Log(Managerial Tenure)	-0.177**	-2.68%	-0.173**	-2.60%	-0.170**	-2.56%
	(-2.27)		(-2.25)		(-2.20)	
Team Management	0.056	0.85%	0.024	0.36%	0.042	0.63%
	(0.20)		(0.09)		(0.16)	
Fund Characteristics						
Subadvised	-0.346	-4.90%	-0.324	-4.59%	-0.351	-4.96%
	(-1.20)		(-1.17)		(-1.24)	
Log (Fund Size)	-0.066	-0.99%	-0.043	-0.64%	-0.059	-0.89%
	(-1.08)		(-0.71)		(-1.04)	
Log (Fund Age)	0.224**	3.38%	0.216**	3.25%	0.219**	3.31%
	(2.35)		(2.34)		(2.34)	
Expense	0.621***	9.39%	0.595***	8.95%	0.612***	9.24%
	(2.77)		(2.58)		(2.82)	
Turnover	0.001	0.02%	0.001	0.02%	0.001	0.02%
	(1.34)		(1.27)		(1.35)	
Fund Flow	-0.033**	-0.50%	-0.030**	-0.44%	-0.031**	-0.47%
	(-2.35)		(-2.21)		(-2.26)	
Constant	-4.814***		-4.732***		-4.443***	
	(-3.31)		(-3.02)		(-2.70)	
Organization Type Dummies	Yes		Yes		Yes	
Fund Style Dummies	Yes		Yes		Yes	
Observations	4,064		4,095		4,064	
Pseudo R-squared	0.121		0.120		0.123	

Table VII Deferred Compensation and Stock/Option

This table provides the results of logistic regressions modeling the likelihood of deferred compensation (Panel A) and stock/options (Panel B) of portfolio managers. Variables are defined as in Table II. Our sample consists of 4,112 funds in year 2009. We control for both the business organization and investment objective (style) fixed effects in the regression. Both the estimated coefficients and marginal effects are reported. The standard errors are clustered at the advisor level. Statistical significance of 1%, 5%, and 10% is indicated by ***, **, and * respectively.

Panel A. Deferred Compensation

	Deferred Comp.		*Deferred Comp.*		*Deferred Comp.*	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
VARIABLES	*Coeff.*	*ME*	*Coeff.*	*ME*	*Coeff.*	*ME*
Advisor Characteristics						
Log(Advisor Size)	0.194	3.59%			0.155	2.85%
	(1.62)				(1.17)	
Log(#Employee)	-0.044	-0.82%			-0.133	-2.44%
	(-0.25)				(-0.67)	
Log(Accounts per Employee)	-0.146	-2.69%			-0.172	-3.16%
	(-1.42)				(-1.50)	
Clientele Dispersion			-0.057	-1.06%	-0.611	-11.20%
			(-0.08)		(-0.72)	
#Affiliations			0.123	2.31%	0.095	1.75%
			(1.60)		(1.03)	
Log(Advisor Age)	0.237	4.38%	0.325	6.08%	0.253	4.66%
	(0.89)		(1.29)		(0.94)	
Manager Characteristics						
Stakeholder	-1.624***	-21.70%	-1.521***	-21.10%	-1.557***	-21.00%
	(-2.92)		(-2.69)		(-2.74)	
Fund Ownership	-0.282	-5.21%	-0.300	-5.62%	-0.261	-4.79%
	(-1.47)		(-1.57)		(-1.40)	
Log(Manager Tenure)	-0.092	-1.70%	-0.066	-1.23%	-0.074	-1.36%
	(-1.13)		(-0.82)		(-0.90)	
Team Management	-0.090	-1.68%	-0.159	-3.01%	-0.143	-2.66%
	(-0.36)		(-0.62)		(-0.57)	
Fund Characteristics						
Subadvised	0.391	7.64%	0.413	8.19%	0.396	7.69%
	(1.35)		(1.45)		(1.37)	
Log (Fund Size)	0.033	0.61%	0.083	1.55%	0.053	0.97%
	(0.59)		(1.26)		(1.02)	
Log (Fund Age)	0.036	0.68%	0.026	0.49%	0.021	0.38%
	(0.39)		(0.26)		(0.22)	
Expense	-0.283	-5.23%	-0.462	-8.66%	-0.348	-6.39%
	(-1.00)		(-1.45)		(-1.20)	
Turnover	0.001*	0.03%	0.001**	0.03%	0.001**	0.03%
	(1.93)		(2.01)		(2.13)	
Fund Flow	0.001	0.01%	0.005	0.09%	0.004	0.07%
	(0.08)		(0.58)		(0.45)	
Constant	-3.150**		-2.743*		-2.583	
	(-2.09)		(-1.79)		(-1.54)	
Organization Type Dummies	Yes		Yes		Yes	
Fund Style Dummies	Yes		Yes		Yes	
Observations	4,064		4,095		4,064	
Pseudo R-squared	0.117		0.110		0.125	

Panel B. Stock/Option Compensation

	Stock/ Option		*Stock/ Option*		*Stock/ Option*	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
VARIABLES	*Coeff.*	*ME*	*Coeff.*	*ME*	*Coeff.*	*ME*
Advisor Characteristics						
Log(Advisor Size)	0.287**	7.10%			0.313**	7.75%
	(2.05)				(2.15)	
Log(#Employee)	0.422**	10.50%			0.357*	8.83%
	(2.26)				(1.84)	
Log(Accounts per Employee)	0.092	2.29%			0.052	1.29%
	(0.98)				(0.53)	
Clientele Dispersion			-1.700**	-42.20%	-0.811	-20.10%
			(-2.28)		(-0.81)	
#Affiliations			0.117*	2.91%	-0.025	-0.63%
			(1.79)		(-0.29)	
Log(Advisor Age)	-0.076	-1.89%	0.285	7.07%	-0.079	-1.97%
	(-0.37)		(1.49)		(-0.39)	
Manager Characteristics						
Stakeholder	-0.827**	-19.30%	-1.103***	-25.10%	-0.908**	-21.00%
	(-1.99)		(-2.82)		(-2.09)	
Fund Ownership	-0.254	-6.29%	-0.476***	-11.80%	-0.293*	-7.23%
	(-1.41)		(-3.01)		(-1.71)	
Log(Manager Tenure)	-0.077	-1.91%	-0.114	-2.83%	-0.072	-1.79%
	(-1.00)		(-1.52)		(-0.93)	
Team Management	0.008	0.20%	-0.053	-1.32%	0.006	0.15%
	(0.03)		(-0.23)		(0.02)	
Fund Characteristics						
Subadvised	-0.321	-7.85%	-0.466*	-11.30%	-0.357	-8.70%
	(-1.19)		(-1.87)		(-1.31)	
Log (Fund Size)	-0.027	-0.68%	0.126**	3.14%	-0.022	-0.54%
	(-0.45)		(2.26)		(-0.43)	
Log (Fund Age)	0.168*	4.17%	0.102	2.52%	0.162*	4.01%
	(1.80)		(1.17)		(1.82)	
Expense	0.650**	16.10%	0.264	6.55%	0.668**	16.50%
	(2.12)		(1.03)		(2.29)	
Turnover	-0.001	-0.02%	-0.000	-0.01%	-0.001	-0.02%
	(-1.19)		(-0.34)		(-1.12)	
Fund Flow	-0.019**	-0.47%	-0.014*	-0.34%	-0.017**	-0.42%
	(-2.19)		(-1.81)		(-2.07)	
Constant	-4.896***		-1.071		-4.274**	
	(-3.25)		(-0.81)		(-2.33)	
Organization Type Dummies	Yes		Yes		Yes	
Fund Style Dummies	Yes		Yes		Yes	
Observations	4,064		4,095		4,064	
Pseudo R-squared	0.215		0.162		0.219	