Mutual Fund Governance and Performance: An Analysis of Morningstar's Stewardship Grade

Carl R. Chen
University of Dayton

Ying Huang*
Zhejiang University
&
Northern Kentucky University

Abstract

We study the relation between mutual fund performance and governance effectiveness on 4,164 U.S. mutual funds between 2006 and 2009 using Morningstar's fiduciary grades. Quantile regression analyses provide evidence that Stewardship Grade and manager incentives are positively associated with Sharpe ratio for funds at the right tail of the performance distribution. Board quality, though not related to contemporaneous performance measures, is the only governance component that is capable of predicting funds' future performance indicating that monitoring effect is stronger than the incentive alignment effect. Both overall Stewardship Grade and manager incentives reduce funds' portfolio turnover ratio.

Keywords: Corporate governance, Agency theory, Mutual fund performance, Manager incentives, Board quality

JEL Classification: G2, G3

* Corresponding author. Academy of Financial Research and College of Economics, Zhejiang University. Department of Accounting, Finance and Business Law, Haile/US Bank College of Business, Northern Kentucky University. Email: yhuang616@gmail.com. We would like to thank William Judge and Huimin Chung for their helpful suggestions on earlier versions of the paper, and Li-Yu Chen for programming assistance. Ying Huang acknowledges the financial support provided by the Program for New Century Excellent Talents in University (NCET) of China.

1. INTRODUCTION

The objective of this study is to investigate the relation between mutual fund governance and fund performance. The conflict of interest between mutual fund shareholders and fund managers is obvious: shareholders try to maximize their realized risk-adjusted returns, while fund managers have a strong incentive in expanding the fund size because management fees are determined by the asset size (See Mahoney, 2004). Managerial incentive alignment and/or board monitoring offer viable solutions to this agency problem. Pay-performance relationship documented in Murphy (1999), Core, Guay, and Larcker (2003), and Hall and Liebman (2003) supports the view that incentive pays, such as bonuses, options, and stock grants align managerial interest with that of the shareholders. In addition to the managerial incentive alignment, a second strand of the literature emphasizes the effectiveness of the board monitoring. Some find a positive relation between firm performance and board independence (e.g., Rosenstein and Wyatt, 1990), yet others do not (e.g., Hermalin and Weisbach, 1991, and Yermack, 1996).

Differing from previous studies, we examine Morningstar Stewardship Grade and compare the effectiveness of its two major components, namely, manager incentives and board quality, as proxies for governance effectiveness in a single study. Morningstar's grading system provides us with an integrated grading for mutual funds, and this makes our study differ from most previous ones that concentrate on individual aspects of corporate governance, e.g., blockholdings (Demsetz and Lehn, 1985; Demsetz and Villalonga, 2001), board size (Yermack, 1996; Eisenberg et al., 1998) and board composition (Hermalin and Weisbach, 1991).

Moreover, the comparison of the effect of manager incentives with that of the board quality on governance is important, as the SEC proposed a governance mechanism that requires an independent chairman and a board consisting of at least 75% independent directors. We

intend to address whether managerial incentive or board quality is more effective in aligning managerial and shareholder interests. In addition to examining the contemporaneous relation between fund performance and governance, we also study the ability of these governance measures to predict future fund performance as evidence from this analysis can provide more information to both regulators and retail investors.

Using Morningstar's data serves three purposes. First, Morningstar's mutual fund rating system is very popular among retail investors. Retail investors and some professional managers regularly use Morningstar's rating system to guide their investment decisions; hence it is important to study the effectiveness of such a rating system. Del Guercio and Tkac (2008) find significant positive (negative) fund flows following Morningstar rating upgrades (downgrades). Second, Morningstar's data provide us with a single source of data to compare the relative importance of various measures of fund governance in relation to mutual fund performance. Third, we examine the effectiveness of Morningstar's Stewardship Grade using a different and more pertinent methodology than previous research in this regard.

Specifically, the employment of quantile regressions allows us to examine the differential behavior of fund performance across the entire performance distribution. Such analysis becomes very useful when the relation between variables varies substantially across distributions. On the other hand, traditional analysis based on the OLS method is inappropriate in this setting because the OLS regression only estimates the conditional means, and therefore the OLS method may fail to capture certain non-negligible relations between Morningstar's governance grades and fund performance at the tails of fund performance distribution.

As previously indicated, fund managers have a strong incentive in expanding the fund size because management fees are determined by the asset size (See Mahoney, 2004). To alleviate this agency problem, mutual funds design incentive contracts that are commensurate

with fund manager performance, and their governance tends to heavily rely on their board. However, unlike other financial institutions, mutual fund industry's governance structure is lightly regulated – guided only by the Investment Company Act of 1940. For example, the 2003 mutual fund scandal involves late trading and market timing. On September 3, 2003, New York Attorney General Eliot Spitzer issued a complaint against Canary Capital, accusing Canary of engaging in late trading in collusion with Bank of America's Nations Funds. Late trading enabled Canary to purchase mutual fund shares at the closing price after the market had closed. Such trading reduces fund shareholders' interest because Canary unfairly uses information about after-hours market developments in foreign markets. Canary settled the complaints for $40 million.[1] Spitzer and the SEC also charged some other mutual fund groups, e.g., Strong Capital, Janus, Bank One's One Group, and Invesco of market timing, which allowed their favored clients to trade frequently to take advantage of market volatility. Market timing conducted by these funds increases fund cost at the expense of other shareholders. Indeed, Radin and Stevenson (2006) find that the governance model of the mutual fund industry has significant structural difference from its corporate counterparts, hence dilutes the authority of its directors.

These widespread fund flaws have prompted the SEC to propose a stricter fund governance mechanism that requires an independent chairman and a board consisting of at least 75% independent directors. Such controversial proposal, however, encountered intensive debates in both the academia and the industry, and was challenged by the Commerce Department. Although SEC proposed new guidelines for the governance of mutual funds, existing researches find that the effectiveness of such requirement is subject to debate. For example, Ferris and Yan (2007) conclude that neither the probability of a fund scandal nor the overall performance is related to the independence of the chairman or board directors. In fact, the SEC proposal was ruled by the US Court for violating the Administrative Procedure Act.

This paper contributes to this strand of research by examining the relation between various fund governance mechanisms and fund performance. Our study differs from prior literature in two aspects. First, we employ the most up-to-date Morningstar's Stewardship Grade and its components to examine the relation between fund performance and various measures of governance; hence we are able to compare the effectiveness of these governance measurements in a single study with a sample encompassing periods of both economic boom and bust. Therefore, our results provide important insights for retail investors. Second, we adopt a quantile regression model to study the relation between fund performance and fund governance over the entire distribution of fund performance. This type of modeling is more informative and powerful in analyzing the diverse mutual fund universe, where funds are heterogeneous with significantly different trading strategies and investment objectives. It is recognized that the traditional OLS regression is less informative as it estimates the conditional mean, which essentially treats mutual funds as a group of investment advisors with homogeneous trading strategies.

Our empirical findings reveal that OLS results are less informative than those generated by quantile regressions. For example, the manager incentives covariate is not a significant determinant of contemporaneous fund performance in the OLS models. However, quantile regressions find that manager incentives bear a positive and significant relation with fund performance for funds in 5 out of 9 Sharpe Ratio quantiles. On the contrary, manager incentives bear no relationship with future fund performance measured by the three-year Alpha. Stewardship Grade, which measures overall fund fiduciary effectiveness, is not associated with fund portfolio turnover ratio in the OLS model. However, it actually becomes negatively and significantly associated with portfolio turnover ratio in 8 out of 9 quantiles. In addition, board quality, which is emphasized by the SEC proposal on mutual fund governance, bears no contemporaneous relationship with Sharpe Ratio. Surprisingly, it is found to be strongly

correlated with three-year Alpha, suggesting that board quality does enhance fund performance in the longer run. Our major findings based upon quantile regressions thus have important and useful implications for retail investors as well as for regulators.

The rest of the paper is organized as follows. The next section develops our hypotheses and reviews the literature. Data and methodology are described in the third section. The fourth section presents and discusses the empirical results. Conclusions are summarized in the final section.

2. HYPOTHESES DEVELOPMENT

Studies that investigate mutual fund performance are abundant. This is because mutual funds still provide investors with the most convenient way to invest in a professionally managed diversified portfolio. As of July 2009, more than $10.4 trillion are under US mutual fund management.[2] Earlier mutual fund research has examined fund performance persistence (Grinblatt & Titman, 1992; Carhart, 1997; Bollen & Busse, 2005); market timing ability (Bollen & Busse, 2001); performance bench marking (Lehman & Modest, 1987; Grinblatt & Titman, 1994; Daniel et al., 1997); and fund governance (Tufano & Sevick, 1997; Chou, Ng, & Wang, 2007; Khorana et al., 2007; Wellman & Zhou, 2008; Evans, 2008). Our study falls into the last category of mutual fund performance and governance.

We first examine the relation between fund performance and Morningstar Stewardship Grade. We are motivated by the expanding literature on the uses of corporate governance indexes (Gompers, Ishii, & Metrick, 2003; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2002; Bauer, Gunster, & Otten, 2004; Drobetz, Schillhofer, & Zimmermann, 2004; Beiner, Drobetz, Schmid, & Zimmermann, 2006). Since Morningstar Stewardship Grade is a composite measurement of the governance effectiveness in mutual funds that takes into account managerial

incentives, board quality, regulatory history, fee structure, and corporate culture, we set to test if this overall governance measurement bears any relation with fund performance. If a higher governance score reflects a more effective governance structure that better aligns managerial and shareholder interests, we expect to see a positive relation between Morningstar Stewardship Grade and fund performance.

Literatures supporting the positive relation between governance indices and firm performance include Gompers et al., (2003), Bebchuk, Cohen, and Ferrell (2004), Bauer et al. (2004), Drobetz et al. (2004), Beiner et al. (2006), and Bhagat and Bolton (2008). Nevertheless, Bebchuk, Cohen, and Wang (2010) show that the G-Index (as well as the E-Index based on a subset of the six provisions) is no longer associated with abnormal returns during the period of 2000-2008. They attribute the disappearance of the governance-returns association to market participants' learning to appreciate the difference between firms scoring well and poorly on the governance indices.

Based upon the above discussions, we thus posit our first hypothesis as:

H_1. Mutual funds with higher overall stewardship ratings will have better financial performance than those with lower stewardship ratings.

We next examine the relation between fund performance and two major components of Morningstar's Stewardship Grade – manager incentives and board quality. One strand of the literature focuses on executive compensation and firm performance. The principal-agent theory argues that since managers (agents) may not always act in the best interests of the shareholders (owners), incentive pays like bonuses, option grants and stock grants are designed to align their interests. Therefore, firms with more attractive compensation structures (e.g., higher percentage of incentive pays) and/or higher managerial equity ownership are expected to perform better.

Pay-performance relationship documented in Murphy (1999), Core, Guay, and Larcker (2003), and Hall and Liebman (2003) provide support for this view.

On the other hand, Bebchuk and Fried (2004) propose the managerial power theory in which they argue that CEOs effectively set their own pay subject to some market constraints. Studies specifically oriented to the mutual fund industry include Khorana, Servaes, and Wedge (2007) and Evans (2008). Khorana et al. find that future risk-adjusted performance is positively related to managerial ownership, with performance improving by about 3 basis points for each basis point increase of managerial ownership. Their findings support the notion that managerial ownership has the desirable incentive alignment attribute for mutual fund investors. Khorana et al.'s (2007) finding is supported by Evans (2008), who reports that mutual fund returns are increasing with the level of managerial investment, consistent with the notion that personal ownership realigns decision-maker and shareholder interests. Since the score of Morningstar's manager incentives measurement considers both compensation structure and managerial equity ownership, we propose our second hypothesis as:

> *H_2. Mutual funds with higher manager incentive ratings will have better financial performance than those with lower managerial incentive ratings.*

A second strand of the corporate governance literature focuses on the effectiveness of the board, as manager incentive alignment and effective board monitoring are two major ways to mitigate agency problems. Independent chairman and outside directors are less tolerant of firm underperformance and are expected to better monitor the management team, hence are conducive to better firm performance and valuation (Tobe, 2010). Related to this issue is the incentive pay for directors. For example, more equity-based director compensation motivates directors to reinforce monitoring, which helps align shareholders' and directors' interests (Lipton & Lorsch, 1992; Jensen, 1993; Hermalin & Weibach, 1998). Therefore, funds with more independent

boards and/or well-compensated directors with more incentive pays are expected to perform better.

Empirical evidence for board independence, however, is inconclusive at best. Although Rosenstein and Wyatt (1990) show that stock price reacts positively to outside director appointment, Hermalin and Weisbach (1991), Mehran (1995), Yermack (1996), and Dalton, Daily, Ellstrand, and Johnson (1998) find no relation between board independence and firm performance. Boone, Field, Karpoff, and Raheja (2007) contend that board size and independence are shaped by a combination of firm-specific and managerial characteristics. Therefore, rules to reform board governance are unlikely to enhance firm value.

For mutual fund studies, Tufano and Sevick (1997) find that shareholder fees are lower when fund boards have a greater fraction of independent directors. Khorana et al. (2007) study mutual fund mergers between 1999 and 2001 and find that some fund mergers — typically across-family mergers — benefit target fund shareholders but are costly to target fund directors. Such mergers are more likely when funds underperform and their boards have a larger percentage of independent trustees, suggesting that more independent boards are less tolerant of underperformance before initiating across-family mergers. This effect is most pronounced when all of the fund's directors are independent (not just the 75% level of independence required by the SEC). Ferris and Yan (2007), however, document that neither the probability of a fund scandal nor overall fund performance is related to the independence of the chairman or the board, thus they question the usefulness of the SEC proposal to mandate 75% director independence.

Empirical evidence on director incentive pay includes Bhagat, Carey, and Elson (1999), Gerety, Hoi, and Robin (2001), and Ryan and Wiggins (2004). Bhagat et al. (1999) find a correlation between the dollar value of a director's equity holding and the likelihood of a disciplinary-type CEO succession in a poorly performing company. Gerety et al. (2001) reveal a

statistically and economically insignificant stock reaction to the proposal of director incentive pay, hence conclude that firms have not been successful in using director incentive pay to enhance shareholder value. In fact, they find that stock markets react negatively to plans proposed by firms with involved CEOs. Ryan and Wiggins (2004) find that director equity-based compensation is significantly related to the traditional barriers to governance, suggesting that director compensation structure fails to mitigate the barriers to monitoring; on the contrary, it only reinforces them.

Since Morningstar's board quality grade considers both board independence and director compensation, we expect that better board quality score improves fund performance. We propose our third hypothesis as:

> *H_3. Mutual funds with higher board quality ratings will have better financial performance than those with lower board quality ratings.*

While our main interest is in fund performance and fund governance, we also look into the relationship between fund portfolio turnover and Stewardship scores due to the following three considerations. First, academics and practitioners alike believe that fund portfolio turnover is related to fund performance, although their views are divergent. Earlier studies conclude that actively managed funds (with higher portfolio turnover) underperform their passively managed counterparts (e.g., Gruber, 1996; Carhart, 1997). Among practitioners, the chairman of the Vanguard fund family, John Bogle argues that Vanguard Index 500 outperforms the average mutual fund due to its low trading activity, hence low cost. However, others, (Wermers, 1997, 2000; Grinblatt & Titman, 1994; Kacperczyk, Sialm & Zheng, 2005) take a rather different view. For example, Wermers (2000) finds that top portfolio turnover funds hold stock portfolios that significantly outperform those of bottom portfolio turnover funds by a margin of 4.3% per year, among which 2.1% is due to better stock selection and market timing ability. Second, portfolio

turnover ratio is found to contain information in addition to funds' past performance, and investment strategies taking into account both kinds of information produce superior returns (e.g., Budiono and Martens, 2010). Third, fund turnover causes tax liability for shareholders. A good example occurred in the years of internet bubbles during which shareholders saw their net asset values halved, yet the year-end statement showed substantial amount of capital gains. Therefore, tax efficiency has become an important consideration for shareholders and SEC rules require funds to disclose the tax impact of portfolio turnover.

Although there are studies that relate fund performance to fund turnover, the literature linking fund governance and fund portfolio turnover, however, is essentially silent. The only study that directly relates fund portfolio turnover to fund governance is Dow and Gorton (1997), which argues that managerial compensation encourages noise trading — not a value-enhancing activity. Sound manager incentives and board structure, on the other hand, mitigate value-decreasing trades. Such relation between fund portfolio turnover and fund governance is naturally embedded in the arguments and hypotheses that we develop above for the relation between fund performance and fund governance. Clearly, if portfolio turnover influences fund performance, positively or negatively, and fund performance is correlated with fund governance, we would expect fund governance more or less to exert some influence on the portfolio turnover. To be sure, as fund portfolio turnover is perceived to have an impact on fund performance, fund governance mechanism may be structured in conformity with it so as to promote (mitigate) the positive (negative) effect of portfolio turnover on performance. Due to the ongoing debate on the effect of portfolio turnover on fund performance, it is thus an interesting empirical question to explore as for how portfolio turnover is related to fund governance, and we intend to provide new evidence to add to this debate. Moreover, since Wermers (2000) contrasts the difference

between top and bottom portfolio turnover funds, the quantile regression model used in this study is particularly well-suited to this type of analysis.

Based upon the arguments developed for Hypotheses 1-3 (governance effectiveness and fund performance) and the notions discussed above (portfolio turnover and fund performance), we extend Hypotheses 1-3 to the following additional hypotheses to examine the relationship between fund portfolio turnover and Stewardship scores. In essence, if portfolio turnover influences fund performance, we examine if fund governance is structured to influence portfolio turnover decisions. Since Hypotheses 4-6 are extensions of Hypotheses 1-3, we state these hypotheses in a similar fashion. It is noted that Morningstar's Stewardship scores do incorporate factors related to funds' trading activity. For example, Stewardship Grade score is lower when a fund's expenses, which are related to fund portfolio turnover, get higher. Morningstar's manager incentive component also receives lower scores if a fund emphasizes short-term performance, which encourages short-term trading. Hypotheses 4-6 are stated as follows:

H_4. Mutual funds with higher overall stewardship ratings will have lower portfolio turnover than those with lower stewardship ratings.

H_5. Mutual funds with higher manager incentive ratings will have lower portfolio turnover than those with lower managerial incentive ratings.

H_6. Mutual funds with higher board quality ratings will have lower portfolio turnover than those with lower board quality ratings.

3. DATA AND METHODOLOGY

3.1 Data and Sample

We obtain mutual funds' performance and governance measures from the 2006 - 2009 (2nd quarter) editions of Morningstar Principia. Our sample contains all individual funds with

Stewardship data available. In total, 4,164 funds belonging to 45 mutual fund groups are rated by Morningstar for Stewardship grades. Funds belonging to the same fund group may have very different Morningstar fiduciary ratings. For example, Wells Fargo Advantage Common Stock has a "B" rating for the manager incentives score, while Wells Fargo Advantage Asset Allocation has a "D" rating for this score. It is noted that many funds offer different share-classes, in which case only one class is retained because all classes share the same Stewardship scores. Indeed, if we conduct tests at the share-class level, funds with more share classes would get over-weighted, while funds with single share class would become under-weighted.[3]

Table 1 Panel A tallies the number of funds with Stewardship Grades available for each year. 4,164 funds represent only about 15% of the total number of funds covered by Morningstar. However, these funds with Stewardship Grades are larger funds with more investors. The average total assets of funds with Stewardship Grades available is $4,510.6 million (shown in Panel B), while the same statistic for the whole sample is a much smaller $1,163.7 million.

Insert Table 1 about here

Among the five components of Morningstar Stewardship Grade, we choose to focus on board quality and manager incentives for two reasons. First, board quality and manager incentives are the most studied and debated mechanisms which intend to alleviate agency costs in the finance and management literature. These two components have also stirred most of the regulatory debates recently. Second, and more importantly, there are many missing observations in 2006 and 2007 for corporate culture and regulatory issue components. Incorporating these two components in the multivariate analysis will greatly limit the number of observations available in the regressions; hence reduce the information contents of variables in focus. We, nevertheless, include the other component, fees, in the analysis because it has no missing

observations.[4] Brief explanations of the Stewardship Grade and two of its components focused in this study are provided as follows.

Stewardship Grade measures the overall effectiveness of a fund's governance and is constructed based upon the aggregate points of five components — Corporate Culture, Board Quality, Manager Incentives, Fees, and Regulatory Issue. Letter grade A is assigned to an aggregate point range of 9~10; B for 7~8.5 points; C for 5~6.5 points; D for 3~4.5 points; and F for 2.5 points or lower.

Board quality looks at factors such as if the board is led by an independent chairman and 75% of the directors are independent; if the board consistently acts in shareholders' best interests; and if independent directors have meaningful investments in the fund. Manager incentives take two major factors into consideration: manager ownership and compensation structure. Managers with more than $1 million or more than one-third of their liquid net worth in the fund they run receive full credits. Compensation structure score depends on if the compensation plans reward long-term performance or asset growth. Plans that emphasize short-term performance and/or asset growth receive lower scores.

Morningstar assigns letter grades from A to F for the quality of each governance variable, with A being the best and F the worst. We convert these letter grades to numerical grades for our analysis, with A=5, B=4, C=3, D=2, and F=1. Morningstar compiles these data based upon public filings and surveys. Morningstar emphasizes that "Stewardship Grade has no impact on a fund's star rating," but at the same time it indicates that these grades are "designed to help investors further identify fund managers and fund companies that do a good or a poor job of aligning their interests with those of shareholders".[5] Since the principal-agent theory suggests that firms perform better when managerial and shareholders' interests are aligned, we set to investigate the potential association of these fiduciary ratings with fund performance.

In addition to the aforementioned three governance measurements, we also obtain fund performance data as well as some control variables from Morningstar Principia. These variables include funds' Sharpe Ratio, three-year Alpha, portfolio turnover ratio, total fund assets, fund age, expense ratio, and fees score.[6] Both Sharpe Ratio and Alpha are risk-adjusted returns. Sharpe Ratio measures contemporaneous risk-adjusted fund performance, while Alpha measures three-year risk-adjusted performance. Morningstar calculates monthly Sharpe Ratio and then annualizes it. Alpha is calculated by subtracting expected returns adjusted for fund beta from the actual returns. We also create a series of dummy variables to be used in the regression analysis to control for yearly effect and various fund objectives.

Panel B of Table 1 reports descriptive statistics for variables used in the study. The average Sharpe Ratio during the sampling period is a positive 0.47, and the average three-year Alpha is 0.61%. What's notable in Panel B is the discrepancy between the mean and the median values for certain variables, in particular for 3-year Alpha. This skewness in distribution reinforces the merit of using quantile regression analysis.

Panel C presents descriptive statistics based upon fund objectives. Note that we group funds into eight objective categories, which are less than Morningstar's actual classifications. It is necessary for us to consolidate the objective categories, as too detailed classifications render estimated matrixes being singular. For example, we group all international funds (Asia or Europe) into one single category. Panel C shows that the Growth category has the largest number of fund-year observations with a maximum of 1,471, followed by Fixed Income category (929). Equity-Income category has the smallest number of observations (126). During the sampling period, all fund categories generate positive average Sharpe Ratios, with International Fund having the largest Sharpe Ratio (0.99). For three-year Alpha, Specialty Fund yields the greatest Alpha (3.14%), while Balanced Fund has the lowest (-1.42%). Growth-Income Fund category is

the largest in terms of average total assets ($8,627.5 million), while Specialty Fund is the smallest (total assets of $1,537.6 million). Most of the Stewardship and its component grades are higher than 3.

3.2 Methodology

To investigate fund performance sensitivity to fund governance, we carry out our analysis on the data with multivariate analyses consisting of both OLS and quantile regression models, from which results are contrasted to show the differences. In this subsection, we present the basic regression model and set forth the advantages associated with the proposed quantile regression analysis.

As we know, mutual funds employ a great variety of strategies, which are inherently heterogeneous. Traditional modeling of mutual fund performance produces only the conditional mean estimates and essentially ignores the behavior of funds at the tails of the performance distribution. Given the popularity of mutual funds among investors and the lack of sophistication in investing for many mutual fund investors (Mahoney, 2004), understanding fund behaviors at the tails of the performance distribution certainly conveys much more practical implications for average investors and for such regulatory bodies as the SEC. To achieve this research objective, we adopt a quantile regression model to study mutual fund performance.

We first construct our basic regression models as follows:

$$PERFORMANCE_{it} = \alpha_0 + \sum_{t=1}^{3} \beta_t DYEAR_{jt} + \sum_{j=4}^{10} \beta_j DOBJ_{jt} + \beta_{11} AGE_{it} + \beta_{12} TURNOVER_{it} + \beta_{13} ASSET_{it} + \beta_{14} EXPENSE_{it} + \beta_{15} STEWARDSHIP_{it} + \varepsilon_{it} \quad (1)$$

$$PERFORMANCE_{it} = \alpha_0 + \sum_{t=1}^{3} \beta_t DYEAR_t + \sum_{j=4}^{10} \beta_j DOBJ_{jt} + \beta_{10} AGE_{it} + \beta_{11} TURNOVER_{it} + \beta_{12} ASSET_{it}$$
$$+ \beta_{13} EXPENSE_{it} + \beta_{14} FEE_{it} + \beta_{15} INCENTIVE_{it} + \beta_{16} BOARD_{it} + \varepsilon_{it} \quad (2)$$

$$TURNOVER_{it} = \alpha_0 + \sum_{t=1}^{3} \beta_t DYEAR_t + \sum_{j=4}^{10} \beta_j DOBJ_{jt} + \beta_{11} AGE_{it} + \beta_{12} ASSET_{it} + \beta_{13} EXPENSE_{it}$$
$$+ \beta_{14} STEWARDSHIP_{it} + \varepsilon_{it} \quad (3)$$

$$TURNOVER_{it} = \alpha_0 + \sum_{t=1}^{3} \beta_t DYEAR_t + \sum_{j=4}^{10} \beta_j DOBJ_{jt} + \beta_{11} AGE_{it} + \beta_{12} ASSET_{it} + \beta_{13} EXPENSE_{it}$$
$$+ \beta_{14} FEE_{it} + \beta_{15} INCENTIVE_{it} + \beta_{16} BOARD_{it} + \varepsilon_{it} \quad (4)$$

where variables measuring fund performance are the contemporaneous Sharpe Ratio and the three-year Alpha. When Alpha is used as the performance measure, the lead-lag relationship between the dependent variables and independent variables need to be adjusted, which will be explained in more details in the following sections. The use of Sharpe Ratio and Alpha as the primary performance measurements is based upon two considerations — risk-adjusted return measures, and data matching that maximizes the sample size in the regression analysis. Morningstar offers an array of returns, but most of them are not risk-adjusted. Other risk-adjusted returns such as "best-fit alpha" have too many missing observations. $\sum_{t=a}^{b} \beta_t DYEAR_t$ represent a series of dummy variables controlling the yearly effect; $\sum_{j=m}^{n} \beta_j DOBJ_{jt}$ represent a series of dummy variables controlling for fund objectives; Age_{it} is the age of fund *i* at time *t*; $Asset_{it}$ is the total assets under fund *i*'s management at time *t* in natural logarithm; $Expense_{it}$ is the expense ratio for fund *i* at time *t*; $Stewardship_{it}$ is fund *i*'s Stewardship Grade at time *t*;

Fee_{it} measures a fund's fees score within the comparison group; $Incentive_{it}$ is a score measuring manager incentives; and $Board_{it}$ is a score measuring fund *i*'s board quality at time *t*.

There are in total 35 stated fund objectives according to the Morningstar classifications. We simplify and merge the objective classifications into eight commonly known categories to avoid linear-dependence problems between some objective binary variables. The eight objectives we adopt are balanced, growth, growth-income, asset allocation, specialty, international, fixed income, and equity-income. In the regression analysis, equity-income serves as the reference group, hence is the omitted category.

The coefficients in Equations (1) ~ (4) estimated using OLS method are the conditional means of the model parameters. Notably, the conditional mean has limited informational value for two reasons. First, it is naive and even erroneous to assume that all funds are homogenous, share the same investment philosophy, employ similar trading strategies, and have identical stock selection and market timing skills.[7] Interpretation of the factor loadings will thus be biased if this traditional regression analysis is used. Second, while it may be interesting to know the conditional mean performance of mutual funds in general, it is far more enlightening to understand the behavior of funds at the tails of the performance distribution. Examining fund performance at the tails allows us to pinpoint the differential response of fund performance to exogenous shocks between good and bad performers. Additionally, performance of funds at the tails also entails more regulatory implications, as the impact of rigorous regulatory changes often can be better observed for funds at the tails of the performance distribution.

Instead of OLS, one can also estimate Equations (1) ~ (4) using LAD method which produces smaller confidence ellipsoids than the OLS when the median is a better measure of

central tendency than the mean. Like the OLS, however, LAD method generates only a single value estimate.

There are several advantages of using quantile regressions over simple OLS regressions. First, when data are heterogeneous, quantile regressions permit inferences about the influence of regressors conditional on the distribution of the endogenous variable. OLS (LAD) regression models merely estimate the relationship between covariates *X* and the conditional mean (median) of the dependent variable *Y* given *Y*=*x*. Quantile regression extends the regression model to conditional quantiles of *Y*. Because quantile regressions estimate conditional quantile functions, as such, they are appropriate when data show a significant degree of variations. Therefore, quantile regressions can capture information about the slope of the regression line at different quantiles of the endogenous variable (fund performance) given the set of exogenous variables (fund governance and characteristics). On the other hand, OLS (LAD) regressions reveal only the impact of exogenous variables on the mean (median) of the conditional distribution of fund performance, while for this study the tails and the central location of the conditional distribution vary differently with the covariates. Second, since there is no distributional assumption about the error term in the model, quantile regression estimates exhibit strong model robustness. The conditional quantile regression analysis developed by Koenker and Bassett (1978) and extended by Koenker and Hallock (2001) accounts for the skewed distribution of fund performance, and can be used to draw more appropriate inferences with respect to the factor loadings across the performance distribution. General concepts of the quantile regression can be illustrated as follows.

Given that the ϕth conditional quantile of y_i is linear in x_i ($\phi \in (0,1)$) and assume that (y_i, x_i), i = 1,….,n, whereby y_i represents the fund's performance measurement, while x_i is a vector

of exogenous variables as shown in Equations (1) ~ (4), the quantile regression model can be written as:

$$y_i = x_i^{'}\beta_{\phi} + u_{\varphi i} \tag{5}$$

The underlying assumption of Equation (5) is

$$Quant_{\phi}(y_i \,|\, x_i) \equiv \inf\left\{ y : F_i(y|x)\phi \right\} = x_i^{'}\beta_{\phi} \tag{6}$$

with

$$Quant_{\phi}(u_{\phi i} \,|\, x_i) = 0$$

where $Quant_{\phi}(y_i \,|\, x_i)$ is the ϕ^{th} conditional quantile of y_i given x_i. It should be noted that the median estimator (i.e., $\phi = 0.5$) is a special case of the quantile regression, which is known as the LAD estimator. The difference between OLS and LAD is that the former minimizes the sum of the residual-squared, while the latter minimizes the absolute value of the residuals. The ϕ^{th} regression quantile can be tracked by shifting ϕ between zero and one. To estimate $\hat{\beta}_{\phi}$, we can minimize

$$\text{Min} \sum_{i}^{n} \rho_{\phi}(y_i - x_i^{'}\beta_{\phi}) \tag{7}$$

where $\rho_{\phi}(\bullet)$ is the tilted absolute value function and can be defined as:

$$\rho_{\phi}(u) = \phi u \text{ if } u \geq 0 \text{ or } \rho_{\phi}(u) = (\phi - 1)u \text{ if } u < 0 \tag{8}$$

Although the LAD estimator is a special case of the quantile-varying estimator with a quantile of 0.5, one key limitation of the OLS and LAD estimators is that only a single measure of the central distribution tendency is provided, without considering the distribution tail behaviors.

The interior point approach of Karmarkar (1984) is used in the optimization to solve a sequence of quadratic problems. Note that quantile regressions cannot be carried out by simply segmenting the unconditional distribution of the dependent variable into quantiles, then estimating the covariate effect using OLS method for each subset. This approach leads to disastrous results, in particular when the data include outliers. In contrast, quantile regressions use all of the data for fitting quantiles.[8]

4. EMPIRICAL RESULTS

In this section, we analyze the contemporaneous relation between fund governance scores and fund performance using both OLS and quantile regressions. We also examine Sharpe Ratio and portfolio turnover ratio and then analyze the ability of various governance measures to predict future fund performance.

4.1 Ordinary Least Square Regression Results

In Table 2, we report the regression results using Ordinary Least Square regression model (OLS) for the Stewardship Grade, manager incentives, board quality and portfolio turnover ratio. As indicated in the previous section, our focus is on the manager incentives and board quality, as these two Stewardship components are extensively researched and debated mechanisms that help reduce agency problems. Column 2 shows the impact of Stewardship Grade on funds' Sharpe Ratio, controlling for the yearly effect, fund objectives, and fund characteristics. All yearly dummies are negative and statistically significant, implying that 2006 (the excluded year) witnessed the best fund performance and 2009 was the worst performance year. Since Equity-Income fund is the omitted category, a positive (negative) sign for the coefficient of the fund objective dummy variable would indicate better (worse) fund performance than that of Equity-Income funds. For example, fund objective dummies D-Bond and D-International are both

statistically significant and carry negative and positive signs respectively, suggesting that the former underperforms the referenced group of Equity-Income funds, while the latter outperforms it. As expected, Stewardship Grade is positively and significantly ($t=2.43$, $p<.05$) related to the Sharpe Ratio, implying that effective fund governance helps enhance fund performance. This finding supports Hypothesis 1.

Insert Table 2 about here

Column 3 shows the associations of Sharpe Ratio and separate Stewardship components. Although our target is on manager incentives and board quality, fee is also included for reasons discussed in the data section. The results indicate that both the manager incentives and board quality are not associated with contemporaneous fund performance ($t=1.52$ and $t=-.77$, respectively, and both $p>.10$). Therefore, OLS results do not support Hypotheses 2 and 3. On the other hand, fee is positive and significant ($t=2.38$, $p<.05$). In Columns 4 and 5, we examine the relationship between portfolio turnover ratio and governance measures. As shown in Column 4, D-2009 is significant, suggesting that fund portfolio turnover increased significantly in 2009 — the peak of financial crisis. However, there is no evidence supporting the conjecture in Hypothesis 4 and Stewardship Grade bears no contemporaneous relation with portfolio turnover ratio ($t=-1.5$, $p>.10$). As shown in Column 5, Hypotheses 5 and 6 are supported as both manager incentives ($t=-4.43$, $p<.01$) and board quality ($t=-2.51$, $p<.01$) are negatively correlated with fund portfolio turnover, while fee is not. In summary, OLS results are somewhat mixed. Stewardship Grade is positively associated with fund performance, but not with portfolio turnover ratio. On the other hand, manager incentives and board quality do not appear to be related to fund performance, but they bear a significant relationship with portfolio turnover ratio.[9]

As indicated earlier, mutual funds are heterogeneous because they adopt various investment styles and fund managers are endowed with different trading skills, and as a consequence, inferences based on OLS results may be biased or even flawed in this setting (because it estimates only the conditional mean of the performance distribution). Interpretations based on conditional means could be misleading if the responses of fund performance to fund governance measures vary across the whole spectrum of funds. This underscores the advantage and importance of the quantile regression approach in terms of revealing the correlation between fund performance and governance effectiveness.

4.2 Quantile Regression Results

4.2.1 Sharpe Ratio. In Table 3, we report the quantile regression results for Stewardship Grade using Sharpe Ratio as the dependent variable. Results in Columns 2 through 10 are for the 10^{th}, 20^{th}, 30^{th}, 40^{th}, 50^{th}, 60^{th}, 70^{th}, 80^{th}, and 90^{th} quantiles of the fund performance distribution, respectively. As indicated earlier, one should note that OLS model estimates only the conditional mean, while LAD model (50^{th} quantile) estimates only the conditional median, hence produce only single parameter estimates. It is interesting to note that although both Growth funds and Growth-Income funds do not perform that differently from the reference group (i.e., Equity-Income funds) according to the OLS results shown in Table 2, the quantile regression results reported in Table 3 reveal that these two groups perform worse at the right tail of the Sharpe Ratio distribution, whereas relatively better at the left tail, and as a result the net effect for each group as a whole becomes insignificant in the OLS regressions.

Among the fund characteristics control variables, fund portfolio turnover ratio is negative and significant for quantiles at the left tail of the Sharpe Ratio distribution (for the $10^{th} \sim 40^{th}$ quantiles, all $p<.01$), but positive and insignificant at the right tail, indicating that higher portfolio turnover dampens fund performance for poorer performing funds. Fund size measured

by funds' total assets under management is positive and significant across the board (all p<.01), suggesting that larger funds tend to perform better. What counters intuition is that the expense ratio carries a positive sign and is significant in the OLS regression and across all quantiles in the quantile regressions (all p<.01).

Insert Tables 3 and 4 about here

Turning to the main theme of this paper — fund governance, some interesting results emerge. While Table 2 reports a positive relation between Stewardship Grade and Sharpe Ratio (p<.05), results in Table 3 show that the strongest relation occurs at the right tail of the fund performance distribution. Consistent with Hypothesis 1, we find Stewardship Grade is positive and significant at the 1% level for the 70^{th}, 80^{th}, and 90^{th} performance quantiles (t=2.54, t=2.93, and t=2.97, respectively, and all p<.01) and the magnitude of the coefficients gets larger toward the right tail of the distribution, suggesting an overall weaker (stronger) association between Stewardship scores and fund performance for poorer (better) performing funds. In fact, the effect of Stewardship scores on fund performance is two times stronger for funds at the 90^{th} quantile than at the 10^{th} quantile. The LAD estimator (50^{th} quantile), although significant (p<.10), indicates a much weaker relation between Stewardship Grade and Sharpe Ratio than that of funds at the right tail of the performance distribution.

Table 4 presents the relations between Sharpe Ratio and Stewardship components, namely manager incentives and board quality (Hypotheses 2 and 3). OLS regressions in Table 2 fail to uncover any significant correlation between the two governance components and fund performance. LAD regression, as shown by the 50^{th} quantile column in Table 4, also does not show any significant relation. However, in testing Hypothesis 2, we find that manager incentives variable is significant in five of the nine quantiles, in particular at the right tail of the Sharpe

Ratio distribution (for the 70^{th} ~ 90^{th} quantiles, t=2.3, 2.23, and 2.33, respectively, and all p<.05). This indicates that there is a positive contemporaneous relation between manager incentives and fund performance for funds that perform well. Admittedly, this result suggests only an association between manger incentives and fund performance for good performing funds, but no causality can really be established. That is, manager compensations may be structured in accordance with fund performance for top performing funds. We do not know from this analysis, however, whether manager incentives promote good performance or funds architect effective incentives for good performing managers. Models that analyze funds' Alpha shown in the next subsection can better answer such questions. The other governance variable, board quality, however, is significant in only two of the nine quantiles, but with a wrong/unexpected sign (t=1.99, and t=-2.41, respectively, and both p<.05), suggesting the lack of a contemporaneous relation between fund performance and board quality (not what Hypothesis 3 predicts).

Overall, we find some evidence in support of Hypothesis 2 that manager incentives are positively related to fund risk-adjusted performance (measured by the Sharpe Ratio) for funds at the right tail of the performance distribution. That is, manager compensations are structured in a way that is consistent with fund performance for top performing funds. On the other hand, contrary to our initial expectation stated in Hypothesis 3, board quality seems to be unrelated to contemporaneous fund performance measured by the Sharpe Ratio. In fact, board quality carries negative signs for five of the nine quantiles. What's more, fee does not seem to bear any robust relation with fund performance. This effect of fee is overshadowed by that of a more specific measure of fund expenses — expense ratio. The fact that Morningstar assigns the same fee score to all share classes in a fund despite their differences in fee structure may also contribute to the weaker results for fee. Note that this finding is not clear in the OLS models; only the results in the quantile regression models are revealing.

Figure 1 plots the above parameter values at various quantiles of the Sharpe Ratio distribution, which offers a visual inspection of fund performance along with the impacts of various governance measures considered.[10] The shaded areas represent estimators within 95% confidence bands.

Insert Figure 1 about here

Figures 1 (a) ~ (d) plot the parameters for the Stewardship Grade, manager incentives, board quality, and fees, respectively. It can be observed in Figure 1(a) that a positive relation between Stewardship Grade and fund performance is most evident for funds at the right tail of the performance distribution, meaning good performing funds have a stronger correlation with funds' Stewardship scores. Figure 1(b) shows that not only the manager incentives variable exerts positive impacts on fund performance across quantiles, but also the effect increases especially at the right tail of the distribution. Figure 1(c) depicts the relation between board quality and fund performance across quantiles. Most of the parameter estimates are indifferent from zero, and they even turn negative at the right tail of the performance distribution. In addition to the above three governance variables, we also plot the results for variable fee in Figure 1(d), which shows that most of the parameter estimates are close to zero with the exception of the 90th quantile.

4.2.2 **Portfolio Turnover Ratio.** We test Hypotheses 4~6 by using alternative estimation methods to study the contemporaneous relation between fund governance and portfolio turnover. Dow and Gorton (1997) argue that compensation contracts promote noise trading (churning) in the sense that managers engage in ex ante unprofitable trades that have some chance of being profitable ex post. Since higher portfolio turnover adds to selling expenses and shareholders' tax

burdens, we examine if fund governance effectiveness alleviates this agency problem in any way.

Insert Tables 5 and 6 about here

Table 5 reports the quantile regression results of the relation between fund portfolio turnover ratio and Stewardship Grade. The quantile regression results lend support to Hypothesis 4, with all parameters being negative and significant with the only exception of the 90^{th} quantile (all $p<.01$ for the 20^{th} ~ 80^{th} quantiles). The magnitude of the parameters also gradually gets larger from the left to the right tail of the portfolio turnover distribution. Such result stands a sharp contrast to that reported in Table 2, where an insignificant relation between portfolio turnover ratio and Stewardship Grade is found using OLS method. Indeed, a better fund Stewardship score is expected to be associated with lower fund portfolio turnover, but such result is missing in the OLS regression.

The relationship between manager incentives/board quality and portfolio turnover is presented in Table 6. The manager incentives variable is negative and statistically significant at the 1% level in eight of the nine quantiles (all $p<.01$ for the 20^{th} ~ 90^{th} quantiles), suggesting that a well-structured compensation package will help reduce noise trading as posited by Hypothesis 5. For board quality, however, none of the quantile coefficients is significant (all $p>.10$). Therefore, this governance measure does not appear to have any direct relationship with the frequency of fund portfolio turnover. As such, Hypothesis 6 is not supported. As for fee, the same conclusion can be drawn, as all fee coefficients are not statistically significant across nine quantiles (all $p>.10$). It should be noted that since expense ratio is included in the model to control for fund characteristics, and one might suspect potential correlations between expense ratio and fee would skew the results. Therefore, we also run quantile regressions excluding the

expense ratio. Not to our surprise, fee becomes mostly significant in all quantiles as well as with the predicted negative sign (i.e. better the fee structure, lower the portfolio turnover). However, the fact that fee becomes insignificant once expense ratio is included in the model illustrates that most of the effect on fund portfolio turnover from fee has already been captured by the expense ratio. Consequently, it looks like offering managers the right incentives is the most effective way in curbing excessive portfolio turnovers.[11]

Figure 2 plots regression parameter values at various quantiles of the portfolio turnover distribution.[12] Figure 2(a) captures a generally negative relation between Stewardship Grade and turnover ratio, and this relation is robust across quantiles with the exception of funds at the 90^{th} quantile. Sound governance mechanisms thus persistently discourage frequent trading. This is strong evidence for Hypothesis 4. Figure 2(b) shows an outright negative relation between manager incentives and portfolio turnover ratio and is in line with Hypothesis 5; the downward sloping curve clearly reveals that this negative relation strengthens as turnover ratio ratchets up. That is, manager incentives seem to work the best in discouraging portfolio turnover in funds with the highest turnover ratio. In contrast, Hypothesis 6 is not supported. Figure 2(c) exhibits that the parameters of board quality are mostly indistinguishable from zero, indicating the lack of relationship between board quality and fund turnover ratio across the entire spectrum of portfolio turnover distribution. Finally, Figure 2(d) depicts the relation between fee and fund turnover. The absence of a significant relation is manifest. Taken together, quantile regression results thus reveal additional information that is not evident in the OLS models on several fronts.[13]

Insert Figure 2 about here

4.3 Can Fund Governance Scores Predict Performance?

With the contemporaneous relationship between Stewardship scores and fund performance examined, a relevant and equally important question arises: Are Stewardship scores capable of predicting funds' future performance? Contemporaneous relationships between Stewardship scores and fund performance reveal certain "associations" between them; they do not, however, necessarily suggest any causality between the two. For example, a significant relation between manager incentives and fund performance indicates only that managerial compensation structure is related to performance; it does not necessarily imply that sound manager incentives "promote" good fund performance. To address this question, in this subsection we seek to examine if sound governance mechanisms promote future fund performance. To this end, the performance measure used in the regression models is Morningstar's three-year Alpha. Morningstar calculates Alpha by subtracting expected returns given the risk level from actual returns, and it is an alternative measurement of risk-adjusted return. Morningstar reports only three-year Alpha, hence, the dependent variable Alpha is measured in year *t* and independent variables are measured in year *t-2*. For example, Alpha reported in 2009 is the average risk-adjusted performance in 2009, 2008, and 2007. Therefore, we use governance variables reported in 2007 for the independent variables. That is, we try to test if governance variables in 2007 can reasonably predict fund performance in the ensuing three years (2007 inclusive). This procedure reduces the sample size to 1,063 observations in Table 7 and 975 in Table 8.

Table 7 reports both the OLS and quantile regression results for the Stewardship Grade. Three findings are worth noting. First, OLS model shows that expense ratio has no power to predict three-year Alpha. On the other hand, quantile regression reveals that higher expense ratios produce predictions of lower Alphas for poorer performing funds. Second, the OLS model shows that portfolio turnover ratio is positively correlated with three-year Alpha. Quantile

regressions, however, reveal that the existence of the positive correlation is mainly due to better performing funds (all $p<.01$ for the $60^{th} \sim 90^{th}$ quantiles). Poorer performing funds bear no such relationship. This result is consistent with the findings in Wermers (2000). Third, both OLS and quantile regressions show that Stewardship Grades essentially fail to predict the Alpha (all $p>.10$, with the only exception of the 90^{th} quantile where $p<.10$), not supporting the prediction in Hypothesis 1.

Table 8 presents the results for manager incentives and board quality. OLS model shows that the manager incentives variable is not statistically significant, while board quality turns out to be positive and significant ($t=2.13$, $p<.05$). Quantile regressions point out similar results. The manager incentives variable is not significant in all quantiles, while board quality is significant in eight of the nine quantiles ($p<.01$ for six quantiles, $p<.05$ for the 80^{th} quantile, and $p<.1$ for the 60^{th} quantile). The obtained results of board quality thus form sharp contrasts to the manager incentives results. Recall that in the contemporaneous models, the manager incentives variable is significantly related to Sharpe Ratio for funds at the right tail of the performance distribution, but board quality is not significant across all quantiles. Based upon our sample, we thus conclude that although managerial compensation is structured to be consistent with managers' performance, but compensation design has no direct predictive power for future longer-term performance. This finding suggests that caution should be exercised when one is using manager incentives scores to gauge fund future performance, even though Morningstar's original intention of using the score is to capture the incentives for long-term performance. On the other hand, although board quality is not related to fund performance contemporaneously, sound board quality does appear to help promote funds' future longer-term performance. Our results of funds' longer term performance thus do not produce evidence to support Hypothesis 2; instead, Hypothesis 3 is strongly supported.

Insert Tables 7 and 8 about here

Figure 3 plots the quantile regression parameters for Stewardship Grade, manager incentives, board quality, and fee. As can be seen from Figure 3(a), most of the Stewardship Grade parameters are not distinguishable from zero except for the 90th quantile. Of more interest is the parameters for manager incentives as displayed in Figure 3(b). While manager incentives are associated with contemporaneous Sharpe Ratio as reported in Table 4 and Figure 1(b), none of the quantile parameters are significantly different from zero when three-year Alpha is the performance measure. Hence manager incentives have poor predictive power for future fund performance. On the other hand, while board quality is found to be not associated with contemporaneous Sharpe Ratio as reported in Table 4, it is significant in all quantiles except the 10th (Figure 3(c)). Therefore, investors should pay more attention to board quality scores when it comes to assessing or predicting a fund's longer-term future performance.

Insert Figure 3 about here

4.4 Robustness Checks

We conduct a few more robustness tests to check the reliability of our results and to provide some additional evidence. The first test is to re-examine the relation between Sharpe Ratio and manager incentives/board quality while excluding fee in the models. The results should be compared with those reported in Table 4. We exclude fee in the model because fee is Morningstar's measurement of a fund's expenses score. Although fee is constructed using the fund's comparison group as the benchmark, to some extent both fees and expense ratio measure the same thing. As discussed in Endnote 11, fees and expense ratio have a simple correlation of 0.47 — the highest among all control variables. The new results (partial results; parameters of

other covariates are not reported to save space) are reported in Panel A, Table 9. As can be observed, the new test does not alter our prior conclusions.

The second test is to re-examine the relation between Sharpe Ratio and various governance scores including all of the five Stewardship components. As stated earlier, Table 4 focuses only on manager incentives and board quality due to the following considerations: managerial compensation and board structure are the most researched and debated governance mechanisms; and there are many missing observations in the regulatory history and corporate culture scores, in particular in 2006 and 2007. Nevertheless, we re-run the quantile regressions by including all five Stewardship components and the new results are reported in Panel B. Again, parameters of the other covariates are not reported to save space. The results indicate that fee, regulatory history, and corporate culture are insignificant in all quantiles, while the results for manager incentives and board quality are similar to those reported in Table 4, albeit a little weaker due to the reduction in the number of observations (hence useful information) in the regression analysis. Manager incentives effect is the strongest for good performing funds.

The third test we carry out is to replicate the results reported in Table 4 but excluding Fixed Income funds. Fixed Income funds are very different from Equity funds. Although category dummies and the use of quantile regressions may mitigate fund heterogeneity to a certain extent, we re-examine the data excluding Fixed Income funds for results robustness purpose. As reported in Panel C of Table 9, the findings are very similar to those reported in Table 4 with only minor variations. In addition to Fixed Income funds, when we add Balanced funds to the exclusion list (as Balanced funds invest in both equity and bonds), the results, though not reported, do not alter our earlier conclusions.

Finally, we replicate the regressions of Table 8 (relation between Alpha and Stewardship components) by excluding fee in the model (for reasons discussed for Panel A), and the new

results are reported in Panel D of Table 9. Excluding fee in the model does not change our conclusions. Manager incentives have no ability to predict funds' future performance, while board quality still shows impressive predictive power in this regard.

Insert Table 9 about here
---

5. CONCLUSIONS

We investigate the relation between Morningstar's fiduciary grades and mutual fund performance. Fiduciary grades studied include Stewardship Grade and its two components, namely, manager incentives and board quality, because these two governance mechanisms are the most studied and debated in the literature. Sharpe Ratio and portfolio turnover ratio are examined in the contemporaneous models, while three-year Alpha is studied in the forecasting models. Both OLS and quantile regressions are conducted to contrast the differences in empirical results.

We document a number of new and interesting findings which largely support our theoretical predictions based on agency theory. First, quantile regressions reveal key information that cannot be observed from OLS models otherwise. Second, Stewardship Grade is positively and significantly associated with Sharpe Ratio in both the OLS and quantile regression models. Quantile regressions show that, however, the strongest relation exists at the right tail of the performance distribution. The relationship between Stewardship Grade and portfolio turnover ratio also differs between the results from the OLS and quantile regressions. While OLS model shows an insignificant relation between Stewardship Grade and fund turnover, quantile regressions reveal a strong negative and significant relation between the two (with the exception of the 90^{th} quantile). Stewardship Grade, however, has been demonstrated to have little ability to predict funds' future performance measured by the three-year Alpha.

Third, manager incentives variable is not associated with the fund performance measure in the OLS models. However, it is found to be positively and significantly associated with Sharpe Ratio in five out of nine quantiles, especially at the right tail of the performance distribution, suggesting that compensation policies are designed to be consistent with fund performance for good performing funds. Moreover, manager incentives exhibit a significant and negative relationship with portfolio turnover ratio in both the OLS and quantile regressions, implying that sound compensation structure can discourage fund churning. Despite the existence of a positive and significant contemporaneous relation between manager incentives and Sharpe Ratio for good performing funds, manager incentives fail to predict funds' future performance measured by the three-year Alpha.

Fourth, board quality, which is emphasized by the SEC proposal on mutual fund governance, bears no contemporaneous relationship with Sharpe Ratio in both the OLS and the quantile regressions. However, in a sharp contrast to the contemporaneous results, quantile regressions show that board quality is capable of predicting funds' future long-term performance measured by the three-year Alpha. In short, our results demonstrate that manager incentives are related to funds' contemporaneous performance; on the other hand, board quality seems to exhibit a strong ability to predict funds' future performance.

This last finding benefits from more elaboration. We attribute such finding to two possible factors. First, Morningstar's board quality score takes into account "if the board consistently acts in shareholders' best interests" in addition to "if the board is led by an independent chairman and 75% independent directors." Second, the lack of relation between board quality and contemporaneous fund performance should not come as a total surprise, because directors' incentive compensations are often not as clearly dependent on the immediate fund performance as are those of the executive teams. In fact, many directors' compensation

packages include fixed cash remunerations plus some type of reward that is in close connection with their performance on extraordinary tasks. Therefore, a weaker connection between board quality measurement and contemporaneous fund performance is expected. Independent boards and their equity ownership, however, may be responsible for the better long-term fund performance.

Although empirical evidence largely supports our proposed hypotheses, the fact that a few of them are not substantiated can be attributable to the following reasons. First, methodological differences may provide part of the explanations. For example, while the manager incentives variable is not a significant determinant of contemporaneous Sharpe Ratio in the OLS regression, it shows up as significant in some quantile regressions. Stewardship Grade is not a significant determinant of portfolio turnover ratio in the OLS regression, yet it becomes strongly significant in the quantile regressions. Second, differences in contemporaneous versus future performance can also explain part of the discrepancies. For example, subscribing to the principal-agent theory, most of the incentive pays are designed based upon managerial performance, hence it is not a surprise to detect a positive relation between incentive pays and contemporaneous fund performance, especially for good performing funds. However, it is still fairly controversial whether incentive pays designed to "motivate" managers actually leads to better future firm performance. Our findings on the existence of a contemporaneous relation between manager incentives and Sharpe Ratio for top performing funds, and the lack of a similar relation between manager incentives and funds' future performance shed some new light on this ongoing debate. Third, one cannot completely rule out such possibilities that may be at play — the managerial power theory discussed in Bebchuk and Fried (2004), the potential endogeneity problem embedded in the analysis (e.g., Boone et al., 2007), and the recent argument by

Bebchuk et al. (2010) that market participants' learning contributes to the disappearance of the governance-return association.

Although our research contributes to a better understanding of the mutual fund governance and performance, there are certain limitations. First, since Morningstar's data on Stewardship Grades have a relatively short history and the coverage represents only approximately 15% of all funds covered by Morningstar, studies using longer sampling periods and larger samples of mutual funds should be conducted in the future. Second, mutual fund performance measurements such as Sharpe Ratio and 3-year Alpha are employed in this study because they are very popular among mutual fund professionals and retail investors, and are provided by the Principia database. Although both are good risk-adjusted performance measures, 3-factor and/or 4-factor models are alternative measures of risk-adjusted returns; as such, they are suggested to be used in future studies. Third, to avoid the bias of overweighting funds with multiple share classes, we choose only one share class from each fund for analysis. Although share classes differ only in fee structures, a detailed study that further examines each share class will strengthen our results. Lastly, due to the data constraint, our research is a single country study (i.e., U.S.). These findings thus may not be generalized for other countries.

Despite the few limitations, we believe that our study makes a valuable contribution to the corporate governance literature on mutual funds and our findings have important and useful regulatory implications, as the efficacy of SEC's proposal on board and chairman independence is under fierce debate and has been challenged by the industry and the Commerce Department. One of the primary practical implications of this study is that our results are useful for investors who usually rely heavily on Morningstar's ranking services. More importantly, our finding that manager incentives is contemporaneously associated with fund performance but unrelated to funds' future performance, suggests that although compensation contracts are indeed designed to

mitigate the principal-agency problem, there is no evidence that funds will perform better as a result. On the other hand, board quality, though not associated with contemporaneous fund performance, shows strong ability in predicting funds' future performance. Therefore, board structure seems to be a more effective mechanism in promoting shareholders' wealth than compensation structure. This evidence lends support to the SEC's proposal on board and chairman independence in the mutual fund industry.[14]

NOTES

1. For discussions of mutual fund late trading, see Zitzewitz (2008).

2. "Trends in Mutual Fund Activity," published by Investment Company Institute, July 2009.

3. Our computer algorithm selects the first share class listed in the Morningstar database. We did not aggregate fund share classes data, because it will induce aggregation bias and individual information lost in the aggregating process.

4. Nevertheless, we include all five components in the robustness test section of the paper. Corporate culture and regulatory history are not significant in all quantiles, and our conclusions remain.

5. Fact Sheet: The Morningstar Stewardship Grade for Funds.

6. Fees measure a fund's expense ratio in a comparison group. This differs from the expense ratio, which is the raw expense ratio without any adjustment for comparison groups.

7. Although the objective dummies control some fund heterogeneity, funds still differ in stock selection and market timing ability even if they share the same objective.

8. See the Quantreg Procedures, SAS Institute.

9. There could be a potential endogeneity issue for fund performance and turnover ratio. We did not pursue this issue, because (1) a methodology that takes into account both quantile regressions and simultaneous equations is not available and the sampling property cannot be known; (2) Evans (2008) analyzes fund performance and turnover ratio in a simultaneous equation setting, but documents results no different from single-equation OLS regressions.

10. To save space, graphs for dummy variables and control variables are not presented.

11. We examine the Pearson simple correlations between all pairs of exogenous variables. Except for the correlations between Stewardship Grade and its components (i.e., manager incentives, board quality, and fees), correlations between control variables are low, typically less than 10%. The higher correlation between Stewardship Grade and its components is expected because the former is an integrated measure of the latter. This is not a concern because Stewardship Grade and its individual components do not appear in the same equation. Correlations between pairs of Stewardship components are low. For example, the correlation between manager incentives and board quality is less than 1%. Multicollinearity among these variables is thus not a concern. The only exception is the correlation between expense ratio and fees (47%). We thus provide regression analyses excluding fees in some models and add several robustness tests. To save space, the correlations are not reported. They are available upon request.

12. To save space, graphs for dummy variables and control variables are not presented.

13. Note that Morningstar's portfolio turnover data are as of the last date when the portfolio is reported; hence all funds do not have the same reporting date. To mitigate the non-synchronization problem, we conduct additional tests using 2-year moving averages. The results are very similar to our original results and none of the conclusions is altered. In fact, some of the results turn out to be more significant than the original ones.

14. SEC Rule 38a-1 already requires that mutual fund compliance officer reports to the board instead of to the management. See Hoffman, Neill, and Stovall (2008) for discussions.

REFERENCES

Bauer, R., Gunster, N. & Otten, R. 2004. Empirical evidence on corporate governance in Europe: the effect on stock returns, firm value and performance. ***Journal of Asset Management***, 5: 91–104.

Bebchuk, L.A. & Fried, J. M. 2004. ***Pay without performance: The unfulfilled promise of executive compensation***. Cambridge and London: Harvard University Press.

Bebchuk, L.A., Cohen, A., & Ferrell, A. 2004. What matters in corporate governance? Working paper, Harvard Law School.

Bebchuk, L.A., Cohen, A., & Wang, C.C.Y. 2010. Learning and the disappearing association between governance and returns. NBER working papers: 15912, National Bureau of Economics Research.

Beiner, S., Drobetz, W., Schmid, M.M., & Zimmermann, H. 2006. An integrated framework of corporate governance and firm valuation. ***European Financial Management***, 12(2): 249-83.

Bhagat, S., Carey, D.C., & Elson, C.M. 1999. Director ownership, corporate performance, and management turnover. ***Business Lawyer***, 54: 885-919.

Bhagat, S., & Bolton, B. 2008. Corporate governance and firm performance. ***Journal of Corporate Finance***, 14(3): 257-73.

Bollen, N. & Busse, J. 2001. On the timing ability of mutual fund managers. ***Journal of Finance***, 56(3): 1075–94.

Bollen, N. & Busse, J. 2005. Short-term persistence in mutual fund performance. ***Review of Financial Studies***, 18(2): 569–97.

Boone, A.L., Field, L.C., Karpoff, J. M. & Raheja, C.G. 2007. The determinants of corporate board size and composition: An empirical analysis. ***Journal of Financial Economics***, 85: 66-101.

Budiono, D.P. & Martens, M. 2010. Mutual funds selection based on funds characteristics. ***Journal of Financial Research***, 33 (3): 249-65.

Carhart, M.M. 1997. On persistence in mutual fund performance. ***Journal of Finance***, 52 (1): 57-82.

Chou, W-H, Ng, L. & Wang, Q. 2007. ***Do governance mechanisms matter for mutual funds?*** Working paper, University of Wisconsin-Milwaukee.

Core, J., Guay, W. & Larcker, D. 2003. Executive equity compensation and incentives: A survey. Federal Reserve Bank of New York, ***Economic Policy Review***, 9: 27-50.

Dalton, D., Daily, C., Ellstrand, A. & Johnson, J. 1998. Meta-analytic review of board composition, leadership structure, and financial performance. ***Strategic Management Journal***, 19: 269-290.

Daniel, K., Grinblatt, M., Titman, S. & Wermers, R. 1997. Measuring mutual fund performance with characteristic-based benchmarks. ***Journal of Finance***, 52(3): 1035-58.

Del Guercio, D. & Tkac, P. A. 2008. Star power: The effect of Morningstar ratings on mutual fund flow. ***Journal of Financial and Quantitative Analysis***, 43: 907-936.

Demsetz, H., & Lehn, K. 1985. The structure of corporate ownership: Causes and consequences. ***Journal of Political Economy***, 93(6): 1155-77.

Demsetz, H. & Villalonga, B. 2001. Ownership structure and corporate performance. ***Journal of Corporate Finance***, 7(3): 209-33.

Dow, J. & Gorton, G. 1997. Noise trading, delegated portfolio management, and economic welfare. ***Journal of Political Economy***, 105: 1024-1050.

Drobetz, W., Schillhofer, A. & Zimmermann, H. 2004 Corporate governance and expected stock returns: evidence from Germany. ***European Financial Management***, 10: 267–93.

Eisenberg, T., Sundgren, S. & Wells, M.T. 1998. Larger board size and decreasing firm value in small firms. ***Journal of Financial Economics***, 48(1): 35-54.

Evans, A. L. 2008. Portfolio manager ownership and mutual fund performance. ***Financial Management***, 37: 513-534.

Ferris, S.P. & Yan, X. 2007. Do independent directors and chairman really matter? The role of boards of directors in mutual fund governance. ***Journal of Corporate Finance***, 13: 392-420.

Gerety, M., Hoi, C.K., & Robin, A. 2001. Do shareholders benefit from the adoption of incentive pay for directors? ***Financial Management***, 30(4): 45-61.

Gompers, P.A., Ishii, J.L., & Metrick, A., 2003. Corporate governance and equity prices. ***Quarterly Journal of Economics***. 118(1): 107-55.

Grinblatt, M. & Titman, S. 1992. The persistence of mutual fund performance. ***Journal of Finance***, 47(5): 1977–84.

Grinblatt, M. & Titman, S. 1994. A study of monthly mutual fund returns and performance evaluation techniques. ***Journal of Financial and Quantitative Analysis***, 29(3): 419-44.

Gruber, M.J. 1996. Another puzzle: The growth in actively managed mutual funds. ***Journal of Finance***, 51: 783-810.

Hall, B. & Liebman, J. 1998. Are CEOs really paid like bureaucrats? ***Quarterly Journal of Economics***, 113: 653-691.

Hermalin, B.E. &Weisbach, M.S. 1991. The effects of board composition and direct incentives on firm performance. ***Financial Management***, 20(4): 101-12.

Hermalin, B.E. & Weisbach, M.S. 1998. Endogenously chosen boards of directors and their monitoring of the CEO. ***American Economic Review***. 88(1): 96-118.

Hoffman, M.W., Neill, J.D., & Stovall, S.O. 2008. Mutual fund compliance officer independence and corporate governance. ***Corporate Governance: An International Review,*** 16(1): 52-60.

Jensen, M.C. 1993. The modem industrial revolution, exit, and the failure of internal control systems. ***Journal of Financial Economics***, 48: 831-880.

Kacperczyk, M., Sialm, C. & Zheng, L. 2005. On the industry concentration on actively managed equity mutual funds. ***Journal of Finance***, 60:1983-2011.

Karmarkar, N. 1984. A new polynomial-time algorithm for linear programming. ***Combinatorica***, 4: 373-395.

Khorana, A., Servaes, H. & Wedge, L. 2007. Portfolio manager ownership and fund performance. ***Journal of Financial Economics***, 85: 179-204.

Khorana, A., Tufano, P. & Wedge, L. 2007. Board structure, mergers and shareholder wealth: A study of the mutual fund industry. ***Journal of Financial Economics***, 85: 571-98.

Koenker R. & Bassett, G. 1978. Regression Quantiles. ***Econometrica***, 46: 33-50.

Koenker R. & Hallock, K.F. 2001. Quantile regression. ***Journal of Economic Perspective***, 15: 143-156.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. 2002. Investor protection and corporate valuation. ***Journal of Finance***, 57:1147–70.

Lehmann, B. & Modest, D. 1987. Mutual fund performance evaluation: A comparison of benchmarks and benchmark comparisons. ***Journal of Finance***, 42: 233–65.

Lipton, M. & Lorsch, J.W. 1992. A modest proposal for improved corporate governance. ***Business Lawyers***, 48(1): 59-77.

Mahoney, P.G. 2004. Manager-investor conflicts in mutual funds. ***Journal of Economic Perspectives***, 18 (2): 161-82.

Mehran, H. 1995. Executive compensation structure, ownership, and firm performance. ***Journal of Financial Economics***, 38: 163-184.

Murphy, K. 1999. Executive compensation. In Ashenfelter, O. & Card, D. (Eds.), ***Handbook of Labor Economics***, 3, North-Holland, Amsterdam.

Radin, R.F., & Stevenson, W.B. 2006. Comparing mutual fund governance and corporate governance. ***Corporate Governance: An International Review***, *14(5): 367-76*.

Rosenstein, S. & Wyatt, J. 1990. Outside directors, board independence, and shareholder wealth. ***Journal of Financial Economics***, 26: 175-191.

Ryan, H.E. Jr. & Wiggins, R.A. III. 2004. Who is in who's pocket? Director compensation, board independence, and barriers to effective monitoring. ***Journal of Financial Economics***, 73: 497-524.

Tobe, C. 2000. Mutual fund directors: Governance changes proposed for independent directors in the US. ***Corporate Governance: An International Review****, 8(1): 25.*

Tufano, P. & Sevick, M. 1997. Board structure and fee-setting in the US mutual fund industry. ***Journal of Financial Economics****,* 46: 312-335.

Wellman, J. &Zhou, J. 2008. ***Corporate governance and mutual fund performance: A first look at the Morningstar Stewardship Grades***. Working paper, Binghamton University.

Wermers, R. 1997. ***Momentum investment strategies of mutual funds, performance persistence, and survivorship bias***. Working paper, University of Colorado.

Wermers, R. 2000. Mutual fund performance: An empirical decomposition into stock-picking talent, style, transaction costs, and expenses. ***Journal of Finance***, 55 (4): 1655-95.

Yermack, D. 1996. Higher market valuation of companies with a small board of directors. ***Journal of Financial Economics***, 40(2): 185-211.

Zitzewitz, E. 2006. How widespread was late trading in mutual funds? ***American Economic Review Papers & Proceedings***, 96: 284-89.

TABLE 1
Descriptive Statistics

Panel A

Year	No. of Funds in Morningstar	No. of Funds with Stewardship Grade
2006	6,734	1,109
2007	6,851	1,126
2008	7,166	1,064
2009	7,035	865

Panel B

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Sharpe Ratio	4120	0.47	0.42	0.75	-3.05	2.82
3-Year Alpha	4120	0.61	0.01	4.61	-36.21	31.89
Turnover Ratio	4164	75.55	51.0	124.21	0	5,424
Total Assets	4149	4,510.57	1,344.3	11,880.25	13.5	197,059
Age	4150	16.63	13.0	12.09	0	79
Expense Ratio	4090	0.99	1.01	0.43	0	3.17
Stewardship	4164	3.37	3.0	0.88	1.0	5.0
Incentive	4164	3.14	3.0	1.11	1.0	5.0
Board	3867	3.61	4.0	0.63	1.0	5.0
Fee	4164	3.84	4.0	1.31	1.0	5.0

Panel C

Fund Objective	Max No. of Obs.	Sharpe Ratio	Alpha	Turnover Ratio	Total Assets	Steward-ship	Incentive	Board
Balanced	158	0.53	-1.42	60.29	6350.8	3.44	3.25	3.66
Growth	1471	0.50	0.77	74.23	3657.5	3.44	3.35	3.59
Growth-Income	419	0.47	0.33	44.97	8627.5	3.51	3.32	3.62
Asset Allocation	141	0.44	-1.06	55.09	5519.0	3.38	2.69	3.58
Specialty	324	0.57	3.14	84.53	1537.6	3.34	2.79	3.64
International	596	0.99	1.30	62.45	5803.5	3.33	3.10	3.67
Fixed Income	929	0.05	-0.18	100.59	3135.2	3.24	2.92	3.62
Equity-Income	126	0.44	0.36	87.72	7935.3	3.32	3.19	3.45

This table reports descriptive statistics for all variables used in the study. Sharpe Ratio is the annualized monthly Sharpe Ratio; 3-Year Alpha is the beta-adjusted return over three years period; Turnover Ratio is the fund's portfolio turnover ratio (in percentage); Total Assets is the total asset under management (in million dollars); Age is the age of the fund (in years); Expense Ratio is the fund's expense ratio (in percentage); Stewardship is Morningstar's Stewardship Grade; Incentive is Morningstar's manager incentives grade; Board is Morningstar's board quality grade; and Fee is Morningstar's measure of fund expenses within the comparison group.

TABLE 2

OLS Regression Models for Stewardship Components

	Sharpe Ratio	Sharpe Ratio	Turnover Ratio	Turnover Ratio
Intercept	0.18*	0.22**	78.52**	100.95**
	(2.36)	(2.56)	(3.92)	(4.4)
D-2007	-0.10**	-0.08**	-0.17	-0.02
	(-4.96)	(-3.6)	(-0.03)	(0.0)
D-2008	-0.82**	-0.80**	1.47	2.16
	(-37.9)	(-36.3)	(0.26)	(0.37)
D-2009	-1.18**	-1.15**	19.65**	21.17**
	(-52.2)	(-49.9)	(3.40)	(3.49)
D-Balanced	0.07	0.05	-9.91	-9.47
	(1.17)	(0.8)	(-0.69)	(-0.63)
D-Growth	-0.03	-0.03	-11.74	-12.07
	(-0.77)	(-0.64)	(-1.08)	(-1.07)
D-Growth-income	0.01	0.01	-27.63*	-28.39*
	(0.27)	(0.11)	(2.31)	(-2.27)
D-Specialty	0.11*	0.12**	-1.61	-5.76
	(2.22)	(2.48)	(-0.13)	(-0.44)
D-Bond	-0.37**	-0.35**	26.55*	24.01*
	(-8.5)	(-7.89)	(2.39)	(2.08)
D-International	0.48**	0.47**	-28.50**	-32.84**
	(10.8)	(10.3)	(2.47)	(-2.71)
D-Allocation	0.09	0.10	-19.81	-24.04
	(1.57)	(1.75)†	(-1.33)	(-1.56)
Age	-0.00	-0.00	-0.48**	-0.46**
	(-0.89)	(-0.64)	(-2.83)	(-2.57)
Turnover x 10^3	-0.05	-0.02		
	(-0.85)	(-0.32)		
Total Assets	0.08**	0.07**	-1.55	0.44
	(13.3)	(11.4)	(-1.01)	(0.26)
Expense Ratio	0.14**	0.12**	31.25**	39.45**
	(5.96)	(4.78)	(5.24)	(6.1)
Stewardship Grade	0.02*		-3.80	
	(2.43)		(-1.5)	
Incentive		0.01		-8.75**
		(1.52)		(-4.43)
Board		-0.01		-8.32**
		(-0.77)		(-2.51)
Fee		0.02*		0.44
		(2.38)		(0.24)
N	4025	3743	4025	3777
Adj-R^2	0.59	0.57	0.04	0.04

This table reports coefficient estimates for the OLS regressions. Dependent variables are the fund's Sharpe Ratio and portfolio turnover ratio. D-200x are yearly dummy variables, D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's portfolio turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; Stewardship is Morningstar's Stewardship Grade; Incentive is Morningstar's manager incentives grade; Board is Morningstar's board quality grade; and Fee is Morningstar's measure of fund expenses within the comparison group. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

TABLE 3
Quantile Regression Model for Sharpe Ratio-Stewardship Grade

	Quantile								
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Intercept	0.09	0.25**	0.37**	0.42**	0.52**	0.58**	0.61**	0.67**	0.78**
	(1.26)	(3.02)	(5.1)	(6.03)	(8.09)	(7.96)	(8.0)	(7.1)	(7.5)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D-Balanced	0.08	0.14*	0.02	-0.02	-0.03	-0.03	-0.04**	-0.06	-0.03
	(1.39)	(2.31)	(0.43)	(-0.45)	(-0.64)	(-0.59)	(-0.82)	(-0.96)	(-0.41)
D-Growth	0.05	0.02	-0.06	-0.09*	-0.11**	-0.13**	-0.12**	-0.13**	-0.17**
	(1.26)	(0.44)	(-1.49)	(-2.36)	(-3.3)	(-3.3)	(-2.88)	(-2.56)	(-3.09)
D-Growth-income	0.09*	0.06	-0.02	-0.03	-0.08*	-0.11*	-0.10*	-0.12*	-0.13*
	(1.95)	(1.17)	(-0.52)	(-0.84)	(-2.2)	(-2.43)	(-2.19)	(-2.08)	(-2.04)
D-Specialty	-0.08†	-0.04	-0.05	-0.01	-0.03	0.04	0.11*	0.16**	0.27**
	(-1.62)	(-0.8)	(-1.11)	(-0.3)	(-0.66)	(0.88)	(2.36)	(2.80)	(4.22)
D-Bond	-0.69**	-0.61**	-0.64**	-0.62**	-0.56**	-0.36**	-0.17**	-0.00†	0.02
	(-16.2)	(-13.4)	(-16.0)	(-16.0)	(-15.8)	(-9.0)	(-4.1)	(-1.78)	(0.39)
D-International	0.37**	0.41**	0.46**	0.47**	0.44**	0.45**	0.46**	0.44**	0.39**
	(8.2)	(8.63)	(10.9)	(11.7)	(12.0)	(10.7)	(10.5)	(8.0)	(6.7)
D-Allocation	0.23**	0.14*	0.05	0.02	-0.01	-0.03	-0.05	-0.09	-0.15*
	(3.96)	(2.35)	(0.93)	(0.48)	(-0.19)	(-0.52)	(-0.88)	(-1.32)	(-1.95)
Age x 10^2	-0.03	-0.01	-0.08	-0.10	-0.09	-0.10	-0.09	-0.09	-0.18*
	(-0.45)	(-1.46)	(-1.4)	(-1.54)	(-1.57)	(-1.62)	(-1.46)	(-1.18)	(-2.12)
Turnover Ratio x 10^2	-0.04**	-0.04**	-0.04**	-0.02**	-0.01†	-0.01	0.00	0.01	0.00
	(-6.55)	(-5.51)	(-6.28)	(-2.91)	(-1.64)	(-1.13)	(0.1)	(0.92)	(0.3)
TA	0.04**	0.04**	0.05**	0.06**	0.06**	0.06**	0.07**	0.07**	0.07**
	(7.35)	(7.01)	(9.57)	(11.4)	(12.9)	(11.7)	(11.8)	(9.7)	(9.3)
Expense Ratio	0.06**	0.07**	0.07**	0.08**	0.08**	0.09**	0.09**	0.10**	0.13**
	(2.64)	(2.74)	(3.11)	(3.92)	(4.35)	(3.99)	(4.05)	(3.37)	(4.34)
Stewardship	0.02†	0.02*	0.02*	0.02†	0.01†	0.02*	0.02**	0.04**	0.04**
	(1.62)	(2.12)	(1.96)	(1.75)	(1.62)	(2.16)	(2.54)	(2.93)	(2.97)

This table reports coefficient estimates for the quantile regressions. N=4,025. Dependent variable is the Sharpe Ratio. D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's portfolio turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; and Stewardship is Morningstar's Stewardship Grade. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

TABLE 4
Quantile Regression Model for Sharpe Ratio and Stewardship Components

	Quantile								
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Intercept	0.08	0.28**	0.35**	0.43**	0.57**	0.68**	0.74**	0.87**	1.01**
	(0.84)	(3.3)	(4.3)	(5.7)	(7.8)	(8.4)	(8.7)	(8.1)	(9.5)
Yearly Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D-Balanced	0.10†	0.11*	0.03	-0.04**	-0.03	-0.07	-0.06	-0.11	-0.08
	(1.73)	(2.0)	(0.6)	(-0.78)	(-0.7)	(-1.32)	(-1.06)	(-1.55)	(-1.12)
D-Growth	0.10*	0.02	-0.04	-0.09*	-0.12**	-0.13**	-0.11**	-0.13*	-0.18**
	(2.24)	(0.56)	(-0.9)	(-2.3)	(-3.2)	(-3.35)	(2.60)	(-2.4)	(-3.44)
D-Growth-income	0.11*	0.05	0.01	-0.01	-0.09*	-0.12**	-0.11*	-0.14*	-0.14**
	(2.25)	(1.1)	(0.18)	(-0.69)	(-2.22)	(-2.69)	(-2.42)	(-2.4)	(-2.49)
D-Specialty	-0.03	-0.04	-0.01	-0.01	-0.03	0.03	0.12**	0.18**	0.28**
	(-0.6)	(-0.83)	(-0.28)	(-0.15)	(-0.75)	(0.76)	(2.59)	(2.97)	(4.6)
D-Bond	-0.62**	-0.57**	-0.61**	-0.60**	-0.57**	-0.33**	-0.17**	-0.07	0.03
	(-13.5)	(-13.1)	(-14.9)	(-15.9)	(-15.5)	(-8.18)	(-3.9)	(-1.35)	(0.58)
D-International	0.39**	0.37**	0.46**	0.46**	0.44**	0.44**	0.47**	0.45**	0.39**
	(8.1)	(8.0)	(10.7)	(11.4)	(11.4)	(10.3)	(10.5)	(7.9)	(6.7)
D-Allocation	0.27**	0.14*	0.05	0.02	-0.01	-0.04	-0.05	-0.08	-0.13†
	(4.4)	(2.45)	(0.98)	(0.3)	(-0.25)	(-0.66)	(-0.92)	(-1.07)	(-1.8)
Age x 10^2	0.01	-0.10†	-0.07	-0.04	-0.08	-0.08	-0.10	-0.04	-0.23**
	(0.15)	(-1.71)	(-1.1)	(-0.7)	(-1.48)	(-1.25)	(-1.58)	(-0.4)	(-2.77)
Total Assets	0.04**	0.04**	0.05**	0.06**	0.06**	0.06**	0.06**	0.06**	0.06**
	(5.9)	(5.8)	(7.9)	(10.5)	(11.4)	(10.4)	(10.0)	(7.74)	(8.34)
Turnover x 10^2	-0.04**	-0.03**	-0.03**	-0.01†	0.00	0.00	0.01	0.01	0.01
	(-5.7)	(-5.2)	(-4.7)	(-1.65)	(0.22)	(0.18)	(1.43)	(0.83)	(1.13)
Expense Ratio	0.04	0.04†	0.04	0.06**	0.07**	0.05*	0.05*	0.06†	0.09**
	(1.5)	(1.74)	(1.61)	(2.63)	(3.23)	(2.09)	(2.12)	(1.81)	(2.98)
Incentive	0.01	0.02*	0.01	-0.00	0.01	0.01†	0.02*	0.02*	0.02*
	(1.53)	(2.2)	(1.45)	(0.0)	(1.4)	(1.66)	(2.3)	(2.23)	(2.33)
Board	0.00	0.00	0.01	0.01	-0.01	-0.01	-0.01	-0.03*	-0.04*
	(0.3)	(0.12)	(1.17)	(0.66)	(-0.49)	(-0.55)	(-1.1)	(-1.99)	(-2.41)
Fee	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01†
	(0.16)	(1.31)	(0.55)	(0.08)	(0.14)	(0.12)	(0.5)	(1.3)	(1.69)

This table reports coefficient estimates for the quantile regressions. N=3,743. Dependent variable is the Sharpe Ratio. D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's portfolio turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; Incentive is Morningstar's manager incentives grade; Board is Morningstar's board quality grade; and Fee is Morningstar's measure of fund expenses within the comparison group. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

TABLE 5
Quantile Regression Model for Turnover Ratio-Stewardship Grade

	Quantile								
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Intercept	12.94**	22.78**	29.11**	38.05**	54.48**	67.65**	106.57**	126.34**	174.57**
	(3.8)	(5.05)	(6.0)	(6.93)	(7.4)	(7.7)	(9.2)	(8.2)	(8.6)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D-Balanced	-3.89	0.99	2.26	3.66	1.45	-0.20	-12.91	-13.89	-26.56
	(-1.57)	(0.3)	(0.66)	(0.93)	(0.27)	(-0.03)	(-1.55)	(-1.3)	(-1.82) †
D-Growth	-6.63**	-3.61	0.91	1.75	2.26	3.19	-4.96	-5.28	-31.72**
	(-3.54)	(-1.48)	(0.35)	(0.59)	(0.57)	(0.67)	(-0.79)	(0.63)	(-2.88)
D-Growth-income	-10.54**	-9.84**	-8.53**	-9.31**	-11.88**	-12.15*	-25.97**	-28.69**	-58.59**
	(-5.1)	(-3.65)	(-3.0)	(-2.84)	(-2.7)	(-2.32)	(-3.76)	(-3.13)	(-4.8)
D-Specialty	-8.91**	-4.64†	3.26	8.28*	7.58†	9.40†	-3.73	-4.69	-30.08**
	(-4.1)	(-1.65)	(1.1)	(2.42)	(1.65)	(1.72)	(-0.52)	(-0.49)	(-2.54)
D-Bond	-7.56**	-4.27†	-2.29	-1.43	-2.31	1.92	4.24	20.76*	59.58**
	(-3.94)	(-1.7)	(-0.87)	(-0.47)	(-0.56)	(0.39)	(0.66)	(2.44)	(5.3)
D-International	-8.62**	-6.16*	-4.44	-6.36*	-5.29	-7.29	-20.43**	-31.88**	-64.06**
	(-4.32)	(-2.36)	(-1.6)	(-2.0)	(-1.24)	(-1.44)	(-3.06)	(-3.59)	(-5.5)
D-Allocation	-8.74**	-4.64	-3.48	-3.49	-3.50	-0.28	-14.34†	-15.25	-44.38**
	(-3.41)	(-1.38)	(-0.99)	(-0.86)	(-0.64)	(-0.04)	(-1.67)	(-1.34)	(-2.94)
Age	0.016	0.035	0.104**	0.079†	0.10†	0.11	0.16	0.08	-0.12
	(0.54)	(0.9)	(2.59)	(-1.71)	(1.63)	(1.51)	(1.6)	(0.64)	(-0.68)
TA	0.07	-0.61†	-0.75*	-1.03**	-1.93**	-3.01**	-4.97**	-5.87**	-9.14**
	(0.25)	(-1.78)	(-2.08)	(-2.47)	(-3.44)	(-4.53)	(-5.66)	(-5.03)	(5.9)
Expense Ratio	9.76**	14.19**	17.02**	22.61**	26.63**	34.08**	38.08**	48.60**	61.43**
	(9.5)	(10.6)	(12.1)	(13.9)	(12.2)	(13.1)	(11.1)	(10.7)	(10.2)
Stewardship	-0.72†	-1.81**	-3.04**	-4.04**	-4.95**	-5.67**	-6.93**	-7.09**	-0.36
	(-1.63)	(-3.14)	(-5.02)	(-5.8)	(-5.3)	(-5.09)	(-4.7)	(-3.63)	(-0.14)

This table reports coefficient estimates for the quantile regressions. N= 4,025. Dependent variable is the Turnover Ratio. D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's portfolio turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; and Stewardship is Morningstar's Stewardship Grade. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

TABLE 6
Quantile Regression Model for Turnover Ratio and Stewardship Components

	Quantile								
	0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Intercept	7.52†	18.30**	17.98**	23.72**	37.63**	66.27**	92.79**	136.2**	185.82**
	(1.87)	(3.6)	(3.2)	(3.52)	(4.8)	(6.5)	(7.6)	(9.1)	(7.4)
Yearly Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
D-Balanced	-2.45	0.67	4.36	3.22	3.52	-3.49	-4.48	-17.17†	-14.40
	(-0.92)	(0.2)	(1.17)	(0.7)	(0.68)	(-0.52)	(-0.55)	(-1.74)	(-0.87)
D-Growth	-6.09**	-3.96	2.42	3.70	4.48	-0.38	-0.94	-13.56†	-21.84†
	(-3.07)	(-1.56)	(0.9)	(1.11)	(1.16)	(-0.07)	(-0.16)	(-1.83)	(-1.76)
D-Growth-income	-10.16**	-10.53**	-7.00*	-8.07*	-9.99*	-17.94**	-22.28**	-33.80**	-45.47**
	(-4.65)	(-3.76)	(-2.3)	(-2.2)	(-2.34)	(-3.22)	(-3.33)	(-4.0)	(-3.33)
D-Specialty	-8.74**	-5.04†	3.14	6.70†	4.50	1.66	-6.53	-25.69**	-35.97**
	(-3.84)	(-1.73)	(0.98)	(1.75)	(1.01)	(0.3)	(-0.94)	(-3.0)	(-2.53)
D-Bond	-6.56**	-5.66*	-2.78	-1.07	-1.77	-4.96	5.79	12.89†	69.25**
	(-3.24)	(-2.18)	(-0.98)	(-0.32)	(-0.45)	(-0.96)	(0.94)	(1.71)	(5.5)
D-International	-8.19**	-8.08**	-5.14†	-6.67†	-8.35*	-16.75**	-22.81**	-41.49**	-58.86**
	(-3.85)	(-2.96)	(-1.72)	(-1.87)	(-2.01)	(-3.09)	(-3.5)	(-5.23)	(-5.48)
D-Allocation	-8.70**	-7.52*	-2.93	-1.22	-1.55	-9.31	-14.01†	-23.68*	-30.35†
	(-3.2)	(-2.17)	(-0.8)	(-0.27)	(-0.29)	(-1.35)	(-1.70)	(-2.35)	(-1.8)
Age	0.060*	0.09*	0.18**	0.15**	0.14*	0.14†	0.13	-0.03	-0.27
	(1.95)	(2.24)	(4.03)	(2.87)	(2.38)	(1.77)	(1.38)	(-0.22)	(-1.38)
TA	0.22	-0.36	-0.52	-0.43	-1.11*	-1.88**	-3.30**	-5.17**	-8.02**
	(0.75)	(-0.95)	(-1.27)	(-0.9)	(-1.96)	(-2.53)	(-3.7)	(-4.77)	(-4.42)
Expense Ratio	10.06**	16.72**	22.02**	28.75**	37.05**	41.99**	50.29**	63.74**	73.88**
	(9.77)	(11.5)	(13.9)	(15.1)	(16.8)	(14.6)	(14.5)	(15.1)	(10.5)
Incentive	-0.46	-1.94**	-2.65**	-4.08**	-6.18**	-7.93**	-10.18**	-11.71**	-11.85**
	(-1.33)	(-4.4)	(-5.5)	(-7.03)	(-9.2)	(-9.0)	(-9.6)	(9.08)	(-5.48)
Board	0.50	0.97	0.86	1.17	0.95	-0.21	0.40	-1.26	-3.57
	(0.86)	(1.3)	(1.05)	(1.2)	(0.83)	(-0.14)	(0.23)	(-0.58)	(-0.98)
Fee	-0.00	-0.57	-0.33	-0.36	-0.11	-0.25	-0.87	-0.74	3.29
	(-0.0)	(-1.35)	(-0.72)	(-0.66)	(-0.18)	(-0.3)	(-0.87)	(-0.61)	(1.62)

This table reports coefficient estimates for the quantile regressions. N = 3,777. Dependent variable is the Turnover Ratio. D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; Incentive is Morningstar's manager incentives grade; Board is Morningstar's board quality grade; and Fee is Morningstar's measure of fund expenses within the comparison group. **, *, and † denote t-statistics significant at the 1%, 5%, 10% levels, respectively.

TABLE 7
Prediction of 3-Year Alpha by Stewardship Grade

	OLS	Quantile								
		0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Intercept	-3.36*	-1.89	-2.80*	-1.99†	-1.69†	-1.41†	-0.43	-0.12	-1.34	-1.21
	(-1.99)	(-0.85)	(-1.97)	(-1.73)	(-1.89)	(-1.79)	(-0.59)	(-0.13)	(-1.05)	(-0.76)
D-2007	-0.28	-0.78†	-0.74**	-0.31	-0.35*	-0.03	0.13	0.15	0.05	-0.14
	(-0.91)	(-1.95)	(-2.89)	(-1.52)	(-2.20)	(-0.20)	(1.02)	(0.94)	(0.22)	(-0.50)
D-Balanced	-0.79	-1.43	-0.69	-0.62	-0.74	-0.55	-0.61	-0.36	0.10	0.27
	(-0.71)	(-0.97)	(-0.73)	(-0.81)	(-1.25)	(-1.05)	(-1.28)	(-0.60)	(0.12)	(0.26)
D-Growth	2.77**	0.57	1.59*	2.16**	2.51**	3.00**	3.10**	3.22**	3.98**	4.56**
	(3.03)	(0.48)	(-0.73)	(3.48)	(5.17)	(6.81)	(7.96)	(6.61)	(5.73)	(5.31)
D-Growth-income	0.89	-0.62	1.59*	0.27	0.42	0.60	0.63	0.76	1.37†	1.59
	(0.90)	(-0.48)	(2.07)	(0.39)	(0.79)	(1.30)	(1.50)	(1.44)	(1.81)	(1.70)
D-Specialty	3.42**	-3.70**	0.40	1.48*	2.01**	2.33**	3.08**	4.02**	6.49**	9.48**
	(3.44)	(-2.82)	(0.49)	(2.18)	(3.80)	(5.02)	(7.26)	(7.57)	(8.56)	(10.12)
D-Bond	-0.04	-0.00	0.59	0.63	0.46	0.37	0.23	-0.06	0.098	-0.41
	(-0.04)	(-0.00)	(0.71)	(0.99)	(0.93)	(0.85)	(0.58)	(-0.11)	(0.14)	(-0.47)
D-International	2.88**	-0.48	0.86	1.29*	1.33**	1.58**	2.03**	1.79**	2.92**	9.87**
	(3.00)	(-0.38)	(1.09)	(1.98)	(2.61)	(3.54)	(4.96)	(3.50)	(4.00)	(10.93)
D-Allocation	0.02	-0.77	0.73	-0.13	-0.25	-0.20	-0.28	-0.58	-0.13	-0.18
	(0.02)	(-0.47)	(0.91)	(-0.15)	(-0.37)	(-0.35)	(-0.53)	(-0.86)	(-0.14)	(-0.15)
Age x 10^2	1.26	-0.51	0.11	0.07	0.42	0.54	0.59	0.17	0.70	1.43
	(1.04)	(-0.32)	(0.11)	(0.08)	(0.66)	(0.95)	(1.14)	(0.26)	(0.76)	(1.26)
TA	0.20	0.16	0.14	0.09	0.02	0.01	-0.03	-0.05	-0.03	-0.02
	(1.56)	(0.97)	(1.26)	(1.06)	(0.34)	(0.27)	(-0.49)	(-0.69)	(-0.33)	(-0.13)
Turnover Ratio x 10^2	0.54	-0.00	-0.00	-0.01	0.09	0.23*	0.40**	0.59**	1.00**	1.12**
	(2.46)	(-0.01)	(-0.18)	(-0.06)	(0.79)	(2.22)	(4.29)	(5.11)	(6.01)	(5.46)
Expense Ratio	-0.16	-2.57**	-1.42**	-1.04**	-0.53*	-0.41†	-0.24	-0.04	0.49	0.71
	(-0.34)	(-4.14)	(-3.59)	(-3.25)	(-2.10)	(-1.87)	(-1.18)	(-0.17)	(1.37)	(1.61)
Stewardship	0.15	-0.05	0.12	0.08	0.18	0.13	-0.00	0.06	0.25	0.38†
	(0.66)	(-0.17)	(0.67)	(0.55)	(1.54)	(1.28)	(-0.01)	(0.48)	(1.51)	(1.86)

This table reports coefficient estimates for the quantile regressions. N = 1,063. Dependent variable is the 3-year Alpha. D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; Stewardship is Morningstar's Stewardship Grade. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

TABLE 8
Prediction of 3-Year Alpha by Stewardship Components

	OLS	Quantile								
		0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**
Intercept	-5.78**	-2.70	-4.14*	-3.86**	-3.75**	-3.74**	-1.90†	-1.58	-2.32	-4.06*
	(-2.66)	(-0.90)	(-2.55)	(-3.13)	(-3.56)	(-4.30)	(-1.96)	(-1.45)	(-1.48)	(-2.39)
D-2007	-0.36	-0.79†	-0.68**	-0.60**	-0.36*	-0.16	0.09	0.04	-0.05	-0.28
	(-1.10)	(-1.76)	(-2.81)	(-3.20)	(-2.27)	(-1.27)	(0.62)	(0.24)	(-0.22)	(-1.12)
D-Balanced	-1.01	-0.84	-0.43	-1.07	-0.66	-0.56	-0.65	-0.49	-0.00	0.25
	(-0.86)	(-0.52)	(-0.49)	(-1.62)	(-1.17)	(-1.20)	(-1.23)	(-0.84)	(-0.00)	(0.27)
D-Growth	2.90**	1.30	1.91**	2.10**	2.68**	3.04**	3.16**	3.28**	4.20**	5.04**
	(3.07)	(0.99)	(2.71)	(3.90)	(5.83)	(8.04)	(7.46)	(6.91)	(6.13)	(6.81)
D-Growth-income	0.67	-0.74	-0.01	-0.27	0.39	0.65	0.58	0.66	1.27†	1.76*
	(0.65)	(-0.51)	(-0.01)	(-0.45)	(0.78)	(1.57)	(1.24)	(1.28)	(1.69)	(2.17)
D-Specialty	3.58**	-2.95*	0.51	1.56**	2.12**	2.85**	3.65**	4.43**	7.99**	10.78**
	(3.44)	(-2.05)	(0.65)	(2.63)	(4.19)	(6.83)	(7.81)	(8.48)	(10.60)	(13.24)
D-Bond	-0.17	0.039	0.57	0.23	0.45	0.36	0.21	-0.22	-0.10	-0.08
	(-0.18)	(0.03)	(0.91)	(0.42)	(0.96)	(0.94)	(0.48)	(-0.46)	(-0.14)	(-0.11)
D-International	2.77**	-0.58	0.65	0.88	1.26*	1.43**	1.84**	1.63**	2.98**	11.42**
	(2.76)	(-0.42)	(0.87)	(1.54)	(2.58)	(3.55)	(4.09)	(3.22)	(4.10)	(14.54)
D-Allocation	-0.17	-1.04	-0.16	-0.65	-0.23	-0.13	-0.28	-0.71	-0.32	0.40
	(-0.13)	(-0.57)	(-0.16)	(-0.87)	(-0.36)	(-0.26)	(-0.48)	(-1.08)	(-0.34)	(0.39)
Age x 10^2	1.82	2.32	1.47	0.75	0.85	0.76	0.65	0.14	0.63	0.87
	(1.42)	(1.30)	(1.53)	(1.02)	(1.36)	(1.48)	(1.12)	(0.21)	(0.68)	(0.86)
TA	0.24†	0.24	0.10	0.07	0.03	-0.00	-0.00	-0.05	-0.04	0.08
	(1.72)	(1.25)	(0.97)	(0.86)	(0.45)	(-0.02)	(-0.10)	(-0.66)	(-0.41)	(0.76)
Turnover Ratio x 10^2	0.37	0.05	-0.11	-0.16	0.12	0.17†	0.34**	0.50**	0.96**	1.00**
	(1.64)	(0.18)	(-0.68)	(-1.27)	(1.10)	(1.84)	(3.36)	(4.38)	(5.83)	(5.67)
Expense Ratio	0.08	-2.55**	-1.68**	-1.03**	-0.48†	-0.13	-0.06	0.16	0.27	0.45
	(0.15)	(-3.49)	(-4.25)	(-3.43)	(-1.88)	(-0.59)	(-0.26)	(0.62)	(0.69)	(1.10)
Incentive	-0.02	-0.25	0.02	0.09	0.06	0.01	-0.03	-0.05	0.09	0.17
	(-0.11)	(-1.17)	(0.17)	(1.05)	(0.75)	(0.16)	(-0.39)	(-0.68)	(0.80)	(1.39)
Board	0.76*	0.50	0.69**	0.77**	0.57**	0.61**	0.30†	0.53**	0.53*	0.84**
	(2.13)	(1.02)	(2.58)	(3.77)	(3.25)	(4.23)	(1.87)	(2.95)	(2.05)	(3.00)
Fee	-0.05	-0.44*	-0.13	-0.10	0.06	0.10	0.03	-0.04	0.01	-0.01
	(-0.28)	(-1.99)	(-1.08)	(-1.07)	(0.74)	(1.53)	(0.45)	(-0.46)	(0.10)	(-0.08)

This table reports coefficient estimates for the quantile regressions. N=975. Dependent variable is 3-year Alpha. D-balanced, D-growth, D-growth-income, D-specialty, D-bond, D-international, and D-allocation are dummy variables capturing funds' objectives. Age is the age of the fund; Turnover is the fund's turnover ratio; TA is the total asset under management; Expense Ratio is the fund's expense ratio; Fee is Morningstar's expense grade within the comparison group; Incentive is Morningstar's manager incentives grade; and Board is Morningstar's board quality grade. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

TABLE 9
Robustness Tests

Panel A: Sharpe Ratio and Stewardship Components Excluding Fee. (Partial Results)

Quantile	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Incentive	1.17	1.80**	1.03	-0.02	0.94	1.20†	1.49*	2.22**	2.46**
	(1.47)	(2.47)	(1.49)	(-0.03)	(1.52)	(1.73)	(2.06)	(2.48)	(2.69)
Board	0.30	0.33	1.24	0.77	-0.59	-0.63	-1.06	-2.65†	-3.26*
	(0.22)	(0.28)	(1.08)	(0.71)	(-0.57)	(-0.55)	(-0.88)	(-1.78)	(-2.15)

Panel B: Sharpe Ratio and All Stewardship Components. (Partial Results)

Quantile	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Incentive	0.79	1.27†	0.60	0.11	0.60	0.68	0.94	2.09**	3.50**
	(0.97)	(1.87)	(0.89)	(0.14)	(0.8)	(0.98)	(1.21)	(2.5)	(3.14)
Board	-0.35	0.09	0.69	0.10	-0.22	1.18	-1.45	-2.23†	-4.40**
	(-0.28)	(0.09)	(0.65)	(0.09)	(-0.19)	(-1.08)	(-1.18)	(-1.7)	(-2.54)
Fee	-0.23	0.68	-0.20	-0.03	-0.34	-0.27	-0.47	-0.31	0.70
	(-0.31)	(1.14)	(-0.3)	(-0.05)	(-0.53)	(-0.44)	(-0.68)	(-0.42)	(0.73)
Regulatory	0.15	-0.06	-0.70	-0.99	0.94	0.54	1.09	0.54	0.41
	(0.15)	(-0.07)	(-0.82)	(-1.05)	(1.02)	(0.62)	(1.12)	(0.52)	(0.3)
Culture	0.88	1.14	1.07	1.37	0.29	0.02	0.02	0.29	-1.61
	(0.79)	(1.24)	(1.17)	(1.33)	(0.29)	(0.02)	(0.02)	(0.26)	(-1.08)

Panel C: Sharpe Ratio and Stewardship Components Excluding Fixed Income Funds. (Partial Results)

Quantile	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Incentive	1.01	2.12**	1.14	0.17	0.90	1.30†	1.70*	2.12*	1.95*
	(1.31)	(2.97)	(1.58)	(0.26)	(1.4)	(1.91)	(2.38)	(2.40)	(2.06)
Board	0.48	-0.50	0.70	0.15	-0.41	-1.32	-0.87	2.88*	-3.35*
	(0.37)	(-0.42)	(0.58)	(0.14)	(-0.38)	(-1.17)	(-0.73)	(-1.94)	(-2.12)
Fee	0.23	1.30*	0.46	0.60	0.18	0.46	0.49	0.94	1.23
	(0.31)	(1.93)	(0.68)	(0.94)	(0.29)	(0.72)	(0.73)	(1.13)	(1.39)

Panel D: Alpha and Stewardship Components. (Partial Results)

Quantile	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Incentive	-0.12	0.03	0.08	0.06	0.02	-0.02	-0.03	0.10	0.17
	(-0.71)	(0.28)	(0.89)	(0.78)	(0.33)	(-0.24)	(-0.41)	(0.90)	(1.4)
Board	0.33	0.84**	0.72**	0.57**	0.65**	0.34*	0.47**	0.56*	0.85**
	(0.88)	(3.23)	(3.64)	(3.27)	(4.67)	(2.17)	(2.62)	(2.22)	(3.10)

This table reports some robustness test results. Panel A is comparable to Table 4; Panel B is comparable to Table 4; Panel C is comparable to Table 4, and Panel D is comparable to Table 8. We report only partial results. Parameters of other covariates are not reported to save space. All parameters in Panels A ~ C are scaled up by a factor of 10^2. All variables are defined similarly as in the previous tables. "Regulatory" is Morningstar's regulatory issue score, and "Culture" is Morningstar's corporate culture score. **, *, and † denote t-statistics significant at the 1%, 5%, and 10% levels, respectively.

FIGURE 1

Estimated Parameters by Quantile Regressions for Sharpe Ratio
With 95% Confidence Limits

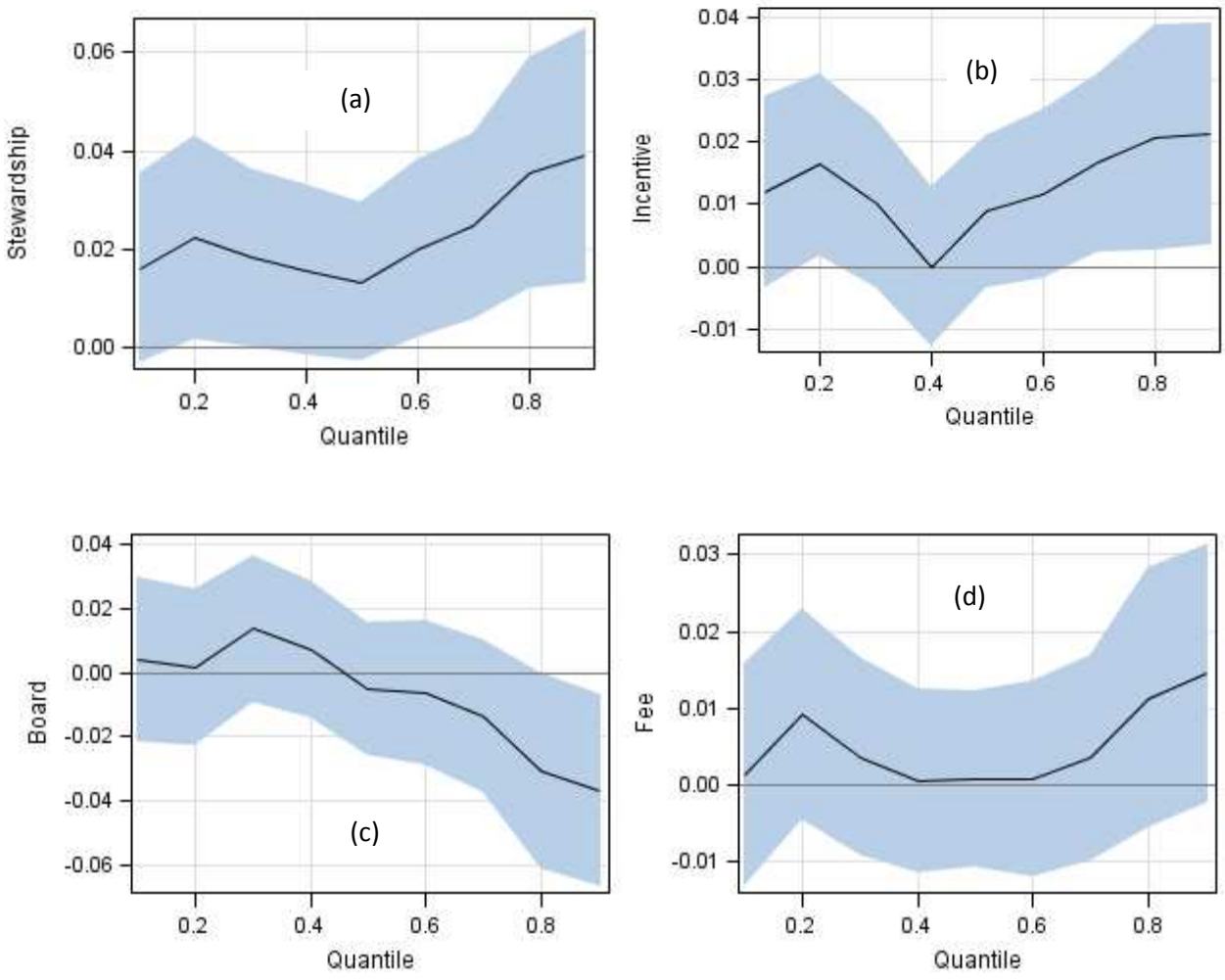

FIGURE 2
Estimated Parameters by Quantile Regressions for Turnover Ratio
With 95% Confidence Limits

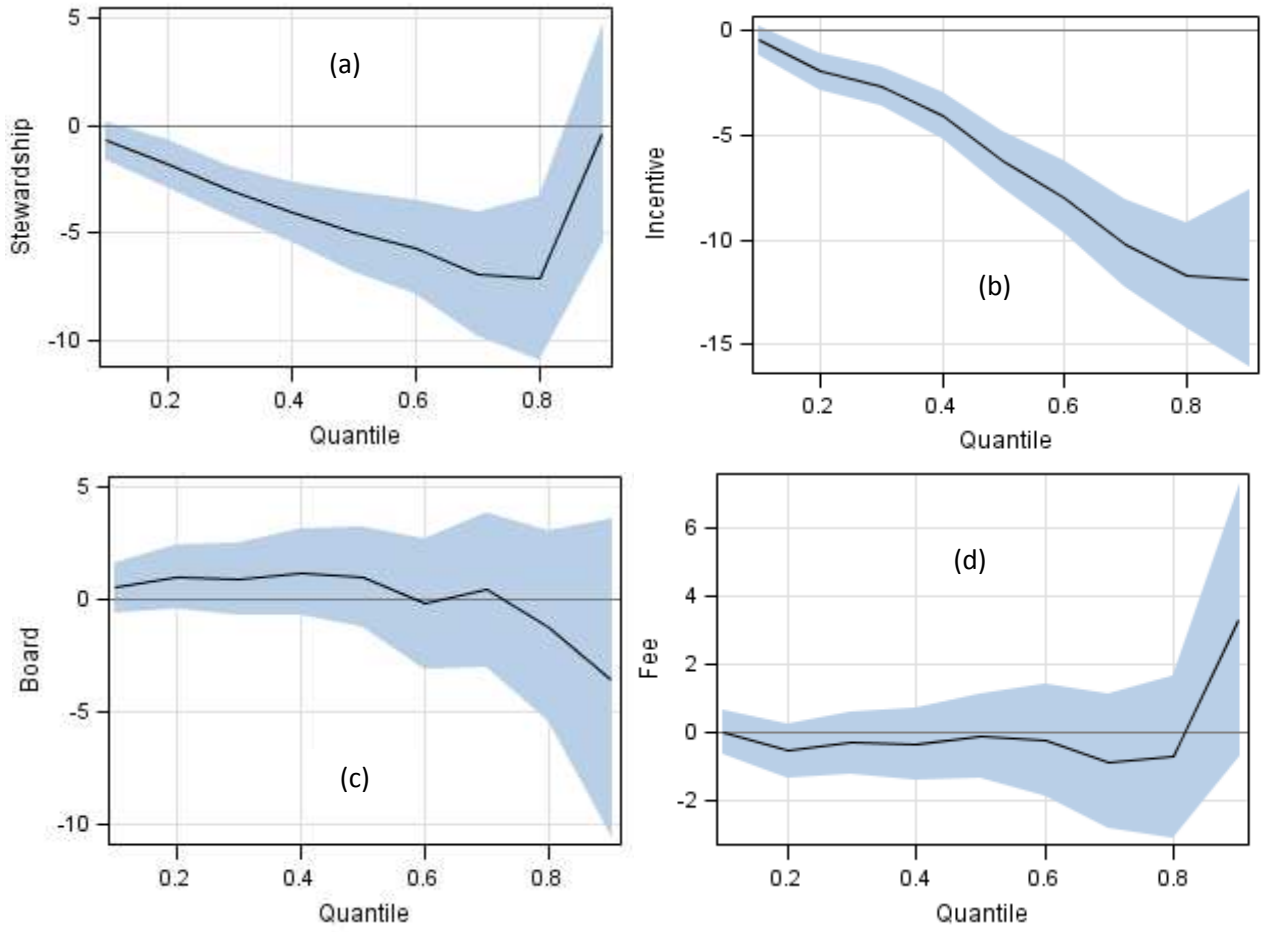

FIGURE 3
Estimated Parameters by Quantile Regressions for 3-Year Alpha
With 95% Confidence Limits