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ABSTRACT

We assess the abilities and the role of buy-side analysts within mutual fund families by analyzing mutual funds managed by buy-side analysts from fourteen fund families. Buy-side analysts exhibit investment abilities by realizing positive style- and risk-adjusted returns and generating superior risk-return tradeoffs. Analysts' skills have a positive impact on the performance of funds from the same family. Although some managers benefit from closely following their buy-side analysts' ideas, research generated by these analysts is generally being underutilized by affiliated managers. The underutilization is consistent with longer-tenured managers choosing to forgo some of the analysts' ideas due to career considerations.

Keywords: Mutual Funds, Buy-Side Analysts, Performance Evaluation, Career Effects

1. Introduction

Analysts employed by mutual fund families (i.e., buy-side analysts) play an important role in the fund management process. They provide investment recommendations and research support, which potentially have a direct impact on the portfolio decisions and performance of the mutual funds that they support. Assessing the abilities of buy-side analysts and their contribution to fund family performance is important because of the tremendous financial resources fund families invest in their research. If buy-side analysts are shown to not have abilities, then fund families and their investors are better served by eliminating their costly research programs. On the other hand, if buy-side analysts are shown to have abilities, then fund families and investors are better served by fund families leveraging these abilities to the fullest.

Despite the importance of buy-side analysts, existing research that covers the performance and the role of this class of analysts is at a relatively early stage in comparison to the extensive literature that studies sell-side analysts.[1] Three important recent studies each use data from a single large anonymous fund family (though not necessarily the same family) to assess the abilities of buy-side analysts based on the performance of their internal stock recommendations; results provide somewhat mixed conclusions. Groysberg et al. (2013) find that recommendations of buy-side analysts have no investment value and perform no differently than the recommendations of sell-side analysts. In contrast, Frey and Herbst (2014) and Rebello and Wei (2014)) conclude that buy-side analysts generate recommendations with investment value. One possible explanation for this discrepancy is that the underlying data is from different fund families, each with distinct analyst abilities, and because the fund families are anonymous, we cannot verify that this is the source of the disparity in findings.

In this paper, we revisit buy-side analysts but we take a different methodological direction. We introduce a novel approach to assess the abilities and role that buy-side analysts play within their families by analyzing 68 nontraditional mutual funds that are managed exclusively by buy-side analysts from 14

[1] Unlike the extensive literature that studies sell-side analysts, we could identify only half a dozen articles that study buy-side analysts (see Cheng, Liu, and Qian (2006); Groysberg, Healy and Chapman (2008); Groysberg et al. (2013); Crawford et al. (2012); Frey and Herbst (2014); and Rebello and Wei (2014)).

mutual fund families. Our approach utilizes the returns and holdings of analyst-run funds rather than the investment recommendations of analysts, which have been the focus of previous research. If buy-side analysts have investment abilities, then the performance of funds that they manage provides a more accurate indicator of their abilities because it reflects returns from analysts' actual investment decisions rather than returns from hypothetical portfolios that mimic their recommendations. Further, since analyst-run funds are likely to incorporate the best ideas of a family's analysts,[2] we can interpret their performance as an upper bound estimate on the profitability of proprietary strategies that exclusively rely on the ideas of in-house analysts. Thus, one of our contributions to this literature is to present more powerful tests of buy-side analysts' abilities based on a performance measure with a clear and realistic economic interpretation.

Besides providing an alternative assessment of the abilities of buy-side analysts, our second main contribution is addressing whether the investment skills of buy-side analysts have a positive impact on the performance of affiliated funds within their respective families. This analysis is possible because, unlike previous research that primarily utilizes data from only one fund family, our paper studies multiple fund families. This allows us to exploit cross-family variation in the quality of analysts, which we relate with fund performance across the 14 sample fund families. Combining this analysis with a bootstrap investigation, we establish that buy-side analysts have an impact on the performance of their affiliated funds.

To assess the abilities of buy-side analysts, we evaluate the performance of analyst-run funds using two benchmarking approaches. As it is common for mutual fund performance evaluation, our first approach adjusts returns for style and risk. But because fund performance could be driven by family and fund characteristics, we employ a second benchmarking approach. Specifically, we benchmark the performance of analyst-run funds against the performance of manager-run funds with similar characteristics, both from the same fund families (hereafter "affiliated funds") and from other families

[2] Levitz (2009) refers to analyst-run funds as "repositories for the best ideas from internal analysts." Along the same line, Dolan (2011) writes that analyst-run funds are viewed by fund families that offer them as "…a place [for analysts] to park their best ideas…"

(hereafter "nonaffiliated funds"). We find strong support for the hypothesis that buy-side analysts have investment abilities, as analyst-run funds generate positive and significant benchmark-adjusted performance under both benchmarking approaches. This conclusion is further corroborated by additional findings suggesting that analyst-run funds exhibit superior risk-return tradeoffs, evidenced by greater Sharpe Ratios, and generate persistence in performance, which is lacking among manager-run funds.

However, running an analyst-run fund is secondary to the main responsibility of buy-side analysts to provide research support. Thus, to understand the overall contribution of buy-side analysts to their mutual fund families at a more general level, it is important to know whether analysts' skills have a positive impact on the performance of affiliated funds. We hypothesize that fund families housing analysts who are more skilled enjoy better performance for their member funds, which results from these analysts providing higher-quality support for their portfolio managers. We find strong support for this hypothesis in that the performance of manager-run funds is positively and significantly related to the level of skill of a given family's analysts. In addition, this relation is stronger than the relation between randomly paired fund managers within the same family, suggesting that analysts' skills positively affect the performance of the member funds.

Providing further evidence that buy-side analysts play an important role in the generation of mutual fund performance within their respective fund families, we find that funds that rely on their analysts' ideas the most (i.e., funds in the top reliance quintile) outperform all other funds that rely on their analysts' ideas to a lesser extent. This is sensible given our findings that analysts have good ideas that result in the outperformance of their funds and that their skills have an overall positive impact on the performance of all funds within their respective families. Moreover, these results are consistent with Cheng, Liu, and Qian (2006) and Rebello and Wei (2014). However, surprisingly, about half of the funds do not seem to follow their analysts' ideas at all. Thus, a natural question arises: why are all portfolio managers not fully utilizing their analysts' ideas to generate better performance? We consider two possible explanations.

First, analysts could choose to withhold good ideas from affiliated portfolio managers in the hope of outperforming portfolio managers and improving their own standing in the organization. We explore this possibility by comparing the performance of stocks that were uniquely-held by analysts with stocks that reflect ideas that analysts shared with portfolio managers, i.e., stocks analysts held in common with affiliated portfolio managers.[3] If analysts are withholding valuable ideas from the portfolio managers, we would expect the stocks uniquely held by analysts to outperform the shared ideas. We find no difference in the performance of these two sets of stocks, ruling out the possibility that analysts are withholding valuable ideas from affiliated portfolio managers.

Second, some portfolio managers may be biased against analyst recommendations. Chevalier and Ellison (1999b) show that longer-tenured portfolio managers are less likely to be fired in response to poor past performance. The rationale is that longer-tenured managers have a longer history of performance and investors are less likely to update their beliefs substantially after one period's performance. Thus, a longer-tenured manager can afford to ignore analyst ideas and undertake manager-specific investments, even if this causes her to forgo performance gains.[4] In doing so, as argued by Shleifer and Vishny (1989), a manager can justify her existence in the organization, reduce the probability of being fired, and obtain more flexibility in determining investment policy.[5] That is, if a longer-tenured manager chooses her investments so as to mimic exactly the stock picks of in-house analysts, her performance, even if stellar, will likely be attributed to the analysts, and the job of this manager might be considered redundant.

In exploring this explanation of tenure-based manager bias, we model the probability that a portfolio manager follows the unique ideas of analysts from the same fund complex as a function of the manager's tenure and other characteristics. If this explanation is one of the reasons why managers do not fully follow analysts' ideas, then we ought to find a negative relation between the probability of a unique analyst idea being utilized by a portfolio manager and her tenure. After controlling for style differences

[3] Commonly-held stocks are held concurrently in at least one analyst-run portfolio and at least one manager-run portfolio within the same fund family.
[4] Kinnel (2012) writes that "…a fund manager can undo an analyst's good stock selection…by ignoring the analyst's advice."
[5] In the same vein, Prendergrast and Stole (1996) argue that individuals with longer tenure in an organization are less likely to respond to new information or changes to a project because such changes could suggest that their previous positions were wrong.

between the manager portfolios and the stocks representing the analysts' unique ideas, among other control variables, we find that an analyst idea is less likely to be utilized by a portfolio manager with longer tenure than a portfolio manager with shorter tenure. This is consistent with our tenure-based manager bias explanation. This evidence, however, is also consistent with longer-tenured managers ignoring analysts' ideas simply because they are more experienced and have higher abilities. If this was the case, then we ought to observe a positive relation between tenure and fund performance. However, in unreported results, we find no significant relation between fund performance and tenure, which rules out this alternative explanation.

Taken together, our findings from the last two tests suggest that analysts are freely sharing their information with portfolio managers, but portfolio managers are not fully utilizing these ideas, at least in part, because of career incentive issues. This finding is important because it suggests that fund families are not optimally employing their resources. In providing this evidence, we highlight the importance of fund structures that can better incorporate analysts' ideas in the portfolio decisions of mutual fund managers.

In summary, our analysis suggests that analysts have valuable ideas that benefit affiliated funds from the same families. However, countervailing frictions hinder mutual fund families from fully capturing the benefits of their analysts' research.

The remainder of the paper is organized as follows. Section 2 provides a literature review. In Section 3 we briefly discuss analyst funds. The data and sample statistics are discussed in Section 4. Section 5 analyzes the performance and risk of analyst and manager-run funds. In Section 6 we examine how buy-side analysts affect the performance of affiliated manager-run funds. Section 7 explores why managers are underutilizing their in-house analysts' ideas, and Section 8 concludes.

2. Literature Review

Our paper is related to several strands of literature. It is most closely related to a nascent literature that studies the research output produced by buy-side analysts from mutual fund families and establishes

conflicting results. Employing data from one large fund family, Groysberg et al. (2013) compare buy-side analysts' stock recommendations with those of sell-side analysts. They find that the recommendations of buy-side analysts have no investment value, as their risk-adjusted performance is insignificant. Furthermore, they show that buy-side analysts make less optimistic recommendations that do not differ in performance from those of sell-side analysts. Using data from the same fund company, Groysberg et al. (2008) compare earnings forecasts of buy-side and sell-side analysts to find that the buy-side analysts make more optimistic and less accurate forecasts. In contrast, Frey and Herbst (2014), and Rebello and Wei (2014) show that recommendations of buy-side analysts have investment value. Further, they show that recommendations of buy-side analysts influence the trades and performance of mutual funds operating under the same organization.

A key aspect to all these articles is that they rely on proprietary buy-side analyst data from a single mutual fund family. In contrast, our study employs data from fourteen mutual fund families. This data advantage allows us to speak to the general role that analysts play within their mutual fund families by studying how the investment skills of analysts impact the performance of manager-run funds across different fund families. Our second contribution is that we present an alternative measure of buy-side analysts' abilities, which is more powerful in that it relies on the performance of analysts' actual investment portfolios rather than on the performance of hypothetical portfolios that mimic their recommendations. Finally, we are the first to document that research generated by in-house analysts is being underutilized by affiliated managers, in part due to career considerations. This friction could have efficiency consequences for mutual fund families and welfare effects for fund investors that mutual fund families might be able to counter by designing a structure for their mutual funds that makes better use of their analysts' research.

A caveat is in order, however, as our study is not without limitations. It is possible that buy-side analysts who manage funds provide investment ideas or recommendations on firms that they choose to not invest in. Our measure of analysts' investment ideas does not include such observations. However, we see no reason why this could change the general nature of our results on the role that analysts play within

their respective mutual fund families. Also, while our sample of mutual fund families is larger than the samples used in previous studies, it is still limited to those that offer analyst-run funds. We believe that the conclusions we draw from our sample mutual fund families extend to other families that employ buy-side analysts.

There are additional related papers that study other aspects of buy-side analysts. Cheng, Liu, and Qian (2006) use self-reported and family-aggregated data from Nelson's Directory of Investment Managers survey. Consistent with them, we find that higher reliance upon research generated by buy-side analysts is associated with better performance. Crawford et al. (2012) examine selective recommendations that buy-side analysts from multiple firms post on a networking website. However, these analysts work predominantly for hedge fund firms, which are not the focus of our study. They find that recommendations of these particular buy-side analysts have investment value, which, combined with our results, suggests that buy-side analysts have investment abilities no matter if they work for mutual fund or hedge fund firms.

Our study is also related to studies that examine how characteristics of individuals managing mutual fund portfolios relate to fund performance (see, e.g., Chevalier and Ellison (1999a, b)). While these studies focus on the characteristics of traditional portfolio managers, our study extends the analysis beyond mutual funds managed by traditional portfolio managers, showing that the distinction of whether a fund is managed by analysts or by traditional portfolio managers has implications for fund performance.

Finally, there is another related group of articles that explores how organizational family structure interacts with fund performance. For example, Baks (2003) addresses how the common resources provided by fund complexes affect fund performance beyond the contribution of portfolio managers. Other papers have looked at different aspects of the organizational family structure and how they relate to fund performance. For example, Massa, Reuter, and Zitzewitz (2010) analyze funds that are managed by named versus anonymous managers. Chen, Hong, and Kubik (2008) study instances of fund management being outsourced to external portfolio managers. Chen et al. (2004) examine the role of family size while Massa and Zhang (2008) examine the role of hierarchical structures within mutual fund families. We

contribute to this literature by documenting and explaining the extent to which one group of players within mutual fund families, namely in-house analysts, influences the investment choices and performance of fund managers within the same fund complex. We are also the first to recognize frictions in the investment processes of mutual fund families that lead to inefficient underutilization of analysts' research by portfolio managers.

3. Analyst Funds: Discussion

Analyst-run funds differ from traditional mutual funds in that instead of being managed by traditional portfolio managers, they are managed by in-house analysts who are responsible for making the underlying investment decisions. Although fund families such as Fidelity have been offering analyst funds for a while (e.g., Fidelity select funds), other mutual fund families are showing an increased interest in launching funds that are managed by analysts. These more recent analyst fund introductions have attracted growing attention in the business press.[6]

Most of the fund families that offer analyst funds have structured them as diversified portfolios. The exception to this is Fidelity, whose analysts are assigned to manage funds with exposure to specific sectors or subsectors. While managing analyst-run funds, analysts are responsible for making the final investment decisions after consulting with the rest of the analyst team co-managing the fund.

The number of analysts involved in picking stocks for these funds varies from family to family, depending on the size of the research department. For example, MFS Research Fund, one of the first offered analyst funds, started with a team of about 30 analysts in charge at inception, whereas Fidelity sector funds are managed by smaller teams of analysts, who generally rotate every one to two years across portfolios covering different sectors or subsectors.

There are many reasons why fund families might want to offer analyst funds. First, analyst funds help fund families with talent retention by creating a stimulating environment whereby analysts select

[6] See, for example, Lauricella (2005), Sullivan (2009), Levitz (2009), and Dolan (2011), among others. Besides the novelty of analyst funds, another aspect that has attracted interest is their performance, which some have interpreted as being superior to that of portfolio managers within the same fund families.

stocks in which they can invest real money. Second, analyst funds provide on-the-job training for the many analysts who aspire to become portfolio managers, which is an attractive investment in the analysts' human capital. Third, funds run by analysts help fund families identify the most skilled analysts, providing fund families with an attractive venue to hone analysts' investment techniques prior to promoting them to portfolio manager positions. Fourth, since analyst funds are comprised of stocks that reflect analysts' best ideas, fund families may use these fund offerings to showcase the strength of their research departments and investment processes (see e.g., Levitz (2009)). Finally, the presence of funds run by analysts stimulates healthy competition among portfolio managers and analysts, whereby the performance of analysts can be viewed as an internal hurdle rate that should be matched or surpassed by the portfolio managers housed in the same family.

The idea of having analysts manage mutual funds is not without skeptics, however. These types of funds might not be attractive to certain clienteles, such as large institutional investors who would want to deal with one portfolio manager rather than with a team of analysts. Institutional investors might also worry about who among the fund employees is accountable for risk management matters (e.g., Sullivan (2009)). Further, analysts running their own fund might be distracted from their main job of providing research support for the portfolio managers. Yet another concern is that analysts might want to keep their best ideas to themselves for inclusion in the analyst fund rather than share them with the portfolio managers.

The controversy surrounding the merits of analyst funds aside, our study relies upon analyst funds to gain two main methodological advantages. First, the performance of analyst funds helps us assess the investment abilities of analysts. Second, we employ the stock holdings of analyst funds to capture the ideas of analysts and the effect that these ideas have on the trades and performance of portfolio managers.

4. Data

4.1. Identification of Analyst-Run Funds

Since analyst funds are not flagged by any classification variables available in the standard mutual fund databases, we relied upon alternative sources to identify analyst funds. We started by searching the business press for previous articles discussing analyst funds. We identified more than a dozen such articles where several analyst funds were mentioned by name and some of the families offering these types of funds were identified. In most of these articles, analyst funds were commonly referred to as "research funds" by the authors; further, most of the funds identified in the articles contained the string "research" in their names (e.g., MFS Research Fund).

Based on these discoveries, we then searched the whole U.S. equity mutual fund universe in the CRSP Mutual Fund Database and Morningstar Direct for occurrences of the word "research" or "analyst" in the fund names. For each fund on the resulting list, we reviewed its prospectus, accompanying statement of additional information filed with the SEC, and its management profile on Morningstar Direct to verify that the funds were, in fact, managed by analysts rather than portfolio managers. Then, we added all Fidelity Select funds, which are managed by analysts on a rotating basis, to our list of analyst funds.[7] The resulting final sample includes 68 analyst funds from 14 mutual fund families. All of these funds are actively managed.

4.2. Data Sources

We use four databases: the Center for Research in Securities Prices (CRSP) Survivor-Bias Free US Mutual Fund (CRSP MF) Database; Morningstar Direct Mutual Fund Database; Thomson Reuters Mutual Fund Holdings Database; and CRSP Monthly Stock Data Series.

All fund characteristics, such as returns, fees, and investment objectives, came from the CRSP MF Database. Since data reported by CRSP MF is at the share class level, information was aggregated at

[7] The author of an article for Fund Spy of Morningstar.com confirmed with Fidelity staff that Fidelity's select funds rather than other funds are a better measure of its analysts' output (see Kinnel (2012)).

the portfolio level by value-weighting each attribute across all share classes belonging to the same portfolio.

Mutual fund stock holdings data came primarily from Thomson Reuters. For the few analyst funds that we could not identify in Thomson Reuters, we obtained their holdings from Morningstar Direct. For a given date and fund, the holdings data provides the name, identifier, and number of shares held in each equity security. We supplemented the holdings data with prices, returns, and other individual stock information from the CRSP Monthly Stock Data Series.

Funds from Thomson Reuters were merged with the CRSP MF using WRDS's MFLINKS, which links Thomson Reuters fund identifiers with fund identifiers from CRSP MF. Analyst funds for which holdings were available in Morningstar Direct, but not in Thomson Reuters, were linked with CRSP MF using fund tickers and names.

4.3. Sample Characteristics

Panel A of Table 1 presents summary characteristics for the 68 analyst funds in our sample over the 2000–2010 sample period. Panel B and C report summary characteristics for affiliated and nonaffiliated manager-run equity funds, respectively. All index funds have been removed from these universes. In addition, we utilized the Lipper investment style categorization (lipper_obj_cd) that is available in the CRSP MF database to exclude all bond funds, international funds, income, and balanced funds.[8] We first calculate an average for each attribute, for each fund; then we compute and report cross-sectional statistics on those fund attributes. Analyst-run funds exhibit certain differences when compared to affiliated and nonaffiliated manager-run funds. Their average reported returns exceed those of affiliated and nonaffiliated manager-run funds by 15 and 33 basis points per month, respectively. Because these

[8] Our sample of analyst funds is characterized by the following investment styles: Capital Appreciation (4.69%), Growth (20.31%), Growth & Income (1.56%), Global Equity (14.06%), Sector (56.25%), and Specialty (3.13%). We chose to include global equity funds because doing so helps us more accurately identify the uniquely-held stock positions of portfolio managers. Alternatively, not doing so would cause us to incorrectly assign the holdings of any excluded analyst funds to the unique aggregate portfolio of fund managers. In addition, global equity funds invest sizable parts of their portfolios in U.S. equities. For example CRSP MF's manual describes one of the broad categories of global funds (i.e., lipper_obj_cd=GL) as "Funds that invest at least 25% of their portfolio in securities traded outside of the United States and that may own U.S. securities as well" (see, CRSP MF data documentation at http://www.crsp.com/products/documentation/lipper-objective-and-classification-codes). Global equity funds also make up a sizable fraction of analyst funds, so excluding them would diminish our sample size significantly.

patterns persist when we compare the median returns of the three groups, we can reject the possibility that these results are driven by outliers. Analyst-run funds are significantly smaller than affiliated manager-run funds; they are roughly one-fourth (one-half) the size of affiliated manager-run funds when comparing means (medians). The same cannot be said when comparing analyst-run funds with nonaffiliated manager-run funds as the median nonaffiliated manager-run fund is smaller than the median analyst fund.

The average family size of analyst funds is larger than the family size of unaffiliated funds. The average family size of analyst funds is also larger than that of their affiliated manager-run funds. Though these two groups of funds are clearly from the same families, the construction methodology of first determining fund-level measures and then averaging across the funds in each group reflects the prevalence of Fidelity's analyst-run funds in our sample. In many of our tests we try to account for family-related effects, by either aggregating performance measures at the family level to treat each family as one unit of observation, keeping the family constant, or explicitly accounting for family size.

A look at the other fund attributes suggests that analyst funds have slightly lower expense ratios and higher portfolio turnover than funds from the other two groups. Analyst funds also manage relatively more concentrated portfolios as shown by their lower average number of holdings and higher portfolio concentration. Portfolio concentration is the portfolio Herfindahl index computed as the sum of the squares of the portfolio weights in each 4 digit SIC-defined industry. In addition, the frequency of holdings reports for analyst funds is not different from that of the other funds. Since size, expense ratios, portfolio turnover, and portfolio concentration have been shown to affect fund performance, our performance comparisons will control for differences in these fund characteristics.[9]

5. Performance of Analyst Funds

In this section we examine the performance and risk of analyst-run funds. We employ multiple performance benchmarking approaches to evaluate the performance of analyst funds in Sections 5.1 and 5.2. In Section 5.3, we perform risk comparisons between analyst-run and manager-run funds. Section 5.4

[9] See Carhart (1997), Chen et al. (2004), and Kacperczyk, Sialm, and Zheng (2005), among others.

contains analysis of performance persistence, and in Section 5.5 we examine whether the incubation bias documented by Evans (2010) affects our findings.

5.1. Style- and Risk-Adjusted Performance

The three performance measures we employ are style-adjusted returns and intercepts from the Fama-French (1993) and the Carhart (1997) models, as specified below,

$$SAR_{p,t} = R_{p,t} - \frac{1}{N_s}\sum_{i=1}^{N_s} R_{i,t} \quad (1)$$

$$R_{p,t} - r_f = a + \beta_{p,MKT}(R_{mkt,t} - r_f) + \beta_{p,SMB}SMB_t + \beta_{p,HML}HML_t + \varepsilon_t \quad (2)$$

$$R_{p,t} - r_f = a + \beta_{p,MKT}(RMRF_t) + \beta_{p,SMB}SMB_t + \beta_{p,HML}HML_t + \beta_{p,UMD}UMD_t + \varepsilon_t \quad (3)$$

where $SAR_{p,t}$ stands for style adjusted return of fund p in month t, $R_{p,t}$ is the reported return of fund p in month t, s denotes the investment style to which fund p belongs, and N_s represents the number of all funds sharing the same investment style s.[10] $RMRF_t$ is the market portfolio return in month t in excess of the risk-free rate. The common factor variables SMB_t, HML_t, and UMD_t are the month-t return differences between small cap and large cap stocks, high and low book-to-market stocks, and positive and negative return-momentum stocks, respectively.

In addition to standard performance evaluation, we benchmark the performance of analyst funds against the performance of manager-run funds within the same families. We do this to account for the fact that analyst funds are from larger families, which presumably afford them more resources, leading to better performance.[11] For completeness and to account for systematic factors affecting all mutual funds, we also benchmark the performance of analyst-run funds against all unaffiliated managers.[12] To control for effects related to differences in expense ratios, we compute returns both net and gross of expenses.

[10] The style designation is based on the lipper_obj_cd investment classification variable available from CRSP MF.
[11] Chen et al. (2004) report a positive relation between family size and fund performance, most likely because larger families have more resources.
[12] An example of such a factor is a systematic flow shock to aggregate mutual funds that causes all funds to trade for liquidity reasons.

Results are reported in Table 2. In Panel A, we first compute performance measures for each fund based on its time-series of returns and then calculate average and median values across funds. We require funds to have at least 12 months of non-missing return data to be included in the performance calculations of Panel A. Analysts generate style-adjusted returns in the magnitude of 11 to 12 basis points per month net of expenses and 9 basis points gross of expenses. They also generate risk-adjusted returns in the magnitude of 12 to 18 basis points per month net of expenses and 20 to 27 basis points gross of expenses. These adjusted returns are not only economically significant but are also statistically significant across all the different performance measures.

Notably, the style- and risk-adjusted returns of analysts benchmarked against those of all affiliated and unaffiliated managers show a similar pattern of outperformance. The style-adjusted returns of analysts benchmarked against those of affiliated managers and unaffiliated managers range, respectively, from 10 to 12 and 12 to 20 basis points per month net of expenses. A similar pattern is observed for risk-adjusted returns and when returns are measured gross of expenses.[13] The p-values used to assess the significance of the differences in means are based on t-tests, while those used to assess the significance of differences in medians are based on the Wilcoxon nonparametric test. Differences in both mean and median performance measures are consistent, suggesting that they are not driven by outliers.

For robustness, Panel B employs a portfolio approach that is better suited to control for cross-fund performance correlations. This approach uses two different weighting methods. The first method places all funds from each group for each period into a portfolio with equal weights and then evaluates the resulting time-series of this portfolio's returns. Under the second method, funds within each group are first equally weighted within each family and then equally weighted across families. So, we start by creating a family-specific average return each period for all funds within each group. Next, we average across these family-specific averages to calculate a monthly average return for each fund group. This method ensures that results are not driven by fund families that house a larger number of analyst funds,

[13] In unreported results, we document that the outperformance of analyst-run funds is concentrated among funds that follow a Global Equity and Sector investment style, which constitute more than 70 percent of the analyst-run fund sample.

such as Fidelity. Results from the portfolio approach reported in Panel B are consistent with those of Panel A.

In sum, analysts appear to have valuable ideas, which help their funds generate positive abnormal returns, even when benchmarked against the abnormal returns of affiliated and unaffiliated managers. This evidence supports the hypothesis that buy-side analysts have investment abilities.

5.2. Matched Benchmarks

In this section we modify the performance benchmarking of analyst funds against manager-run funds to better match funds on characteristics that the previous literature has found to affect performance. That is, we modify the benchmarks to include non-analyst funds that are matched on various traits to analyst funds. First, we match on style, and then within the style-matches, we match separately on management structure, age, industry portfolio concentration, fund size, family size, portfolio turnover, and flow volatility. [14] The Appendix briefly summarizes the previous research that motivated us to analyze these specific fund characteristics.

To match funds based on style, we follow a procedure similar to the one used in Cici, Gibson, and Moussawi (2010). Each year we compare each analyst fund with all affiliated and unaffiliated manager-run funds, respectively, based on the investment style comparison score computed as follows,

$$Compare^{j}_{j,t} = \frac{1}{2} \mid SIZE_{i,t} - SIZE_{j,t} \mid + \frac{1}{2} \mid BTM_{i,t} - BTM_{j,t} \mid \qquad (4)$$

where i indexes analyst funds and j indexes non-analyst funds, $SIZE_t$ and BTM_t are, respectively, the value-weighted size and book-to-market quintile scores of all the stocks that at time t are held by a given fund. The *Compare* score assigns a low value when two portfolios are similar in their investment styles. For each analyst fund we calculate its *Compare* score with all other funds from the comparison universe. Next, we rank all funds from the comparison universe based on their average *Compare* score computed

[14] In an earlier version of the paper we compared the performance of analyst and non-analyst funds using a multivariate regression approach, which estimates the difference in abnormal performance while including linear controls for fund characteristics similar to the approaches followed in the previous literature. However, since we have no reason to believe that fund characteristics have a strictly linear relationship with fund performance and because the significance of the variables persists across both analytical methodologies, results are not included here in the interest of brevity.

against the given fund during year *t*. Non-analyst funds from the tercile with the lowest *Compare* scores are matched to the analyst fund. This procedure is repeated for each analyst fund and sample year.

Once analyst funds have been matched to non-analyst funds from the lowest *Compare* tercile, we further match on each of the other seven characteristics, respectively. For example, when matching on style and age, each analyst fund is first matched to non-analyst funds in the lowest *Compare* tercile and then further matched to funds with the lowest absolute age difference.[15] This procedure produces for each analyst fund a set of non-analyst funds that are comparable with the analyst fund in terms of style and age. To minimize the influence of any single non-analyst fund that could have been matched incorrectly, we require that each analyst fund is matched to at least three non-analyst funds. A similar matching procedure is used for the other characteristics, with the exception of management structure, whereby in the second level of matching, analyst funds are matched to manager-run funds that are team-managed. Finally, to control for all characteristics simultaneously, in addition to style, we match analyst funds to non-analyst funds from the tercile with the closest propensity scores.[16]

We employ style-adjusted returns, as well as alphas calculated on a rolling basis as monthly performance measures.[17] We first match on the characteristics in year *t* and then report the average difference between the monthly alpha of the analyst fund and the equally-weighted average monthly alpha of the matched non-analyst funds in year *t+1*. We report results when Carhart alpha is used as the performance measure. Qualitatively similar results (not reported in the interest of brevity) are obtained when the two other measures are used.

[15] In other words, matched funds from the lowest Compare tercile are ranked into terciles based on their absolute age difference with the given analyst fund. Funds in the bottom tercile constitute the lowest absolute age difference group and thus represent the comparison group of non-analyst funds matched on style and age.

[16] The propensity score is computed for each fund in each year as the predicted probability of a fund being an analyst fund given its characteristics, which include: a dummy variable indicating whether a fund is managed by a team or not; the log of fund age measured in years; the portfolio Herfindahl index computed for each fund as the sum of the squares of the portfolio weights in each SIC-defined industry; the log of total net assets of the fund; the log of total net assets of the family; the portfolio turnover; and the standard deviation of monthly flows normalized by fund assets.

[17] Specifically, the alpha estimate of a fund in a given month is its actual excess return minus its expected excess return for that month, computed by summing the products of the realized common factor values and the respective factor loadings estimated using returns from the previous 36 month. Mutual funds with fewer than 12 valid observations in the prior 36 months are treated as missing observations.

Table 3 reports alphas of analyst-run funds benchmarked against matched affiliated or unaffiliated funds. We report returns net and gross of expenses, respectively, in Panels A and B. It is worth emphasizing that when analysts are matched to affiliated managers, we are, in effect, matching on three dimensions: family membership, style, and each of the other characteristics. Thus, in this case, we are fully controlling for fund family. We report results where each analyst fund is treated as a unique observation (One Observation per Fund) and where all analyst funds within a given family are equally averaged and treated as one aggregate analyst observation at the family level (One Observation per Family).

The first row reports benchmarked alphas when matching is done based only on investment style. Analyst funds generate positive benchmarked alphas regardless of whether their benchmark funds that are matched on style include affiliated or unaffiliated managers, whether they are treated as individual observations or aggregated at the family level, or whether their returns are measured net or gross of expenses. The benchmarked alphas range from 11 basis points to 25 basis points per months. A similar pattern holds when we match additionally on each of the seven characteristics separately and on the propensity score.[18] The benchmarked alphas continue to be both economically and statistically significant no matter on which additional characteristic we match or whether matching is based upon the propensity score, which integrates all characteristics. Thus, we are unable to attribute the performance of analysts to any of the previously documented effects related to the fund characteristics we explored. All in all, this evidence supports the hypothesis that buy-side analysts have investment abilities.

5.3. Risk Differences

Table 1 suggests that analysts manage portfolios that include fewer stocks and are more concentrated than the portfolios managed by portfolio managers. Thus, it is plausible that analysts take on more risk by making more concentrated bets. To explore this possibility, we examine the risk

[18] We also computed propensity scores by including fixed effects for the funds' Lipper investment styles in addition to the seven fund characteristics. We then modified the matching approach to match analyst funds with funds from the manager-run fund universe that are in the tercile with the closest propensity score. Results not reported here in the interest of brevity are qualitatively similar to those reported in Table 3.

characteristics for each of the three fund groups. The characteristics include loadings on the common factors, RMRF, SMB, HML, and UMD, computed from the Carhart (1997) model estimated on the time series of net returns of each fund. In addition, we examine the standard deviation of fund excess returns and the Sharpe Ratio. We first compute each characteristic for each fund based on its time-series of returns and then compute average values for that characteristic across funds within each group.

Results are reported in Table 4. Comparisons of the factor loadings suggest that analyst funds have slightly higher loadings on the market factor, but they are significantly different only when compared against the unaffiliated manager-run funds. However, these differences are not that large in an economic sense. The only factor loading that is consistently different in a statistical sense is the loading on the SMB factor, suggesting that analysts tend to hold larger stocks than manager-run funds, which could be considered less risky.

We also compare the standard deviations of excess returns, which reflect both systematic and idiosyncratic risk. Moreover, to better understand the total risk–return tradeoff, we compare the funds' Sharpe Ratios. These comparisons suggest that analyst funds, indeed, have higher standard deviations. However, this higher risk comes with superior rewards, as evidenced by significantly higher Sharpe Ratios for analyst funds than for affiliated and unaffiliated manager-run funds. This suggests that analysts are able to generate a more attractive risk-return tradeoff for their portfolios, which is consistent with them having investment abilities.

5.4. Persistence

An alternative approach for assessing the investment abilities of buy-side analysts is to look at the persistence of their performance. Our performance results suggest that investment abilities are present among analysts but not among portfolio managers as a group, so we should observe persistent performance among analyst-run funds but not among manager-run funds. To explore this possibility, we explore performance persistence among the three fund universes employing the methodology of Carhart (1997). Specifically, we estimate risk-adjusted returns and factor loadings for portfolios of mutual funds

that are created at the beginning of each calendar year by sorting mutual funds within each investment objective into terciles based on their net return over the previous calendar year. These portfolios are equal-weighted monthly.

Results are reported in Table 5. In Panel A, the sorting on past returns is done within all analyst-run funds and in Panels B and C, among all affiliated and unaffiliated manager-run funds, respectively. Results from this table show that among analyst-run funds the highest and medium past return tercile funds exhibit a positive Carhart alpha in the subsequent year, which is also statistically significant. On the contrary, we do not observe any significant Carhart alphas among any of the affiliated and unaffiliated manager fund terciles. This evidence suggests that performance persists among analyst-run funds—at least among two thirds of them—while the same cannot be said for manager-run funds. This evidence further supports the presence of investment abilities among analyst-run funds.

5.5. Is Incubation Bias Responsible For the Performance Results?

One possible concern is the superior performance that we have documented for analyst-run funds can be attributed to incubation bias. Incubation is a common strategy employed by fund families to develop new funds, which results in fund families offering to the public only the funds from incubation that end up being successful, while not reporting performance data on the unsuccessful funds. Evans (2010) analyzed this issue in great detail and documented a significant upward bias in reported fund returns due to this practice. In the context of our study, it is possible that the incubation bias is even more severe among analyst-run funds, which are often used to showcase the research strengths of the family as a whole. To examine whether incubation affects our findings, we follow the fund age filter proposed by Evans (2010) and remove the first three years of return data for the analyst-run funds as well as for the affiliated and unaffiliated manager-run funds. Subjecting our data to this filter, we then replicate the performance tests of Table 2 and Table 3. Results reported respectively in Appendix B. Tables 1 and 2 show that our results remain qualitatively unchanged, suggesting that incubation bias is not responsible for our main performance results.

6. The Impact of Analysts' Research on Affiliated Fund Performance

In this section we explore the impact that analysts have on the performance of affiliated portfolio managers within the same families. First, we examine whether the skills of a family's analysts have a positive effect on the performance of all affiliated funds. Next, we examine whether managers who rely on the ideas of their family's analysts the most generate better performance.

6.1. Do Analysts' Skills Positively Affect the Performance of Affiliated Funds?

We hypothesize that fund families housing analysts who are more skilled enjoy better performance for their member funds. The hypothesized performance benefit is the result of more-skilled analysts providing higher-quality support for their portfolio managers. To test this hypothesis, we relate the performance of affiliated manager-run funds with our measure of analysts' skill in pooled regressions that control for fund and family characteristics. The dependent variable is monthly fund performance, which is measured either as a style-adjusted return or as an alpha measure, calculated on a rolling basis from the Fama-French or Carhart models as in Section 5.2.

We use the past aggregated performance of the analyst funds as a measure of the investment skills of each fund family's analysts. *Past Performance of Analysts* is constructed by first computing the mean of the monthly fund alphas across all analyst funds within a given complex every month, which we then average over the previous 36 months.

The controls include lagged values for: *Fund Age*, the log of fund age measured in years; *Fund Size*, the natural log of total net assets of the fund measured in millions; *Expense Ratio*, annual expense ratio divided by 12; *Portfolio Turnover*, the portfolio turnover expressed in percentages; and *Family Size*, the natural log of total of family assets measured in millions. The regressions include time and fund style fixed effects, and standard errors are clustered by fund family since that is the level of variation for the key independent variable, *Past Performance of Analysts*.

Results from Table 6 show a positive relation between the performance of manager-run funds and our skill measure of analysts within the same complex. Statistical significance at conventional levels of

significance is documented for four out of the six specifications. Even for the two remaining specifications that employ Carhart alphas as dependent variables, the statistical significance is close to conventional levels with p-values of 0.134 and 0.143, respectively. Further, for these two specifications, we document statistical significance by implementing a bootstrap procedure to assess significance, as we discuss below. Most importantly, the relation between the performance of manager-run funds and our skill measure of analysts is economically significant in that a 100 basis point increase in the average monthly performance of analyst funds over the previous 36 months is, on average, associated with a 13-18 basis points increase in the monthly performance of affiliated funds. This suggests that the skills of a fund family's analysts matter for the performance of affiliated funds.

However, the documented relation between analysts' performance and future performance of affiliated funds does not necessarily imply causation from analysts' skills to the performance of affiliated manager-run funds. Instead, it could simply reflect a typical return association among any two funds belonging to the same family. Thus, we perform a bootstrap procedure to benchmark the observed association against what might be considered a typical association among any random pair of funds from the same family. We randomly select a manager-run fund from each of the families that offer analyst funds and then relate the returns of all manager-run funds with the past returns of these randomly-selected funds from their respective families. We then perform regressions using the same control variables as in the original pooled regression. We repeat this procedure 1,000 times generating an empirical distribution based on the 1,000 coefficients for the past return variable, which we compare against the original coefficients from Table 6. Another attractive feature of this procedure is that it controls for unobserved family traits because in each iteration, it leaves all family characteristics unchanged from our original analysis.

Figures 1a and 1b plot the distribution of the past return coefficients from 1,000 simulations when the Carhart alpha net and gross of expenses, respectively, is used as the performance measure. Similar patterns are observed for the other performance measures, and those charts are not included for brevity. The figure shows that our point estimates of 0.133 and 0.126, respectively, from columns 3 and 6 of

Table 6 are extreme in that they lie in the right tail of the distribution and are statistically different from the mean of the empirical distribution (associated p-value of 0.007). Thus, the relation between the past performance of analysts and that of the average manager-run fund in the family is significantly stronger than the return association of two randomly paired manager-run funds. These results support the hypothesis that the investment skills of buy-side analysts have a positive impact on the performance of affiliated funds.

6.2. Does Reliance on Analysts' Ideas Matter?

So far we documented that analysts have good ideas that result in their funds' positive benchmarked performance and that their skills have an overall positive impact on the performance of affiliated funds. Given these findings, we would expect that reliance upon analysts' ideas is beneficial for the performance of affiliated funds, everything else held constant.

To test for this hypothesized effect, we construct for each affiliated manager-run fund a ratio that measures its reliance upon analysts' ideas (RAI) and relate it to fund performance. RAI is constructed as the fraction of fund assets invested in commonly-held stocks that were invested in analyst-initiated positions. A commonly-held stock is a stock that is held by at least one analyst fund concurrently with at least one same-family manager-run fund. An analyst-initiated position is a stock from the common set that was first purchased by an analyst fund, which suggests that this investment idea was more likely to have originated from analysts.

Figure 2 plots the distribution of the RAI metric for all affiliated mutual funds. As shown by the figure, the distribution is highly skewed, with a high fraction of funds, roughly 30%, having utilization ratios of zero. Furthermore, the median RAI is just 0.57%, suggesting that about half of the affiliated funds deploy almost no capital in what are presumed to be the best ideas of their buy-side analysts. Since non-normality of the RAI measure is likely to lead to a non-linear relationship between RAI and fund performance, we proceed by analyzing the performance of broader groups of funds categorized by their level of RAI.

At the end of every quarter, we rank and sort all manager-run funds within each family that houses at least one analyst fund into quintiles based on their RAI. Funds in each quintile are placed into an equally-weighted portfolio that is held for one quarter and rebalanced every quarter. The resulting time series of monthly returns for each quintile portfolio is evaluated using style-adjusted returns, Fama-French alphas, and Carhart alphas.

Results are reported in Table 7. Funds with the highest RAI, i.e., funds in the top RAI quintile, generate positive and significant style- and risk-adjusted returns. In contrast, funds in the other quintiles generate performance that is indistinguishable from zero and with no clear pattern, suggesting that the relation between fund performance and RAI is not linear. Importantly, funds in the top RAI quintile significantly outperform funds from the bottom quintile and all funds from the remaining four quintiles. These results suggest that funds that rely the most on their analysts' ideas reap performance benefits from doing so.

The relative outperformance of funds from the top quintile is economically large, as funds from the top quintile outperform funds from the bottom quintile by 19 to 37 basis points per months. However, the observed differences in performance could be caused by differences in fund characteristics, for which these portfolio tests do not explicitly control. Thus, in Table 8 we present multivariate regression tests that control for fund characteristics.

The dependent variable is monthly fund performance, which is measured either as a style-adjusted return or as an alpha measure, calculated on a rolling basis as in Section 5.2. The key independent variables are the indicator variables *High Reliance on Analysts* and *Medium Reliance on Analysts*. The first indicator variable equals one for all funds that belong to the top RAI quintile at the end of the previous quarter, while the second variable equals one for all funds that belonged to quintiles 2 through 4. The remaining funds from the bottom quintile represent the benchmark group. The control variables are defined in the previous section, and the regressions include time, fund style, and fund family fixed effects, with standard errors clustered by fund. The reason for adding fund family fixed effects to these specifications is that the *High Reliance on Analysts* and *Medium Reliance on Analysts* dummies are

based on rankings within each family, which necessitates that we exploit within-family variation for the dependent variable and other regressors.

Results from the regression analysis confirm the results of Table 7. The coefficient on the *High Reliance on Analysts* dummy is significant in all specifications. As expected, the magnitude of the outperformance of funds from the top RAI quintile relative to funds from the bottom quintile drops now that we control for fund characteristics. Specifically, the outperformance, although still statistically significant, ranges from 8 to 14 basis points per month. These results confirm that funds that rely on their analysts' ideas the most are able to generate superior performance relative to the other funds from the same family.

All in all, results from this section support the view that buy-side analysts play an important role in that their skills positively affect the performance of affiliated funds, and they help generate superior performance for the affiliated funds that follow their ideas closely.

7. Why Are Analysts' Ideas Being Underutilized?

Evidence from the previous section suggests that about half of the affiliated funds deploy almost no capital in what are presumed to be the best ideas of their buy-side analysts and a small fraction of funds that rely the most on those ideas generate superior performance. Thus, while they could have benefited from pursuing the opposite strategy, affiliated managers, on average, chose to underutilize their analysts' best ideas. In this section, we explore two possible explanations for this puzzling phenomenon.

7.1. Do Analysts Keep Their Good Ideas to Themselves?

Analysts could choose to keep good ideas from their affiliated portfolio managers in the hope of outperforming managers and improving their own standing in the organization. To examine this possibility, we compare the analysts' unique ideas with the ideas that they shared with portfolio managers. If analysts are keeping their good ideas to themselves, their uniquely-held stocks ought to outperform the shared ideas.

For each period and for each family that offers analyst funds, we form an aggregate analyst portfolio and an aggregate manager portfolio. The first portfolio consists of holdings of all the family's analyst-run funds, while the latter portfolio consists of the holdings of all the family's manager-run funds. We compare the two portfolios to identify those positions that were uniquely held by analysts and those that were commonly held by analysts and managers. For each position, we identify the first and the last date when the corresponding stock was uniquely or commonly held. Then we evaluate the performance of each position over that holding interval. We employ the Fama and French (1993) and Carhart (1997) approaches on a rolling basis as well as the DGTW characteristic adjustment approach to control for size, book-to-market equity ratios, and momentum characteristics of the underlying stocks.[19] We also report results for stocks' excess returns, which are the raw returns net of the risk-free rate.

We estimate OLS pooled regressions where the dependent variable is one of the abnormal return measures for each position in the aggregate analyst portfolio. The key independent variable is *Unique to Analysts*, an indicator variable that equals one if the position was unique to analysts and zero if it was jointly held by analysts and portfolio managers. The control variables, which are intended to control for differences in characteristics between the uniquely-held and commonly-held stocks, possibly driven by style differences among analyst and manager-run funds, include: *Market Cap*, the natural log of the market capitalization of the corresponding stock; *Past 12 Month Return*, compounded returns over the past twelve months, *Book-to-Market Ratio*, the ratio of book to market value of equity; and *Return Volatility*, volatility of daily returns over the most recent month. These control variables are measured at the beginning of the holding period. We include industry fixed effects (based on the 48 Fama-French industry groups) to account for industry differences between the uniquely-held and commonly-held stocks. Finally, we cluster standard errors by fund family to account for correlations across observations that belong to the same family.

[19] The DGTW approach, used to control for key stock characteristics, benchmarks the returns of each stock position against the DGTW benchmark portfolios, which are 125 benchmark portfolios of stocks matched on market capitalization, book-to-market ratio, and prior 12-month returns (see, Daniel et al. (1997)) .

Results are reported in Table 9. The insignificant coefficient on the *Unique to Analysts* variable across all models suggests that the performance of analysts' uniquely-held stocks is not significantly different from that of commonly-held stocks. Thus, analysts' unique ideas perform no differently from the ideas that they share with their portfolio managers. This evidence is inconsistent with the possibility that analysts are not sharing their best ideas with their affiliated portfolio managers.

7.2. Does Portfolio Managers' Tenure Play a Role?

We now turn to another possible explanation. We hypothesize that as portfolio managers' tenure with the organization increases and they are less likely to be fired due to poor performance, they have an incentive to forgo analysts' ideas in exchange for more manager-originated investments. By doing so, a manager can justify her existence in the organization, reduce the probability of being fired, and obtain more flexibility in determining investment policy (see Shleifer and Vishny (1989)). If, on the other hand, this same manager mimics the stock picks of analysts exactly, her performance, even if stellar, will likely be attributed to the analysts, and her job might be viewed as redundant.

To explore this possibility, we model the probability that a manager uses a unique stock idea originating from the analysts of the same family as a function of the manager's tenure and other characteristics. If the hypothesized effect is at work, then we ought to find a negative relation between the probability of a unique analyst idea being utilized by managers and their tenure.

We employ a linear probability model estimated via OLS regressions.[20] The dependent variable is an indicator variable, which equals one if a stock that was unique to the analysts of a given fund family at time *t-1* was added to the portfolio of an affiliated fund manager at time *t*, and equals zero if it was not. Independent variables are measured with a lag. Our key independent variable, *Tenure*, is the natural log of the manager tenure with a given fund measured in years. We include time and industry fixed effects and cluster standard errors by family to account for the fact that managers are responding to a common pool of in-house analyst ideas that is unique to the family.

[20] Results from a logistic regression are similar and not reported in the interest of brevity.

We consider additional organizational aspects that could affect managers' use of analysts' ideas. Accordingly, we add five independent variables. *Institutional* is an indicator variable that equals one if the fund offers at least one institutional share class. Catering to an institutional clientele presumably makes a manager more likely to use analysts' ideas as institutional clients generally demand explainable and transparent investments processes applied with a certain level of uniformity across different funds from the same family. *Sub-Advised* is an indicator variable that equals one if the portfolio management of the fund is outsourced to another asset management firm.[21] We expect sub-advised funds to be unlikely users of research generated by a different management company. *Fund TNA/Family TNA* is the ratio of the fund assets to the total family assets. Similar to the entrenchment explanation, we hypothesize that managers that control substantial resources within an organization are more powerful and could follow a more manager-centric investment approach that relies less on analysts' research. *Fund Size* and *Family Size* are constructed as in Section 6.1. Larger funds or larger families might provide portfolio managers resources, such a dedicated research staff or even dedicated analysts outside of the family's common research pool, which might reduce their need to follow the ideas of their in-house analysts.

We also explore whether the likelihood of using analysts' unique ideas is affected by the past performance of the manager's own fund. Managers with superior past performance could feel overconfident about their abilities and see no need to heed their analysts' advice. To test for this effect, we introduce two additional independent variables. *Positive Fund Return* is defined as [max (fund return, 0)], where fund return is the past average risk-adjusted performance of the fund over the previous 36 months. *Negative Fund Return* is defined as [min (fund return, 0)]. Likewise, the likelihood of using analysts' ideas could be affected by how well the analysts performed in the past. Thus, we add two additional variables that reflect the past performance of analyst-run funds, *Positive Analyst Return* and *Negative Analyst Returns,* which are constructed in a similar way as the performance variables for the manager funds. The analyst fund return is the past risk-adjusted performance of the analyst-run funds within a given complex constructed by first taking the mean of the monthly fund alphas across all analyst-

[21] We employed data reported in Morningstar Direct to construct the Tenure, Institutional, and Sub-Advised variables.

run funds within a given complex every month and then averaging the analyst-run mean alphas over the previous 36 months.

Finally, our key control variable, *Compare Score*, is added to control for the style difference between analysts' unique stocks and the portfolio of each affiliated manager. We expect that the larger the style difference between an analysts' unique stock and the manager's portfolio, the less likely is the manager to include that stock in his portfolio. *Compare Score* is constructed as described in Section 5.2. Other control variables, defined as in Section 7.1, include: *Market Cap*; *Past 12 Month Return*; *Book-to-Market Ratio*; and *Return Volatility*.

Table 10 reports results. The coefficient on *Tenure* suggests that analyst ideas are less likely to be utilized by a portfolio manager with longer tenure than a portfolio with shorter tenure. This is consistent with our tenure-bias hypothesis. However, this evidence could also be consistent with longer-tenured managers ignoring analysts' ideas simply because they have more experience and therefore higher abilities. If this was the case, then we ought to observe a positive relation between tenure and fund performance. In unreported results, we examine the relation between fund performance and tenure of portfolio managers through multivariate regressions. We find no significant relation between performance and tenure, which rules out the alternative explanation that longer-tenured managers simply are more skilled and do not need to follow analysts' ideas. This finding is consistent with evidence from several other studies, starting with Chevalier and Ellison (1999a) and continuing with Peterson, Pietranico, Riepe, and Xu (2001), Porter and Trifts (2012), Kempf, Puetz, and Sonnenburg (2013), Ma and Tang (2014) and Porter and Trifts (2014)[22], which document that managerial tenure has either no or negative impact on performance.[23] Given that our finding is similar to the consensus evidence on the relation between fund

[22] One exception to this evidence is Golec (1996) who documents a positive relation between fund performance and managerial tenure for 530 funds during 1988-1990.
[23] Similar findings are also reported for hedge funds (see, e.g., Li, Zhang, and Zhao (2011)).

performance and managerial tenure, the corresponding regression results are not reported here in the interest of brevity.[24]

Also consistent with our intuition, managers catering to institutional clients are more likely to incorporate analysts' ideas. As expected, the coefficient on *Sub-Advised* is negative, but it lacks statistical significance. Contrary to our intuition, the coefficient on *Fund TNA/Family TNA* is positive, but it also lacks statistical significance. From the remaining variables, *Fund Size*, *Compare Score*, *Market Cap*, and *Past 12 Month Return*, and *Return Volatility*, all have significant coefficients, with signs as expected. That is, larger funds are more likely to employ analysts' ideas. Also, fund managers are less likely to add a stock that was uniquely held by analysts if that stock has different style characteristics from the fund portfolio. Additionally, fund managers are more likely to incorporate analyst ideas when the underlying stocks are larger, have experienced positive returns over the last twelve months, and exhibit more volatile returns.

The finding that inclusion of analysts' ideas in a manager's portfolio is not related with the variables that capture past performance of the analysts (i.e., Positive Analyst Return and Negative Analyst Return) is not necessarily inconsistent with evidence from Table 6, which shows that past analyst performance correlates positively with the future performance of manager-run funds and evidence from Tables 7 & 8, which show that manager-run funds that rely the most on analysts' ideas perform better. Our interpretation of the evidence from Table 6 is that the higher quality of a family's analysts generally improves the research environment of the fund family, which, in turn, affects the performance of the manager-run funds in a general way, regardless of whether managers decide to pursue all the analysts' ideas or not. For example, besides generating their own ideas, a significant component of analysts' jobs is to provide research support for the stock ideas that the portfolio managers generate. Thus, the higher the

[24] Although we found no relation between tenure and performance, longer tenure, which could mean more experience, could still have a positive effect on performance. Since longer-tenured managers exhibit lower reliance on analyst ideas, it is plausible that a potential positive effect of tenure on performance is offset by the negative effect that lower reliance on analyst ideas could have on performance. This is partly confirmed by evidence from Table 7, which shows that the performance of manager-run funds with the lowest RAI have performance that is indistinguishable from zero.

quality of the research support managers receive from the analysts, the better the decision making of the portfolio managers would be, regardless of whether they decide to pursue the analyst-initiated ideas or not.

In conclusion, we find that analysts are freely sharing their information with portfolio managers, but portfolio managers are not fully utilizing these ideas. Our findings are consistent with career concerns partially explaining this underutilization. This suggests that fund families are not optimally employing their resources. This could adversely affect fund investors, who could have fared better if their fund managers utilized the ideas of their in-house analysts to a greater extent.

8. Conclusion

Our study presents new findings on the abilities of buy-side analysts and the role that they play in the mutual fund management process. Our results are consistent with the hypothesis that buy-side analysts have investment abilities. Analysts' abilities—measured by the performance of the funds that they manage—generate significant abnormal returns no matter how their performance is evaluated. Furthermore, our results suggest that buy-side analysts are important for their organizations, as their skills positively affect the performance of affiliated funds, and their stock ideas can help generate superior performance for the portfolio managers that follow those ideas closely.

Although some managers benefit a great deal from closely following their buy-side analysts' ideas, research generated by buy-side analysts appears to be generally underutilized by affiliated managers. The underutilization is consistent with longer-tenured managers choosing to forgo some of the analysts' ideas, at least in part, due to career considerations.

An important implication from our findings, as related to mutual fund performance, is that fund families could benefit the performance of their member funds by following a two-pronged approach. First, fund families could boost the quality of their analysts' research. Second, they could impose structures and career incentives that elicit a greater extent of utilization of analysts' ideas by fund managers.

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Table 1
Descriptive Statistics

This table reports summary statistics for three groups of mutual funds during the 2000-2010 period. The first group is comprised of 68 analyst equity mutual funds. Statistics on analyst funds are reported in Panel A. Panels B and C report statistics on the two remaining groups that are comprised of affiliated and unaffiliated manager-run equity funds, respectively. Each attribute is first averaged across all observations belonging to each fund to come up with a fund-specific attribute and the statistics reported are based on the cross-section of these fund-specific attributes. Portfolio Concentration is the portfolio Herfindahl index computed as the sum of the squares of the portfolio weights in each SIC-defined industry. Raw returns are of monthly frequency.

Panel A. Analyst-Run Funds (N=68)						
Characteristics	mean	10th	25th	Median	75th	90th
Raw Return	0.44%	-0.17%	0.18%	0.50%	0.90%	1.23%
Total Net Assets ($mill)	520	24	67	184	675	1,359
Family Assets ($ bill)	253.0	15.7	57.3	382.5	382.5	382.5
Expense Ratio	1.21%	1.01%	1.05%	1.17%	1.33%	1.56%
Maximum 12b-1 Fee	0.49%	0.25%	0.34%	0.45%	0.60%	0.75%
Portfolio Turnover	114%	67%	86%	111%	140%	157%
Portfolio Concentration	0.16	0.03	0.04	0.12	0.21	0.32
Number of Holdings	76	30	46	60	93	123
Average # of Holdings Reports/Year	3.5	3.3	3.3	3.3	3.6	4.0
Monthly Observations	103	35	72	132	132	132
Panel B. Affiliated Manager-Run Funds (N = 411)						
Raw Return	0.29%	-0.32%	0.07%	0.36%	0.63%	0.94%
Total Net Assets ($mill)	2,022	36	111	395	1,417	5,154
Family Assets ($ bill)	104.5	4.7	20.2	28.2	92.2	382.5
Expense Ratio	1.33%	0.85%	0.99%	1.30%	1.61%	1.85%
Maximum 12b-1 Fee	0.50%	0.20%	0.32%	0.54%	0.66%	0.75%
Portfolio Turnover	96%	29%	49%	88%	124%	188%
Portfolio Concentration	0.10	0.02	0.03	0.04	0.08	0.19
Number of Holdings	100	39	54	83	121	189
Average # of Holdings Reports/Year	3.6	3.0	3.3	3.6	3.8	4.0
Monthly Observations	108	57	87	132	132	132
Panel C. Unaffiliated Manager-Run Funds (N=2,694)						
Raw Return	0.11%	-0.99%	-0.16%	0.30%	0.62%	0.94%
Total Net Assets ($mill)	688	8	26	105	393	1,227
Family Assets ($ bill)	15.7	0.0	0.3	2.6	12.1	51.2
Expense Ratio	1.46%	0.88%	1.08%	1.36%	1.68%	2.02%
Maximum 12b-1 Fee	0.45%	0.25%	0.25%	0.42%	0.61%	0.78%
Portfolio Turnover	112%	26%	45%	76%	123%	197%
Portfolio Concentration	0.10	0.03	0.03	0.05	0.08	0.19
Number of Holdings	98	29	42	63	97	165
Average # of Holdings Reports/Year	3.7	2.9	3.2	3.6	4.0	4.2
Monthly Observations	91	29	56	101	132	132

Table 2
Style- and Risk-Adjusted Performance

This table reports performance results for each of the three fund groups: analyst funds; affiliated manager-run funds; and unaffiliated manager-run funds. Two return measures and three performance metrics are used. The two return measures are monthly returns net of expenses (actual reported returns) and monthly returns gross of expenses (actual reported returns + annual expense ratio/12). The three performance metrics are style-adjusted returns and alphas computed from the Fama and French (1993) and Carhart (1997) models. The approach employed in Panel A first calculates performance metrics for each fund based on its time-series of returns and then computes average and median values for those metrics across funds within each group. Panel B reports results from a portfolio approach where every month funds within each group are placed into an equally-weighted portfolio. Panel B also reports results under two averaging methods. The first method equally weights all funds within each fund group. The second method first averages returns within all funds belonging to the same family and the same fund group to come up with a family-specific return and then averages the family-specific return across all families. The performance measures are based on monthly returns and are expressed in percentages. P-values are reported in parentheses. The Difference rows reports the difference in performance between the analyst funds and funds from each of the two other fund groups. P-values for the differences are based on t-tests for the mean comparisons and on Wilcoxon nonparametric tests for the median comparisons.

Panel A. Individual Fund Alphas

Returns (in %):	Net of Expenses						Gross of Expenses					
Performance Measure:	SAR		FF α		Carhart α		SAR		FF α		Carhart α	
Fund Type	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
Analyst	0.116	0.107	0.183	0.124	0.179	0.119	0.086	0.087	0.272	0.213	0.256	0.203
	(<0.001)		*(<0.001)*		*(<0.001)*		*(0.003)*		*(<0.001)*		*(<0.001)*	
Affiliated Manager	-0.003	0.008	-0.026	-0.039	-0.024	-0.040	-0.021	0.001	0.065	0.058	0.066	0.056
	(0.870)		*(0.128)*		*(0.140)*		*(0.216)*		*(<0.001)*		*(<0.001)*	
Difference	0.119	0.100	0.209	0.163	0.203	0.160	0.107	0.086	0.207	0.155	0.190	0.147
	(0.001)	*(0.004)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(0.002)*	*(0.011)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*
Unaffiliated Manager	-0.087	-0.015	-0.098	-0.063	-0.094	-0.066	-0.079	-0.023	0.012	0.034	0.013	0.033
	(<0.001)		*(<0.001)*		*(<0.001)*		*(<0.001)*		*(0.170)*		*(0.139)*	
Difference	0.203	0.122	0.282	0.187	0.273	0.185	0.166	0.110	0.259	0.179	0.243	0.170
	(<0.001)	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(0.002)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*

Table 2-continued
Style- and Risk-Adjusted Performance

Panel B. Portfolio Approach												
Returns (in %):	Net of Expenses						Gross of Expenses					
	One Observation per Fund			One Observation per Family			One Observation per Fund			One Observation per Family		
Performance Measure:	SAR	FF α	Carhart α	SAR	FF α	Carhart α	SAR	FF α	Carhart α	SAR	FF α	Carhart α
Fund Type												
Analyst	0.128	0.237	0.237	0.130	0.112	0.112	0.102	0.341	0.341	0.101	0.206	0.206
	(0.007)	*(0.007)*	*(0.007)*	*(0.008)*	*(0.060)*	*(0.061)*	*(0.022)*	*(<0.001)*	*(<0.001)*	*(0.033)*	*(0.001)*	*(0.001)*
Affiliated Manager	0.023	0.014	0.013	-0.004	-0.020	-0.020	0.006	0.110	0.109	-0.010	0.084	0.084
	(0.282)	*(0.812)*	*(0.816)*	*(0.862)*	*(0.727)*	*(0.727)*	*(0.792)*	*(0.063)*	*(0.062)*	*(0.681)*	*(0.140)*	*(0.142)*
Difference	0.105	0.223	0.224	0.134	0.132	0.132	0.096	0.231	0.232	0.111	0.122	0.122
	(0.035)	*(<0.001)*	*(<0.001)*	*(0.022)*	*(0.004)*	*(0.004)*	*(0.050)*	*(<0.001)*	*(<0.001)*	*(0.058)*	*(0.007)*	*(0.008)*
Unaffiliated Manager	-0.008	-0.038	-0.038	-0.002	-0.061	-0.060	-0.004	0.079	0.079	0.012	0.067	0.068
	(0.055)	*(0.479)*	*(0.477)*	*(0.889)*	*(0.198)*	*(0.198)*	*(0.308)*	*(0.148)*	*(0.150)*	*(0.440)*	*(0.161)*	*(0.158)*
Difference	0.136	0.275	0.275	0.132	0.173	0.172	0.106	0.262	0.262	0.089	0.139	0.138
	(0.006)	*(<0.001)*	*(<0.001)*	*(0.013)*	*(<0.001)*	*(<0.001)*	*(0.023)*	*(<0.001)*	*(<0.001)*	*(0.083)*	*(0.002)*	*(0.001)*

Table 3
Performance Benchmarked Against Manager-Run Funds

This table reports performance differences between analyst funds and matched manager-run funds. Every year each analyst fund is compared against all affiliated and unaffiliated manager-run funds, respectively, based on an investment style comparison score computed as follows

$$Compare^{j}_{j,t} = \frac{1}{2} \mid SIZE_{i,t} - SIZE_{j,t} \mid + \frac{1}{2} \mid BTM_{i,t} - BTM_{j,t} \mid$$

where *i* indexes analyst funds and *j* indexes non-analyst funds, $SIZE_t$ and BTM_t are, respectively, the value-weighted size and book-to-market quintile scores of all the stocks that at time *t* are held by a given fund. To calculate the quintile scores for size and book-to-market, we first rank all stocks from the CRSP/COMPUSTAT universe into quintiles based on their market capitalization. Next within each size quintile, we rank stocks into quintiles based on their ratio of book value to market value of equity. The *Compare* score assigns a low value when two mutual fund portfolios are similar in their investment styles and a high value when different. For each given analyst fund we calculate its *Compare* score against all the other funds from the comparison universe. These other funds are then ranked into terciles based on their average *Compare* score during year *t*. Once analyst funds have been matched to non-analyst funds from the lowest *Compare* tercile, we further match on each of the other seven characteristics, respectively. For example, when matching on style and age, each analyst fund is first matched to non-analyst funds in the lowest *Compare* tercile and then further matched to funds from the tercile with the lowest absolute age difference. This procedure produces for each analyst fund a set of non-analyst funds that are comparable with the analyst fund in terms style and age. A similar matching procedure is used for the other characteristics, with the exception of management structure, whereby the second level of matching is based on whether a fund has the same group structure as the analyst fund (i.e., either single- or team-managed). To control for all characteristics simultaneously, in addition to style we match analyst funds to non-analyst funds from the tercile with the closest propensity scores. The propensity score is computed by first modeling the probability of a fund being an analyst fund as a function of the seven variables used to create matching groups: a dummy variable indicating whether a fund is managed by a team or not; the log of fund age measured in years; the portfolio Herfindahl index computed for each fund as the sum of the squares of the portfolio weights in each SIC-defined industry; the log of total net assets of the fund; the log of total net assets of the family; the portfolio turnover; and the standard deviation of monthly flows normalized by fund assets. The propensity score for each fund in each year is the predicted probability of a fund being an analyst fund given its characteristics. We first match on the characteristics in year t and then report the average difference between the monthly alpha of the analyst fund and the equally-weighted average monthly alpha of the matched non-analyst funds in year t+1. The performance measure is the monthly alpha computed on a rolling basis from the Carhart (1997) model. Specifically, the alpha estimate of a fund in a given month is its actual excess return minus its expected excess return for that month, computed by summing the products of the realized common factor values and the respective factor loadings estimated using returns from the previous 36 month. The performance differences between analyst funds and matched manager-run funds are based on monthly returns expressed in percentages. P-values are reported in parentheses.

Table 3
Performance Benchmarked Against Manager-Run Funds

Panel A. Fund Returns Net of Expenses (in %)

	One Observation per Fund		One Observation per Family	
Matched on	Affiliated Managers	Unaffiliated Managers	Affiliated Managers	Unaffiliated Managers
Holdings Style	0.223	0.249	0.114	0.159
	(0.019)	*(0.025)*	*(0.011)*	*(0.017)*
And				
Management Structure	0.241	0.247	0.148	0.155
	(0.005)	*(0.027)*	*(0.009)*	*(0.019)*
Fund Age	0.194	0.243	0.139	0.162
	(0.056)	*(0.027)*	*(0.035)*	*(0.017)*
Industry Concentration	0.198	0.252	0.210	0.158
	(0.025)	*(0.024)*	*(0.013)*	*(0.013)*
Fund Size	0.236	0.252	0.192	0.166
	(0.020)	*(0.027)*	*(0.071)*	*(0.017)*
Family Size		0.233		0.149
		(0.035)		*(0.025)*
Portfolio Turnover	0.231	0.265	0.220	0.169
	(0.017)	*(0.021)*	*(0.030)*	*(0.022)*
Flow Volatility	0.237	0.239	0.241	0.162
	(0.019)	*(0.032)*	*(0.022)*	*(0.018)*
Propensity Score	0.229	0.235	0.218	0.143
	(0.051)	*(0.030)*	*(0.067)*	*(0.029)*

Table 3-continued
Performance Benchmarked Against Manager-Run Funds

Panel B. Fund Returns Gross of Expenses (in %)

	One Observation per Fund		One Observation per Family	
Matched on	Affiliated Managers	Unaffiliated Managers	Affiliated Managers	Unaffiliated Managers
Holdings Style	0.226	0.239	0.112	0.160
	(0.021)	*(0.033)*	*(0.013)*	*(0.018)*
and				
Management Structure	0.240	0.239	0.140	0.157
	(0.006)	*(0.034)*	*(0.011)*	*(0.019)*
Fund Age	0.208	0.236	0.144	0.164
	(0.048)	*(0.034)*	*(0.029)*	*(0.018)*
Industry Concentration	0.195	0.235	0.216	0.161
	(0.033)	*(0.036)*	*(0.013)*	*(0.013)*
Fund Size	0.224	0.241	0.188	0.164
	(0.030)	*(0.035)*	*(0.081)*	*(0.020)*
Family Size		0.226		0.152
		(0.043)		*(0.026)*
Portfolio Turnover	0.232	0.254	0.225	0.170
	(0.021)	*(0.027)*	*(0.030)*	*(0.023)*
Flow Volatility	0.231	0.228	0.243	0.163
	(0.024)	*(0.041)*	*(0.023)*	*(0.019)*
Propensity Score	0.238	0.228	0.228	0.146
	(0.051)	*(0.037)*	*(0.063)*	*(0.029)*

Table 4
Risk Comparisons

This table reports risk characteristics for each of the three fund groups: analyst funds; affiliated manager-run funds; and unaffiliated manager-run funds. The characteristics include loadings on the common factors, RMRF, SMB, HML, and UMD, computed from the Carhart (1997) model estimated on the time series of net returns of each fund. RMRF is the market portfolio return in excess of the risk-free rate. The common factor variables SMB, HML, and UMD are the return differences between small cap and large cap stocks, high and low book-to-market stocks, and positive and negative return-momentum stocks, respectively. In addition, the table reports the average standard deviation of fund excess returns and the average Sharpe Ratio. We first compute each characteristic for each fund based on its time-series of returns and then compute average values for that characteristic across funds within each group. P-values are reported in parentheses.

Fund Type	RMRF	SMB	HML	UMD	STD	Sharpe Ratio
Analyst	1.042	0.026	0.040	-0.008	0.066	0.051
	(<0.001)	*(0.378)*	*(0.501)*	*(0.592)*		
Affiliated Manager	1.015	0.132	0.020	0.012	0.058	0.020
	(<0.001)	*(<0.001)*	*(0.253)*	*(0.043)*		
Difference	0.027	-0.106	0.020	-0.019	0.008	0.03042
	(0.359)	*(0.002)*	*(0.742)*	*(0.217)*	*(0.001)*	*(0.022)*
Unaffiliated Manager	0.989	0.183	0.022	0.019	0.060	-0.005
	(<0.001)	*(<0.001)*	*(0.003)*	*(<0.001)*		
Difference	0.053	-0.157	0.018	-0.027	0.006	0.056
	(0.055)	*(<0.001)*	*(0.766)*	*(0.073)*	*(0.007)*	*(<0.001)*

Table 5
Portfolios of Mutual Funds Sorted on Lagged 1-Year Return

This table reports risk-adjusted returns and factor loadings for portfolios of mutual funds that are created at the beginning of each calendar year by sorting mutual funds within each investment objective on their net return over the previous calendar year. The portfolios are equal-weighted monthly. Funds with the highest past return are in tercile 1, and those with the lowest past return are in tercile 3. Carhart α is the intercept from the Carhart (1997) model. RMRF is the market portfolio return in excess of the risk-free rate. The common factor variables SMB, HML, and UMD are the return differences between small cap and large cap stocks, high and low book-to-market stocks, and positive and negative return-momentum stocks, respectively. In Panel A, the sorting on past returns is done within all analyst-run funds and in Panels B and C, among all affiliated and unaffiliated manager-run funds, respectively. P-values are reported in parentheses.

Past Return Tercile	Carhart α	RMRF	SMB	HML	UMD	R^2
Panel A. Analyst						
1 (high)	0.247	1.072	0.061	0.169	0.104	94.66%
	(0.029)	*(<0.001)*	*(0.057)*	*(<0.001)*	*(<0.001)*	
2	0.253	0.991	-0.005	0.135	-0.018	95.96%
	(0.008)	*(<0.001)*	*(0.860)*	*(<0.001)*	*(0.261)*	
3 (low)	0.216	0.994	0.053	0.064	-0.166	92.47%
	(0.137)	*(<0.001)*	*(0.201)*	*(0.117)*	*(<0.001)*	
Panel B. Affiliated Manager						
1 (high)	-0.037	1.032	0.241	0.004	0.106	97.18%
	(0.659)	*(<0.001)*	*(<0.001)*	*(0.858)*	*(<0.001)*	
2	0.031	0.994	0.098	0.019	0.010	98.45%
	(0.596)	*(<0.001)*	*(<0.001)*	*(0.242)*	*(0.308)*	
3 (low)	0.009	0.986	0.012	0.064	-0.076	95.77%
	(0.929)	*(<0.001)*	*(0.679)*	*(0.023)*	*(0.000)*	
Panel C. Unaffiliated Manager						
1 (high)	-0.074	0.998	0.317	0.036	0.122	97.08%
	(0.375)	*(<0.001)*	*(<0.001)*	*(0.128)*	*(<0.001)*	
2	-0.019	0.959	0.117	0.077	0.002	98.64%
	(0.717)	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(0.803)*	
3 (low)	-0.011	0.947	0.035	0.070	-0.110	94.03%
	(0.924)	*(<0.001)*	*(0.292)*	*(0.035)*	*(<0.001)*	

Table 6
Relation of Analysts' Skills and Affiliated Manager-Run Fund Performance

This table reports results from pooled regressions that relate the performance of manager-run funds with the past performance of analyst funds from the same family. The dependent variable is monthly fund performance and is measured using the same approaches as in Section 5, whereby one of the performance measures is the style adjusted return and other two performance measures are the Fama-French and the Carhart rolling alphas. The first independent variable is: *Past Performance of Analysts*, the past risk-adjusted performance of the analyst funds within a given complex constructed by first taking the mean of the monthly fund alphas across all analyst funds within a given complex every month and then averaging the analyst mean alphas over the previous 36 months. The other independent variables include lagged values for: Fund Age, the log of fund age measured in years; Fund Size, the natural log of total net assets of the fund measured in millions; Expense Ratio, annual expense ratio divided by 12; Portfolio Turnover, the portfolio turnover expressed in percentage; and Family Size, the natural log of total of family assets measured in millions. The regressions include time and fund style fixed effects and standard errors are clustered by fund family. Coefficient p-values are reported in parentheses.

Table 6
Relation of Analysts' Skills and Affiliated Manager-Run Fund Performance

Returns:	Net of Expenses			Gross of Expenses		
Dependent Variable	SAR	FF α	Carhart α	SAR	FF α	Carhart α
Quality of Analysts	0.14800	0.17800	0.13300	0.14500	0.17400	0.12600
	(0.030)	*(0.037)*	*(0.134)*	*(0.084)*	*(0.040)*	*(0.143)*
Fund Age	0.00024	0.00006	0.00023	0.00018	0.00007	0.00023
	(0.338)	*(0.811)*	*(0.439)*	*(0.449)*	*(0.801)*	*(0.449)*
Fund Size	-0.00037	-0.00008	-0.00018	-0.00035	-0.00008	-0.00018
	(0.007)	*(0.167)*	*(0.021)*	*(0.011)*	*(0.156)*	*(0.015)*
Expense Ratio	-0.77400	-1.08800	-0.95100			
	(0.308)	*(0.074)*	*(0.146)*			
Portfolio Turnover	-0.00050	-0.00012	-0.00028	-0.00044	-0.00011	-0.00027
	(0.028)	*(0.503)*	*(0.102)*	*(0.127)*	*(0.555)*	*(0.144)*
Family Size	0.00036	0.00012	0.00013	0.00032	0.00012	0.00013
	(0.015)	*(0.302)*	*(0.266)*	*(0.005)*	*(0.278)*	*(0.209)*
Time & Style Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	29,014	27,994	27,994	28,393	27,993	27,993
R^2	2.28%	6.03%	6.49%	2.15%	6.02%	6.48%

Table 7
Performance Stratified by RAI-Portfolio Approach

This table reports performance results for manager-run mutual funds stratified by their reliance upon analyst ideas (RAI). RAI is constructed for each affiliated manager-run fund at the end of each quarter as the fraction of fund assets invested in commonly held stocks that were first held by analysts within the same complex. At the end of every quarter, all manager-run funds within each family that houses at least one analyst fund are ranked and sorted into quintiles based on their RAI. Funds in each quintile are placed in an equally-weighted portfolio, which is held for one quarter and rebalanced every quarter. The resulting time series of monthly returns for each quintile portfolio is evaluated using style-adjusted returns, Fama-French alphas and Carhart alphas. The performance measures are expressed in percentages per month and the associated p-values are reported in parentheses.

Returns (in %):	Net of Expenses			Gross of Expenses		
RAI Quintiles	SAR	FF α	Carhart α	SAR	FF α	Carhart α
Q1	0.000	-0.081	-0.069	-0.004	0.004	0.016
(Lowest RAI)	*(0.997)*	*(0.610)*	*(0.645)*	*(0.959)*	*(0.978)*	*(0.916)*
Q2	0.037	0.014	0.016	0.010	0.105	0.107
	(0.443)	*(0.876)*	*(0.855)*	*(0.828)*	*(0.190)*	*(0.182)*
Q3	-0.073	-0.071	-0.067	-0.070	0.042	0.046
	(0.196)	*(0.472)*	*(0.493)*	*(0.196)*	*(0.662)*	*(0.626)*
Q4	0.081	0.053	0.052	0.059	0.143	0.142
	(0.274)	*(0.597)*	*(0.606)*	*(0.436)*	*(0.156)*	*(0.161)*
Q5	0.202	0.280	0.279	0.183	0.374	0.374
(Highest RAI)	*(0.005)*	*(0.021)*	*(0.022)*	*(0.014)*	*(0.002)*	*(0.002)*
Q5-Q1	0.202	0.361	0.348	0.187	0.370	0.358
	(0.058)	*(0.034)*	*(0.030)*	*(0.081)*	*(0.029)*	*(0.027)*
Q5-Rest	0.203	0.299	0.294	0.197	0.292	0.289
	(0.013)	*(0.005)*	*(0.005)*	*(0.019)*	*(0.005)*	*(0.005)*

Table 8
Performance Stratified by RAI—Multivariate Regression Approach

This table reports results from pooled regressions that relate the performance of manager-run funds with their reliance upon analyst ideas (RAI). RAI is constructed for each affiliated manager-run fund at the end of each quarter as the fraction of fund assets invested in commonly held stocks that were first held by analysts within the same complex. The dependent variable is monthly fund performance and is measured using the same approaches as in Section 5, whereby one of the performance measures is the style adjusted return and other two performance measures are the Fama-French and the Carhart rolling alphas. The key independent variables are the indicator variables *High Reliance on Analysts* and *Medium Reliance on Analysts*. The first indicator variable equals one for all funds that belong to the top RAI quintile at the end of the previous quarter, while the second variable equals one for all funds that belonged to quintiles 2 through 4. The remaining funds from the bottom quintile represent the benchmark group. The other independent variables include lagged values for: Fund Age, the log of fund age measured in years; Fund Size, the natural log of total net assets of the fund measured in millions; Expense Ratio, annual expense ratio divided by 12; Portfolio Turnover, the portfolio turnover expressed in percentage; and Family Size, the natural log of total of family assets measured in millions. The regressions include time, fund style, and fund family fixed effects and standard errors are clustered by fund. Coefficient p-values are reported in parentheses.

Table 8
Performance Stratified by RAI—Multivariate Regression Approach

Returns Measured:	Net of Expenses			Gross of Expenses		
Dependent Variable	SAR	FF α	Carhart α	SAR	FF α	Carhart α
High Reliance on Analysts	0.066	0.132	0.065	0.064	0.132	0.065
(est. in %)	*(0.085)*	*(0.003)*	*(0.085)*	*(0.095)*	*(0.003)*	*(0.086)*
Medium Reliance on Analysts	-0.024	0.007	-0.042	-0.026	0.008	-0.041
(est. in %)	*(0.481)*	*(0.835)*	*(0.181)*	*(0.444)*	*(0.832)*	*(0.183)*
Fund Age	0.00040	0.00035	0.00035	0.00036	0.00033	0.00032
	(0.119)	*(0.080)*	*(0.098)*	*(0.155)*	*(0.107)*	*(0.140)*
Fund Size	-0.00029	-0.00004	-0.00007			
	(0.019)	*(0.681)*	*(0.498)*			
Expense Ratio	-0.16184	-0.39915	-0.18100	-0.00032	-0.00007	-0.00010
	(0.812)	*(0.441)*	*(0.744)*	*(0.005)*	*(0.480)*	*(0.281)*
Portfolio Turnover	0.00012	0.00028	0.00030	0.00013	0.00028	0.00030
	(0.659)	*(0.241)*	*(0.270)*	*(0.638)*	*(0.243)*	*(0.272)*
Family Size	-0.00288	-0.00167	-0.00241	-0.00289	-0.00168	-0.00243
	(<0.001)	*(0.003)*	*(<0.001)*	*(<0.001)*	*(0.003)*	*(<0.001)*
Time, Style & Family Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,746	22,746	22,746	22,746	22,746	22,746
R^2	3.42%	6.70%	7.11%	3.38%	6.69%	7.10%

Table 9
Uniquely-Held versus Commonly-Held Stocks

This table reports results from pooled OLS regressions of performance measures of analysts' positions on a set of characteristics. The key independent variables is Unique to Analysts, an indicator variable that equals one if the position was unique to the aggregate analyst portfolio and zero if it was jointly held in the aggregate analyst and aggregate manager portfolios. The classification of the analysts' positions into the two categories is done as follows. Within each fund family, portfolio holdings of analysts and managers are aggregated every period to construct an aggregate analyst and manager portfolio. The resulting aggregate analyst and manager portfolios are compared every period to identify positions corresponding to two subsets of stocks from the aggregate analyst portfolio that are either uniquely held in the analyst portfolio or commonly held in both portfolios. For each position from each of these subsets we identify a start and an end date, which are the first and the last dates when a position appears in the respective subset. Performance of each position is evaluated based on this holding period. Abnormal returns are computed for each position using the Fama and French (1993) and Carhart (1997) regressions on a rolling basis as well as the DGTW characteristic-based adjustment approach. Under the DGTW adjustment approach the returns of each stock position are benchmarked against the DGTW benchmark portfolios, which are 125 benchmark portfolios of stocks matched on market capitalization, book-to-market ratio, and prior 12-month returns. The excess return is the raw stock return minus the risk-free rate. The performance measures are based on monthly returns. The control variables include the natural log of the stock market capitalization, compounded returns over the past twelve months, the ratio of book to market value of equity, and volatility of daily returns over the most recent month. Parameter values are reported along with associated p-values in parentheses. Standard errors are clustered by fund family and industry fixed effects are included, where industry definition is based on the 48 Fama-French industry groups.

Table 9
Uniquely-Held versus Commonly-Held Stocks

Dependent Variables:	Excess Return		FF α		Carhart α		DGTW α	
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Unique to Analysts (est. in %)	0.184	0.018	0.166	0.104	0.239	0.156	0.258	0.195
	(0.519)	*(0.922)*	*(0.459)*	*(0.460)*	*(0.355)*	*(0.172)*	*(0.212)*	*(0.255)*
Market Cap		-0.00275		-0.00016		-0.00095		-0.00096
		(<0.001)		*(0.505)*		*(<0.001)*		*(<0.001)*
Past 12 Month Return		0.00711		-0.00185		-0.00033		-0.00030
		(0.002)		*(0.020)*		*(0.818)*		*(0.548)*
Book-to-Market Ratio		0.00085		0.00354		0.00256		0.00320
		(0.727)		*(0.020)*		*(0.008)*		*(<0.001)*
Return Volatility		-0.04187		0.38193		0.25023		0.15570
		(0.728)		*(<0.001)*		*(0.004)*		*(0.002)*
Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
N	17,320	17,320	17,320	17,320	17,320	17,320	17,504	17,504
R^2	0.02%	1.98%	0.03%	1.99%	0.03%	1.37%	0.05%	1.40%

Table 10
Linear Probability Model for Inclusion of Analyst Ideas in Managers' Portfolios

This table reports OLS coefficient estimates from a regression of an indicator variable on several stock and fund characteristics. The indicator variable equals one if a given stock that was uniquely held by the analysts of a given fund family at time t-1 was added to the portfolio of a given affiliated fund manager at time t, and equals zero if a given stock was not held by a given affiliated manager at time t. Independent variables are measured with a lag. The key independent variable is Tenure, the natural log of the portfolio manager tenure with the fund measured in years. Other independent variables include: Institutional, an indicator variable that equals one if the fund offers at least one institutional share class; Sub-Advised, an indicator variables that equals one if the portfolio management of the fund is outsourced to another assets management firm; TNA/Family TNA, ratio of the fund assets to the total family assets; Fund Size, the natural log of total net assets of the fund measured in millions; Family Size, the natural log of total of family assets measured in millions; Positive Fund Return, defined as [max (fund return, 0)], where fund return is the past average risk-adjusted performance of the fund over the previous 36 months; Negative Fund Return, defined as [min (fund return, 0)]; Positive Analyst Return, defined as [max (analyst fund return, 0)], where analyst fund return is the past risk-adjusted performance of the analyst-run funds within a given complex constructed by first taking the mean of the monthly fund alphas across all analyst-run funds within a given complex every month and then averaging the analyst-run mean alphas over the previous 36 months; and Negative Analyst Return, defined as [min (analyst fund return, 0)]; *Compare Score*, is constructed in a similar fashion as the Compare Score variable introduced in Table 3 and measures the style difference between a given stock and the portfolio of a given affiliated manager; Market Cap, the natural log of the stock's market capitalization; Past 12 Month Return, compounded stock returns over the past twelve months, Book-to-Market Ratio, the ratio of book to market value of equity; and Return Volatility, volatility of daily returns over the most recent month. Associated p-values are reported in parentheses based on standard errors clustered by fund family. Time and industry fixed effects are included, where industry definition is based on the 48 Fama-French industry groups.

Table 10
Linear Probability Model for Inclusion of Analyst Ideas in Managers' Portfolios

Returns Measured:	Net of Expenses			Gross of Expenses		
Independent Variables	SAR	FF α	Carhart α	SAR	FF α	Carhart α
Tenure	-0.00179	-0.00179	-0.00177	-0.00183	-0.00179	-0.00177
	(0.022)	*(0.024)*	*(0.023)*	*(0.026)*	*(0.027)*	*(0.024)*
Institutional	0.00244	0.00240	0.00234	0.00236	0.00239	0.00233
	(0.013)	*(0.010)*	*(0.009)*	*(0.013)*	*(0.011)*	*(0.008)*
Sub-Advised	-0.00190	-0.00332	-0.00289	-0.00103	-0.00312	-0.00266
	(0.686)	*(0.515)*	*(0.594)*	*(0.841)*	*(0.543)*	*(0.616)*
TNA/Family TNA	0.01110	0.01020	0.01010	0.01110	0.01030	0.01010
	(0.506)	*(0.535)*	*(0.538)*	*(0.496)*	*(0.528)*	*(0.537)*
Fund Size	0.00078	0.00080	0.00081	0.00080	0.00079	0.00078
	(0.004)	*(0.003)*	*(0.003)*	*(0.002)*	*(0.002)*	*(0.002)*
Family Size	-0.00262	-0.00226	-0.00224	-0.00280	-0.00221	-0.00220
	(0.189)	*(0.182)*	*(0.210)*	*(0.175)*	*(0.201)*	*(0.218)*
Positive Fund Return	-0.08460	-0.06030	-0.06020	-0.25700	-0.09330	-0.16100
	(0.658)	*(0.195)*	*(0.060)*	*(0.096)*	*(0.418)*	*(0.183)*
Negative Fund Return	0.36600	0.06100	-0.04800	0.24200	0.06820	0.03080
	(0.060)	*(0.623)*	*(0.752)*	*(0.061)*	*(0.444)*	*(0.829)*
Positive Analyst Return	-1.75000	-0.49300	-0.18900	-1.24800	-0.34600	-0.09230
	(0.291)	*(0.289)*	*(0.504)*	*(0.432)*	*(0.506)*	*(0.792)*
Negative Analyst Return	-2.76800	0.32000	-0.47900	-1.78000	-0.04690	-1.24700
	(0.314)	*(0.554)*	*(0.534)*	*(0.243)*	*(0.952)*	*(0.157)*
Compare Score	-0.00582	-0.00579	-0.00578	-0.00589	-0.00578	-0.00575
	(0.010)	*(0.008)*	*(0.008)*	*(0.008)*	*(0.008)*	*(0.008)*
Market Cap	0.00127	0.00125	0.00126	0.00120	0.00125	0.00126
	(0.017)	*(0.018)*	*(0.019)*	*(0.026)*	*(0.017)*	*(0.020)*
Past 12 Month Return	0.00149	0.00146	0.00146	0.00150	0.00146	0.00147
	(<0.001)	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*
Book-to-Market Ratio	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	(0.846)	*(0.874)*	*(0.927)*	*(0.938)*	*(0.914)*	*(0.946)*
Return Volatility	0.04830	0.04820	0.04840	0.04870	0.04830	0.04870
	(0.001)	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*	*(0.001)*
Time & Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	445,455	445,455	445,455	445,455	445,455	445,455
R^2	0.93%	0.90%	0.90%	0.93%	0.90%	0.91%

Figure 1
Bootstrap Analysis

This figure shows the distribution of *Past Performance of Analysts* coefficient estimates from 1,000 bootstrap simulations of the regression equation in Table 6. Each simulation randomly selects a manager-run fund from each of the families that offer analyst funds and then relates the returns of manager-run funds with the past returns of the randomly-selected funds from their respective families, using the same control variables as in the original regression. In Figure 1a, the performance measure is the Carhart alpha based on fund returns reported net of expenses. In Figure 1b, the performance measure is the Carhart alpha based on fund returns reported net of expenses.

Figure 1a

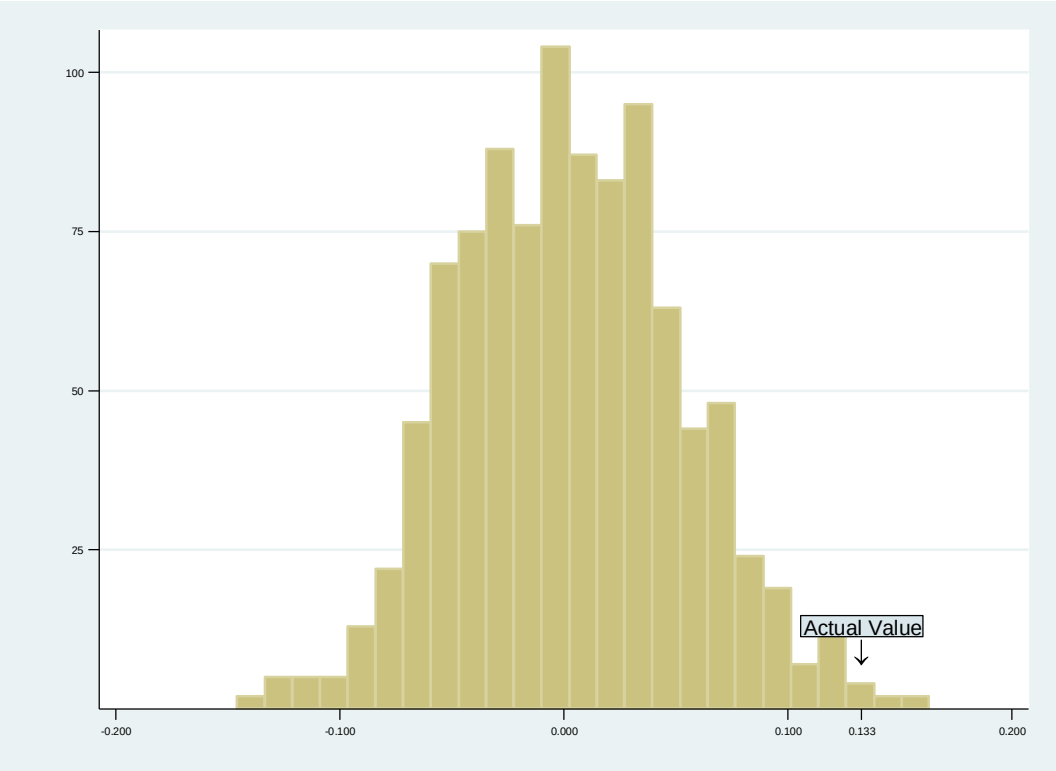


Figure 1b

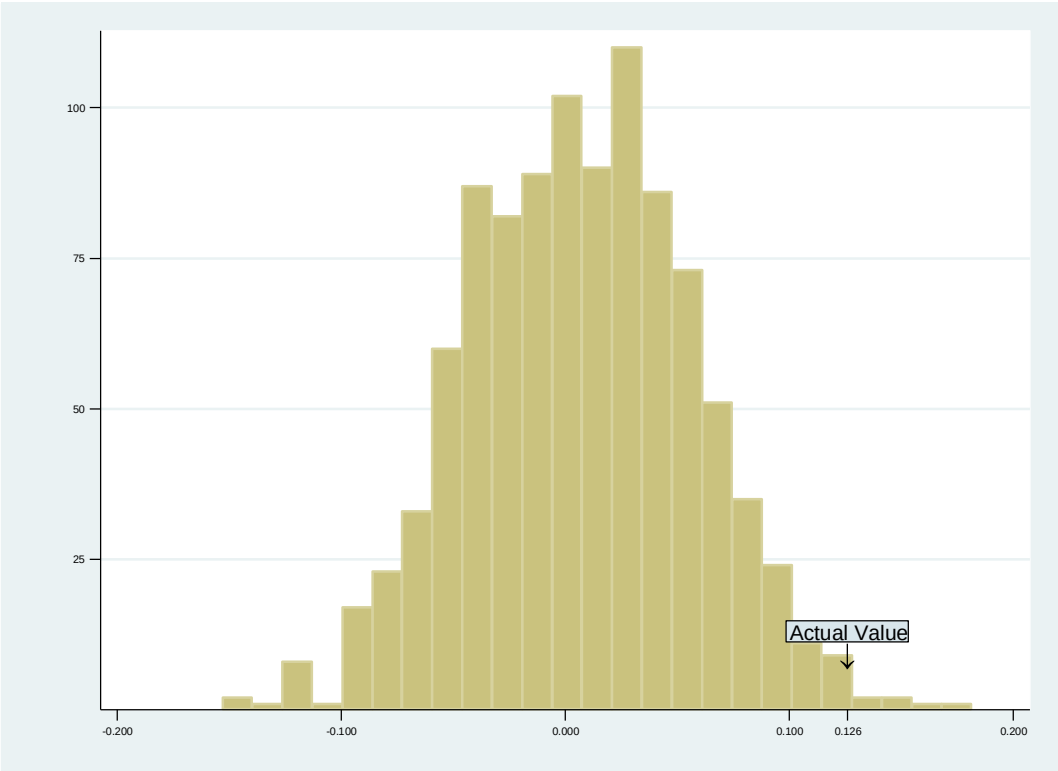
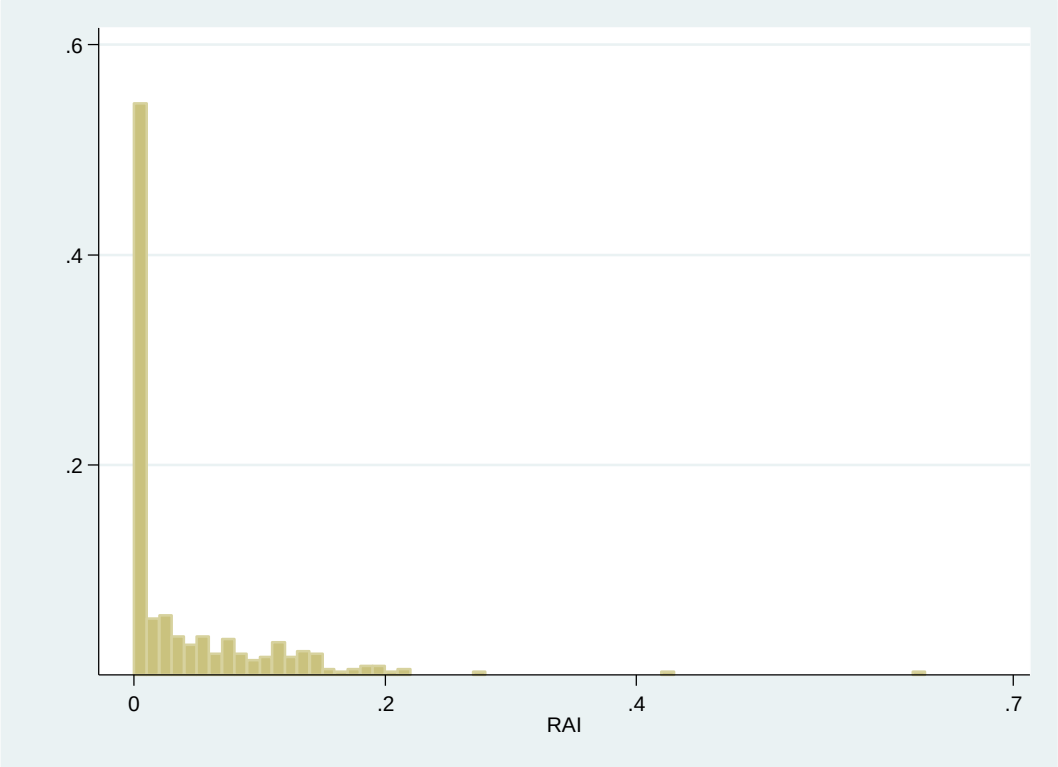


Figure 2
Distribution of RAI

This figure shows the distribution of RAI among the affiliated mutual funds. RAI is constructed for each affiliated manager-run fund at the end of each quarter as the fraction of fund assets invested in commonly held stocks that were first held by analysts within the same complex. Quarterly values are averaged to come up with an average RAI for each fund.



AppendixA. Selection of Matching Characteristics

In this appendix we briefly summarize the previous research that motivated our selection of characteristics that we used for matched fund comparisons. While evidence on whether teams of managers outperform single managers is mixed (see Prather and Middleton (2002); Chen et al. (2004); Bliss, Porter, and Schwarz (2008); and Bar, Kempf, and Ruenzi (2011)), a recent paper by Patel and Sarkissian (2012), which accounts for differences across data sources, shows that team-managed funds outperform single-manager funds. Chevalier and Ellison (1999a) show that younger managers outperform their older counterparts. This is consistent with previous labor market studies. For example, Medoff and Abraham (1980) show that employees' relative performance does not increase with experience, presumably because skill obsolescence, lack of motivation, and lack of stimulation affect the effort level of more senior employees. Since younger funds are most likely to be assigned to younger managers, we use fund age as a proxy for manager age. With regards to industry portfolio concentration, Kacperczyk, Sialm, and Zheng (2005) show that funds that concentrate their holdings in certain industries perform better than diversified funds. Fund size effects are best formalized by Berk and Green (2004), who argue that inflows to high-performing funds and the resulting increased fund size eliminate return persistence because of diminishing returns to scale. Chen et al. (2004) report that family size is positively related to fund performance, which is most likely due to larger families having more resources. With regards to portfolio turnover, certain funds might operate under turnover restrictions, which could have implications for performance. Also in relation to turnover differences across funds, Chen, Jegadeesh, and Wermers (2000) suggest "…that some fund managers are able to routinely identify attractive investment opportunities and, hence, trade frequently, while managers with more limited skills may be much more cautious in their trades." The role that fund clienteles and their associated flow characteristics have on fund performance have been studied by Edelen (1999), Rakowski (2000) and Alexander, Cici, and Gibson (2007), who show that flow size and volatility cause a drag on fund performance.

Appendix B Table 1
Style- and Risk-Adjusted Performance with Fund Age Filter

This table replicates Table 2 imposing the fund age filter of Evans (2010). The filter is implemented by excluding the first three years of return data for each fund. P-values are reported in parentheses. P-values for the differences are based on t-tests for the mean comparisons and on Wilcoxon nonparametric tests for the median comparisons.

Panel A. Individual Fund Alphas

Returns (in %):	Net of Expenses						Gross of Expenses					
Performance Measure:	SAR		FF α		Carhart α		SAR		FF α		Carhart α	
Fund Type	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
Analyst	0.106	0.060	0.188	0.116	0.187	0.115	0.067	0.052	0.276	0.210	0.272	0.204
	(0.003)		*(<0.001)*		*(<0.001)*		*(0.024)*		*(<0.001)*		*(<0.001)*	
Affiliated Manager	-0.021	-0.003	-0.047	-0.047	-0.048	-0.049	-0.029	-0.012	0.059	0.048	0.058	0.045
	(0.177)		*(0.004)*		*(0.003)*		*(0.066)*		*(<0.001)*		*(<0.001)*	
Difference	0.127	0.063	0.235	0.163	0.235	0.163	0.096	0.065	0.217	0.162	0.214	0.159
	(0.001)	*(0.007)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(0.004)*	*(0.028)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*
Unaffiliated Manager	-0.072	-0.026	-0.121	-0.084	-0.124	-0.086	-0.066	-0.030	-0.002	0.020	-0.004	0.020
	(<0.001)		*(<0.001)*		*(<0.001)*		*(<0.001)*		*(0.837)*		*(0.659)*	
Difference	0.178	0.086	0.309	0.200	0.310	0.201	0.133	0.082	0.278	0.189	0.276	0.184
	(<0.001)	*(0.002)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(0.011)*	*(<0.001)*	*(<0.001)*	*(<0.001)*	*(<0.001)*

Appendix B Table 1-continued
Style- and Risk-Adjusted Performance with Fund Age Filter

Panel B. Portfolio Approach

Returns (in %):	Net of Expenses						Gross of Expenses					
	One Observation per Fund			One Observation per Family			One Observation per Fund			One Observation per Family		
Performance Measure:	SAR	FF α	Carhart α	SAR	FF α	Carhart α	SAR	FF α	Carhart α	SAR	FF α	Carhart α
Fund Type												
Analyst	0.123	0.244	0.244	0.110	0.088	0.088	0.095	0.340	0.340	0.089	0.183	0.183
	(0.002)	*(0.007)*	*(0.007)*	*(0.022)*	*(0.130)*	*(0.131)*	*(0.010)*	*(<0.001)*	*(<0.001)*	*(0.059)*	*(0.002)*	*(0.002)*
Affiliated Manager	-0.009	-0.013	-0.013	-0.029	-0.038	-0.038	-0.016	0.092	0.092	-0.029	0.073	0.072
	(0.696)	*(0.826)*	*(0.821)*	*(0.262)*	*(0.519)*	*(0.520)*	*(0.477)*	*(0.121)*	*(0.121)*	*(0.280)*	*(0.217)*	*(0.219)*
Difference	0.132	0.257	0.257	0.139	0.126	0.126	0.112	0.248	0.248	0.118	0.110	0.111
	(0.002)	*(<0.001)*	*(<0.001)*	*(0.019)*	*(0.014)*	*(0.015)*	*(0.006)*	*(<0.001)*	*(<0.001)*	*(0.046)*	*(0.031)*	*(0.032)*
Unaffiliated Manager	-0.015	-0.038	-0.038	-0.013	-0.062	-0.062	-0.009	0.079	0.079	0.007	0.069	0.069
	(0.002)	*(0.481)*	*(0.477)*	*(0.502)*	*(0.213)*	*(0.214)*	*(0.048)*	*(0.147)*	*(0.147)*	*(0.684)*	*(0.163)*	*(0.162)*
Difference	0.138	0.282	0.282	0.123	0.150	0.150	0.104	0.261	0.261	0.082	0.114	0.114
	(<0.001)	*(<0.001)*	*(<0.001)*	*(0.013)*	*(0.002)*	*(0.002)*	*(0.007)*	*(<0.001)*	*(<0.001)*	*(0.097)*	*(0.018)*	*(0.018)*

Appendix B Table 2
Performance Benchmarked Against Manager-Run Funds with Fund Age Filter

This table replicates Table 3 imposing the incubation bias filter of Evans (2010). The filter is implemented by excluding the first three years of return data for each fund. P-values are reported in parentheses.

Panel A. Fund Returns Net of Expenses (in %)

	One Observation per Fund		One Observation per Family	
Matched on	Affiliated Managers	Unaffiliated Managers	Affiliated Managers	Unaffiliated Managers
Holdings Style	0.223	0.247	0.118	0.158
	(0.023)	*(0.032)*	*(0.010)*	*(0.025)*
And				
Management Structure	0.227	0.251	0.143	0.157
	(0.010)	*(0.030)*	*(0.013)*	*(0.027)*
Fund Age	0.206	0.240	0.131	0.164
	(0.081)	*(0.036)*	*(0.076)*	*(0.025)*
Industry Concentration	0.205	0.261	0.214	0.161
	(0.012)	*(0.027)*	*(0.007)*	*(0.023)*
Fund Size	0.229	0.251	0.187	0.168
	(0.012)	*(0.033)*	*(0.051)*	*(0.029)*
Family Size		0.226		0.148
		(0.040)		*(0.033)*
Portfolio Turnover	0.244	0.271	0.244	0.169
	(0.017)	*(0.027)*	*(0.020)*	*(0.033)*
Flow Volatility	0.207	0.243	0.221	0.168
	(0.007)	*(0.032)*	*(0.006)*	*(0.022)*
Propensity Score	0.212	0.234	0.199	0.142
	(0.031)	*(0.040)*	*(0.052)*	*(0.036)*

Appendix B Table 2-continued
Performance Benchmarked Against Manager-Run Funds with Fund Age Filter

Panel B. Fund Returns Gross of Expenses (in %)

	One Observation per Fund		One Observation per Family	
Matched on	Affiliated Managers	Unaffiliated Managers	Affiliated Managers	Unaffiliated Managers
Holdings Style	0.225	0.236	0.117	0.157
	(0.026)	*(0.041)*	*(0.010)*	*(0.026)*
and				
Management Structure	0.224	0.243	0.134	0.160
	(0.012)	*(0.038)*	*(0.017)*	*(0.027)*
Fund Age	0.221	0.233	0.138	0.166
	(0.070)	*(0.044)*	*(0.065)*	*(0.026)*
Industry Concentration	0.205	0.243	0.220	0.163
	(0.018)	*(0.040)*	*(0.009)*	*(0.024)*
Fund Size	0.217	0.239	0.180	0.166
	(0.019)	*(0.044)*	*(0.063)*	*(0.033)*
Family Size		0.221		0.151
		(0.049)		*(0.033)*
Portfolio Turnover	0.246	0.259	0.249	0.168
	(0.020)	*(0.034)*	*(0.021)*	*(0.036)*
Flow Volatility	0.207	0.233	0.226	0.168
	(0.009)	*(0.041)*	*(0.007)*	*(0.024)*
Propensity Score	0.223	0.228	0.209	0.145
	(0.031)	*(0.048)*	*(0.051)*	*(0.036)*

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2011

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2004

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