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Spillovers of Senior Mutual Fund Managers' Capital Raising Ability

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CREATES Research Paper 2022-03

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Job Market Paper

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This version: December 2, 2021

*I thank Olga Balakina, Charlotte Christiansen, Gernot Doppelhofer, Jonas Nygaard Eriksen, Niels Strange Grønborg, Juha Joenväärä, Thore Johnsen, Yuan Li, Stig Vinther Møller, Lasse Heje Pedersen, José Albuquerque de Sousa, James Webster, Ran Xing, and seminar participants at Aarhus University, Copenhagen Business School, Norwegian School of Economics, and 2021 Young Scholars Nordic Finance Workshop for helpful comments. This paper was partially written during my visit to Copenhagen Business School in the Spring of 2021. I also thank Lasse Heje Pedersen for hosting my visit and acknowledge Copenhagen Business School for granting me access to the Morningstar Direct Database.

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Abstract

This paper documents a sizeable spillover effect of senior mutual fund managers' capital raising ability on their colleagues. I find that when a junior fund manager has new senior colleagues in a fund, the junior manager's other funds also have substantial capital inflows. To identify the cause of these capital inflows, I extend the active investment skill in the Berk and Green model with capital raising ability. Empirical evidence shows that a fund manager's performance in other funds (measured by net or gross alphas) decreases significantly after having new senior colleagues, and value added from the active investment does not increase. This is consistent with a spillover effect of senior managers' capital raising ability rather than active investment skill.

Keywords: Mutual Fund Managers; Management Spillovers; Capital Raising; Investment Skill; Capital Flows

JEL Classification: G11; G14; G23

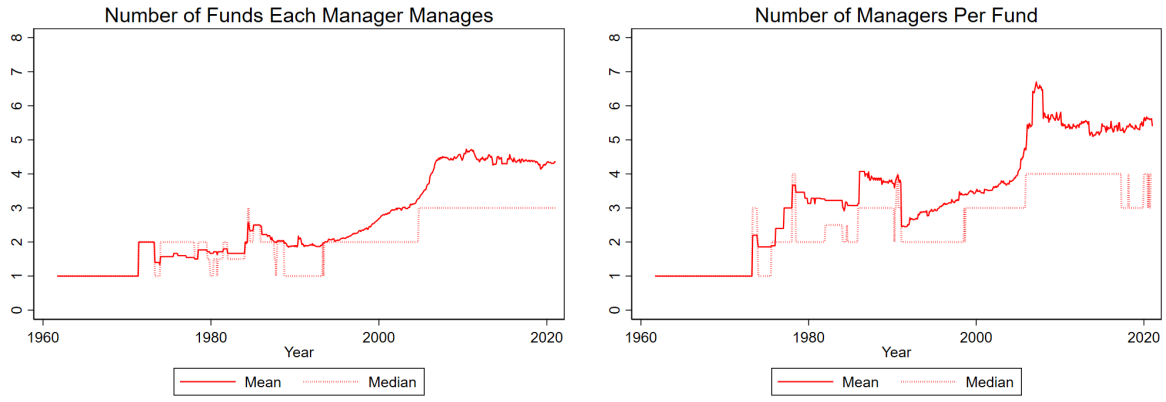
This version: December 2, 2021.

I. Introduction

Over the past six decades, there has been a gradual transformation in the management structure of mutual funds. As shown in Panel A of Figure I, an average fund manager managed one fund in 1970 and manages four funds today (multitasking). Panel B shows that an average fund had one manager in 1970 and has five managers today (team management). In this context, there is a growing literature exploiting the advantages of multitasking and team management (Agarwal et al. (2018); Fedyk et al. (2020); Harvey et al. (2020)). Different from these studies, this paper documents a large benefit of this management structure - the spillover effect of senior fund managers' capital raising ability on their colleagues.

Figure I: The U.S. Mutual Fund Industry

This figure plots the mean and median of the number of funds each manager manages and the number of managers per fund. The sample period is from January 1962 to December 2020.



The amount of capital that a fund manager can raise depends on the manager's client connections and investors' perceptions of the manager's active investment skill and reputation.[1] A manager's colleagues potentially influence the manager's client connections and investors' perceptions of this manager, especially under this new fund management structure. To identify this spillover effect from colleagues, I examine when a junior manager has new senior

[1]The amount of capital that a manager can raise is important because it is directly related to revenues. Previous studies imply that the main incentive of mutual fund managers is to generate higher revenues (Berk and van Binsbergen (2015); Ibert et al. (2017)).

colleagues in a fund, the change in capital flows of this junior manager's other funds in the next tenure year.[2]

I find that having new senior colleagues increases a fund manager's capital flows by $92 million in the next tenure year, which is approximately 8.3% of assets under management. The spillover effect on flows is approximately two times the effect of a one-standard-deviation increase in net alphas.[3] I also show that a one-standard-deviation increase in the experience difference between the most senior new colleague and the fund manager leads to a $74 million increase in capital flows in the next tenure year, which is about 6.6% of the assets under management. This evidence highlights the role of fund managers' experience in raising capital. All regressions include manager and time fixed effects and control for fund characteristics.

There are two possible spillover channels. The first is the active investment skill, which is widely studied and commonly defined as the skill to outperform investors' alternative investment opportunity set (e.g., Berk and van Binsbergen (2015)). For example, the manager can obtain private information or learn investment strategies from senior colleagues. This paper proposes another possible spillover channel - senior fund managers' capital raising ability. I define it as the ability to increase a fund's assets under management (AUM) without increasing its performance. For example, the fund manager might have more capital inflows due to the spillovers of senior colleagues' good reputations or client connections.

I propose a model to distinguish between spillovers of capital raising ability and active investment skill. My model relaxes the assumption in Berk and Green (2004)'s model that the capital provision is competitive (i.e., the assumption that the net alpha is zero) and allows variations in net alphas across fund investors.[4] This is motivated by the empirical evidence that there is a large cross-sectional dispersion of net alphas and fees of mutual funds

[2]Other measures (e.g., changes in net alphas and gross alphas) are used later in this paper to distinguish between capital raising ability and active investment skill.

[3]The literature on mutual funds shows that the past net alpha explains the fund size and revenues because higher net alphas lead to higher capital flows (Sirri and Tufano (1998); Lynch and Musto (2003); Choi et al. (2016)).

[4]Consistently, the model in Gârleanu and Pedersen (2018) shows that the net alpha depends on the number of noise allocators.

(e.g., Carhart (1997); Cooper et al. (2021)).

My model shows that net alphas, gross alphas, and value added can be used to distinguish whether capital raising ability or active investment skill increases.[5] It predicts that the increase in the capital raising ability both lowers the net alpha that goes to fund investors and lowers the gross alpha because fund inflows dilute revenues from the active investment. The capital raising ability does not affect value added when capital is abundant. In contrast, an increase in the active investment skill increases gross alphas and value added. Net alphas may increase or not change when the active investment skill increases.[6]

Empirical evidence shows that net alphas and gross alphas decrease, value added is not affected after having new senior colleagues. According to our model predictions, these findings consistently suggest that there exist spillovers of senior colleagues' capital raising ability rather than active investment skill.

One potential problem is that when a fund family's assets under management are expected to increase, more human capital (new senior managers) are hired to manage the growing funds. To address this reverse causality issue, I add family-time fixed effects and control for the previous two tenure years' capital flows. The result of capital inflows still holds. I also show that when a fund manager has new colleagues who are all more junior, the manager has no capital inflows to the other funds. These findings imply that reverse causality is not a problem and fund managers' experience matters to capital raising.

In addition, I show that fees increase after having new senior colleagues, indicating that fund managers have an edge to charge higher fees after benefiting from senior colleagues' capital raising ability. Even a higher fee is charged, investors allocate more capital to the fund manager. This evidence is consistent with the model of Gennaioli et al. (2015), which suggests that investors' trust allows managers to charge high fees and deliver low net alphas.

Finally, I examine which fund managers are more likely to benefit from the spillovers

[5]Value added is a measure of active investment skill proposed by Berk and van Binsbergen (2015). Value added is the product of gross alpha and asset under management.

[6]When capital is abundant, the net alpha is not affected by the increase in active investment skill. When capital is not abundant, the net alpha increases with the active investment skill.

of senior managers' capital raising ability. Additional evidence shows that fund managers who manage small-size funds and belong to a large-size fund family with many funds under management, benefit more from senior colleagues to attract capital flows. Further robustness check shows that the spillover effect of senior managers' capital raising ability holds in different periods.

This paper highlights the importance of fund managers in raising capital. Capital raising in the mutual fund industry focuses on the role of investment advisors and brokers, who direct investors toward the mutual funds (Bergstresser et al. (2009); Christoffersen et al. (2013); Jenkinson et al. (2016); Roussanov et al. (2020)). Others emphasize the net alpha because higher net alphas lead to higher capital inflows (Sirri and Tufano (1998); Lynch and Musto (2003); Choi et al. (2016)). Some studies document spillovers of star funds and managers in the same fund families (Nanda et al. (2004); Warner and Wu (2011); Sialm and Tham (2016)), indicating the role of fund families in attracting capital flows. My empirical evidence implies that fund managers also play a role in raising capital. Furthermore, the capital raising ability of fund managers can help us understand why the average net alpha in the mutual fund industry is negative (Carhart (1997); Fama and French (2010)).

This paper contributes to the literature on fund managers' experience. Studies on fund managers' experience mainly focus on their performance and risk-taking (e.g., Chevalier and Ellison (1999); Kempf et al. (2017)). Concerning capital raising ability, a stylized fact is that more senior fund managers manage larger-size funds, but this evidence does not indicate that experience is positively related to capital raising ability due to the survivorship bias.[7] This paper establishes the importance of managers' experience in capital raising by showing that fund managers benefit from senior colleagues.

This paper advances the literature on the advantages and disadvantages of the popularity of multitasking and team-management structure. Some papers show that team-managed funds underperform (e.g., Chen et al. (2004)). Others find that the team management

[7]For example, best mutual fund managers work for hedge funds (Kostovetsky (2017)), and less skilled managers are eliminated.

structure enables some funds to outperform (e.g., Zambrana and Zapatero (2020)) and lower the decreasing returns to scale (Blake et al. (2013); Harvey et al. (2020)), reduces uninformed overconfident trading (Fedyk et al. (2020)), and reduces portfolio pumping (Patel and Sarkissian (2021)). I add another perspective that the spillover effect of senior managers provides a new explanation for the shift to decentralized investment management in the past decades.

Finally, this paper contributes to the literature on mutual fund manager skill. Many studies focus on the existence of the mutual fund skill (Jensen (1968); Gruber (1996); Kosowski et al. (2006); Fama and French (2010); Berk and van Binsbergen (2015); Barras et al. (2021)). Others investigate where the skill comes from (Daniel et al. (1997); Coval and Moskowitz (2001); Kacperczyk et al. (2005); Cohen et al. (2008)). The spillovers of investment skill are not exploited. This paper provides evidence that working with senior colleagues does not improve a fund manager's active investment skill, suggesting that the active investment skill is not easily learned or shared by managers.

The remainder of the paper proceeds as follows. Section II proposes an identification strategy of spillovers of senior fund managers' capital raising ability. Section III defines fund manager variables that are used in the model. Section IV develops the theory and hypotheses. Section V outlines the data and variable constructions for the empirical study. Section VI describes the empirical model specification and analyzes the main empirical results. Section VII examines the spillover effect conditional by fund characteristics. Section VIII presents additional results and robustness checks. Section IX concludes.

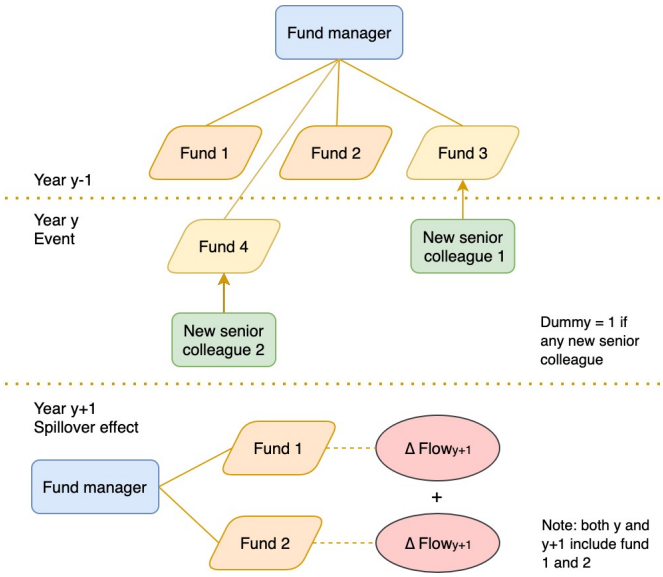
II. Identification Strategy

An example of my identification strategy of spillover effects is shown in Figure II. A fund manager manages three funds (fund 1, 2, 3) in this manager's tenure year $y-1$. In year y, a new senior colleague 1 joins fund 3 to co-manage this fund. In the same year, the fund manager joined the managing team of fund 4, which was managed by another new senior

colleague 2. When co-managing funds 3 and 4 with new senior colleagues 1 and 2, there might be spillovers of the senior colleagues' capital raising ability to fund 1 and 2. To study the spillover effect, I include only funds 1 and 2 and exclude funds 3 and 4. The spillover effect of senior colleagues' capital raising ability is measured by the increase in the fund manager's capital flows from year y to year $y+1$.[8]

Figure II: Identification Strategy

This diagram shows the identification strategy to examine the spillover effect of senior fund managers' capital raising ability.



New colleagues could be more junior or senior than the fund manager j. I focus on the experience difference in this paper. I hypothesize that senior managers have higher capital raising ability (e.g., more client bases, better customer service) than less senior managers. Moreover, managers with more experience have accumulated investment skills for years and could share information/investment ideas with less senior managers. Therefore, this paper mainly focuses on the spillover effect among fund managers with different years of experience.

The experience difference between the fund manager and the colleague k in a given tenure

[8]Capital inflows is a straightforward measure of capital raising ability. Other measures (changes in net alphas, gross alpha, fees, revenues, and value added in Berk and van Binsbergen (2015)) are used later in this paper to distinguish between the capital raising ability and investment skill.

year y of the manager j is

$$D_{j,k,y} = Tenure_{k,y} - Tenure_{j,y}, \tag{1}$$

where the subscript k denotes the fund manager j's colleague k, $Tenure$ is the number of years of experience a mutual fund manager has, y is the manager j's tenure year when the fund manager has any new colleague. The time unit is not based on the calendar year but based on the manager tenure of the fund manager j. For example, when the fund manager started the job in May 1994, $y = 1$ during the period between May 1994 and April 1995.

I construct a dummy variable $\mathbb{1}^{senior}$, which is equal to one if the fund manager has any new senior colleague in the manager's tenure year y, and zero otherwise.[9] I also construct a variable $D_{j,y}$ to capture the experience difference (number of years) between the fund manager and the manager's most senior new colleague. For example, if a fund manager has two new colleagues: one is 10 years more senior, and another is 5 years more junior, then $D_{j,y}$ is 10. If no new colleague is more senior than the fund manager, $D_{j,y}$ is set as a missing value. $D_{j,y}$ allows us to study, for fund managers with senior colleagues, how one year increase in the manager's most senior colleague's experience affects the spillover effect of the most senior colleagues' capital raising ability/active investment skill.

III. Definitions

This section defines fund manager variables that are used in the model. For simplicity, I omitted the subscripts for the fund manager j and time t. Most notations in this paper follow Berk and van Binsbergen (2015).

Let R^n denote the return over the riskless asset earned by investors. Investors have another best alternative investment opportunity, R^B, called the benchmark return. R^n can

[9]The new senior colleague is the first time the fund manager starts to work with. For example, fund manager 1 worked with colleague 1 in fund 1 in 2000, then colleague 1 left fund 1 in 2002. When manager 1 worked again with colleague 1 in fund 2 in 2010, I did not treat colleague 1 as a new colleague to fund manager 1 in 2010.

be decomposed as the benchmark return R^B, and a deviation from the benchmark α^n:

$$R^n = R^B + \alpha^n, \tag{2}$$

where α^n is the unconditional mean of benchmark adjusted return earned by investors (net alpha).

Let α^g denote the unconditional mean of the benchmark adjusted return earned by a fund manager before fees are deducted (gross alpha). Gross alpha is the sum of the net alpha and the fee:

$$\alpha^g = \alpha^n + f, \tag{3}$$

where f is the percentage fee that the fund manager charges to manage the funds for investors.

Let q denote the assets under management (AUM), which is the real fund size that a fund manager manages. The total revenue a fund manager earns, V, is the product of AUM and the percentage fee:

$$V = qf. \tag{4}$$

Let V^A denote the revenue a fund manager earns from the active investment skill, called value added. Value added is proposed by Berk and van Binsbergen (2015), which is the dollar value a fund manager adds over the benchmark:

$$V^A = q\alpha^g. \tag{5}$$

IV. Model and Hypotheses

This section develops a model to identify the specific benefits junior managers earn from their senior colleagues: (1) the capital raising ability or (2) the active investment skill. Capital raising ability is broadly defined as all possibilities to increase a fund's asset under management (AUM) without increasing its performance such as obtaining client connections

from senior colleagues, improving marketing skills, customization service, and diversification service. Active investment skill is broadly defined as all possibilities to outperform investors' alternative investment opportunity set such as obtaining private information or learning investment strategies from senior colleagues.

In the main analysis, I derive the equilibrium AUM, net alpha, gross alpha, fees, revenues, and revenues from the active investment (value added) when the fund manager can raise abundant capital for the active investment as discussed in Berk and Green (2004). When the capital for the active investment is not abundant, predictions are similar and proofs are in Appendix A.

The capital raising ability of fund managers is the key difference between my model and the model in Berk and Green (2004) and Berk and van Binsbergen (2015). Berk and Green (2004) assume a competitive provision of capital, in which net alphas of all funds are constant at zero and fees are equal to gross alphas in equilibrium. However, the empirical evidence shows that the average U.S. domestic equity mutual funds' net alpha is negative (Carhart (1997); Fama and French (2010)). In addition, Cooper et al. (2021) document that fees are strongly negatively related to net alphas, and the dispersion of fees is large and persistent. These findings suggest that there is a large dispersion of the net alphas that go to fund investors. Given that many mutual funds deliver low net alphas and charge high fees but still exist, fund managers should be rewarded for raising capital that requires low net alphas.

In this context, this paper relaxes the assumption in Berk and Green (2004) that the capital provision is competitive to allow variations in net alphas required by fund investors.[10] The net alpha is modeled as an increasing function of the assets under management q:

$$\alpha^n = -c + kq, \tag{6}$$

where c is positive, measuring the ability of a fund manager at raising capital. $-c$ represents

[10]Consistently, the model in Gârleanu and Pedersen (2018) shows that the asset-weighted average net alpha is negatively related to the number of noise allocators.

the cost of capital of the first cent a fund manager raised relative to the benchmark cost of capital in the market. A fund manager with a larger c is more skilled at raising capital. In other words, the manager can raise capital at a lower cost. k is positive, measuring the speed at which the average cost of capital (net alpha) of the fund manager increases with the total amount of capital raised (assets under management q).

When a fund manager does not have the active investment skill, all raised capital is indexed such that the gross alpha is zero. The fee charged by the fund manager is the difference between the gross alpha and the net alpha in Eq. (6)

$$f^C = 0 - \alpha^n = c - kq. \tag{7}$$

From Eq. (7), we can observe that index funds with the same fee have different assets under management due to their heterogeneous ability at raising capital (c differs).

The revenues generated by the fund manager from raising capital is

$$V^C = f^C q = cq - kq^2. \tag{8}$$

The active investment skill follows Berk and Green (2004) and Berk and van Binsbergen (2015). When a fund manager actively invests the capital raised from investors, there are decreasing returns to scale in the mutual fund industry (Chen et al. (2004); Pástor and Stambaugh (2012); Pástor et al. (2015)). The increase in AUM is associated with a decrease in the gross alpha. I assume that the gross alpha that a fund manager generates by the active investment is given by

$$\alpha^{g^A} = a - bq^A, \tag{9}$$

where q^A is the AUM a fund manager chooses to actively manage. a is interpreted as the alpha on the first cent the manager actively invests. b captures the decreasing returns to scale the manager faces. Both a and b are positive.

As in Berk and van Binsbergen (2015), value added, the revenues a fund manager earns from the active investment skill, can be written as

$$V^A = q^A \alpha^{g^A} = q^A(a - bq^A). \tag{10}$$

The total revenues generated by a fund manager are the revenues from both the raised capital and the active investment:

$$V = V^C + V^A = (cq - kq^2) + (aq^A - bq^{A^2}). \tag{11}$$

Berk and Green (2004) and Berk and van Binsbergen (2015) suggest that it is optimal for the fund manager to actively invest q^{A*} and index the excess capital. When the capital is abundant (i.e., $q \geq q^A$), the choices of q and q^A are independent. Maximizing the revenue from the capital raising ability with respect to the raised capital q gives the equilibrium total assets under management:

$$\frac{dV^C}{dq} = c - 2kq^* = 0 \Rightarrow q^* = \frac{c}{2k}. \tag{12}$$

Substituting the optimal q^* into Eq. (8) gives the maximized revenues the fund manager earns from raising capital:

$$V^{C*} = q^*(c - kq^*) = \frac{c}{2k}(c - k\frac{c}{2k}) = \frac{c^2}{4k}, \tag{13}$$

and substituting q^* into Eq. (6) gives the net alpha in equilibrium:

$$\alpha^{n*} = -\frac{c}{2}. \tag{14}$$

This equation shows that a fund manager with higher skill in raising capital (higher c) has a lower equilibrium net alpha α^{n*}.

When capital is abundant, maximizing the revenue from the active investment V^A (called value added) with respect to the size of the active investment q^A gives the optimal amount that manager j chooses to actively manage

$$\frac{dV^A}{dq} = a - 2bq^{A*} = 0 \Rightarrow q^{A*} = \frac{a}{2b}. \tag{15}$$

Substituting the optimal actively managed q^{A*} into Eq. (10) gives the active investment skill of the fund manager in equilibrium:

$$V^{A*} = q^*(a - bq^*) = \frac{a}{2b}(a - b\frac{a}{2b}) = \frac{a^2}{4b}, \tag{16}$$

and substituting q^{A*} into Eq. (9) gives the gross alpha generated by the active investment in equilibrium:

$$\alpha^{g^A*} = a - b(\frac{a}{2b}) = \frac{a}{2}. \tag{17}$$

Now I start to derive the main predictions to distinguish between an increase in capital raising ability and an increase in active investment skill. When capital is abundant, substituting Eq. (12) and (15) into $q^* \geq q^{A*}$ gives

$$q^* = \frac{c}{2k} \geq \frac{a}{2b} = q^{A*}. \tag{18}$$

The condition of abundant capital ($q^* \geq q^{A*}$) applies to all the following propositions.

Proposition 1. *(assets under management). q^* increases with c, whereas q^* does not increase with a.*

The proposition shows that when the capital is abundant for the active investment, the equilibrium AUM increases with the capital raising ability but does not increase with the active investment skill.

The equilibrium net alpha is $\alpha^{n*} = -\frac{c}{2}$, as in Eq. (14). The equilibrium gross alpha is the value added from the active investment divided by the total assets under management:

$$\alpha^{g*} = \frac{V^{A*}}{q^*} = \frac{a^2 k}{2bc}. \tag{19}$$

The equilibrium fee is equal to the difference between the equilibrium gross alpha in Eq. (19) and the net alpha α^{n*} in Eq. (14):

$$f^* = \alpha^{g*} - \alpha^{n*} = \frac{a^2 k}{2bc} + \frac{c}{2}. \tag{20}$$

Proposition 2. *(net alpha, gross alpha, and fee).*

(1) α^{n*} *decreases with* c*, whereas* α^{n*} *does not decrease with* a*.*

(2) α^{g*} *increases with* a*, and decreases with* c*.*

(3) f^* *increases with* a*, and may increase or decrease with* c*.*

The proposition shows that when the capital is abundant for the active investment, a fund manager's net alpha decreases with the raising capital ability, but the increased active investment skill does not affect the net alpha. A fund manager's gross alpha increases with the active investment skill and decreases with the capital raising ability. The fee increases with the active investment skill, while it is unclear whether the fee increases or decreases with the capital raising ability.

We can see that maximized revenues from the active investment is $V^{A*} = \frac{a^2}{4b}$, as in Eq. (16). Maximized revenue from raising capital is $V^{C*} = \frac{c^2}{4k}$, as in Eq. (13). Given that capital is abundant, the total revenue is

$$V^* = V^{A*} + V^{C*} = \frac{a^2}{4b} + \frac{c^2}{4k}. \tag{21}$$

Proposition 3. *total revenue and revenue from the active investment (value added).*

(1) If $q^* \geq q^{A*}$*,* V^* *increases with* a *or* c*.*

(2) If $q^* \geq q^{A*}$, V^{A*} increases only with a.

The proposition shows that when the capital is abundant for the active investment, the total revenue of a fund manager increases with both the active investment skill and the capital raising ability. The revenue from the active investment (value added) only increases with the active investment skill.

Table I summarizes the main hypotheses using six variables.[11] I show the hypotheses when capital is both unconstrained and constrained.[12] We can see that net alpha, gross alpha, and value added can be used to distinguish between the capital raising ability and the active investment skill.[13]

Table I: Summary of Hypotheses

This table reports the summary of hypotheses to distinguish between the increase in capital raising ability and the active investment skill. I show both the hypotheses when capital is unconstrained and constrained.

	Increase in			
	Capital Raising Ability		Active Investment Skill	
	Not Constrained	Constrained	Not Constrained	Constrained
Hypothesis 1				
Capital Flow	+	+	no effect	+
Hypothesis 2				
Net Alpha	–	–	no effect	+
Gross Alpha	–	–	+	+
Fee	+ / –	+	+	+
Hypothesis 3				
Revenue (Total)	+	+	+	+
Revenue from Active Investment	no effect	+ / –	+	+

[11] Empirically, the change in AUM is attributed to capital flows and capital appreciation (depreciation). Capital appreciation (depreciation) is not considered in this setting, so I use the capital flow to measure the change in AUM.

[12] The reason to show both unconstrained and constrained capital is that predictions of capital flows are different. When capital is unconstrained, capital flows can be used to distinguish between capital raising ability and active investment skill. However, when capital is constrained, capital flows increase with both capital raising ability and active investment skill.

[13] Empirically, the increase in capital raising ability or active investment skill is due to the spillover effect of senior colleagues' capital raising ability or active investment skill.

V. Data Set and Variable Constructions

V.A. Data Set

The data set is a match of two databases. First, I obtain open-ended equity mutual fund data from CRSP Survivorship Bias Free Mutual Fund Database. CRSP provides mutual fund information on fund returns, different types of fees, AUMs (TNA), turnovers, and investment objectives. I exclude bond, money market, ETFs/ENFs, index funds, and any fund observations before the fund's TNA reached $5 million following Berk and van Binsbergen (2015). Given that many funds have multiple share classes, I merge those funds into a single fund. Second, I obtain mutual fund manager information from Morningstar Direct that contains a complete list of fund managers' names for each fund in different periods. Finally, I merge CRSP with Morningstar Direct to obtain a data set with 5,464 funds and 13,244 managers. The final sample includes actively managed equity funds and managers from January 1962 to December 2020.[14]

V.B. Variable Constructions

I first estimate the variables at the fund level and then aggregate them to the manager level. The constructions of total revenues, value added, net alphas, and gross alphas are described in Section III. To estimate the alphas (mutual funds' benchmark-adjusted returns), I obtain the benchmark return on fund i at month t as

$$R_{it}^{B} = \sum_{l=1}^{n(t)} \hat{\beta}_i^l R_t^l, \tag{22}$$

where $n(t)$ is the number of Vanguard index funds available at month t, and R_t^l is the excess return of the index fund l at month t, and $\hat{\beta}_i^l$ is obtained by the linear projection of the excess return of fund i onto the excess return of benchmark l. In the main analysis, the benchmark

[14]For completeness, I present similar results for the domestic sample of actively managed U.S. equity funds with 3,226 funds and 8,100 managers from January 1962 to December 2020 in the Online Appendix.

of mutual funds is the 11 Vanguard index funds, following Berk and van Binsbergen (2015). Index funds were tradeable and accounted for transaction costs at the time by investors, and Vanguard index funds are regarded as the least costly alternative investment opportunities. 11 Vanguard index funds include funds with different caps (small, mid, large), growth/value funds, international funds, and a balanced fund.[15] The reason not to use the traditional risk-based approach in the main analysis is that the transaction cost is not included in risk factors, and some factors were discovered after many active mutual funds were launched.[16]

I then compute capital flows to the fund i at time t as

$$Flow_{it} = q_{it} - q_{i,t-1}(1 + R^n_{it}), \tag{23}$$

where q_{it} is the assets under management (AUM), R^n_{it} is the return over the riskless asset earned by investors.

B.1. Aggregate to Manager-Level Variables

Some funds are managed by multiple managers, so we cannot credit all capital flows to one fund manager. I construct manager-level variables related to quantity (AUM, flow, revenue, and value added) as follows. When a fund is managed by several managers, I divide the fund's AUM equally across each manager, and sum all the funds that manager j manages

$$q_{jt} = \sum_{i \in \Omega jt} \frac{q_t}{Mgrn_{it}}, \tag{24}$$

where $Mgrn_{it}$ is the number of fund managers in the mutual fund i at month t. The capital flow, revenue, and value added are constructed in the same way.

It is improper to divide across managers for variables as returns and ratios (alphas and

[15] The tickers for the Vanguard index funds include VFINX, VEXMX, NAESX, VEURX, VPACX, VVIAX, VBINX, VEIEX, VIMSX, VISGX, and VISVX.

[16] Vanguard index funds are obtained from CRSP Database. Factor data comes from Kenneth French's website.

expense ratios). I take an equal-weighted mean of these ratio variables across all funds under management.

$$\alpha_{jt}^{n} = \frac{1}{I_j} \sum_{i \in \Omega jt} \alpha_{it}^{n}, \tag{25}$$

where I is the total number of funds that fund manager j manages.

Finally, I aggregate manager-level variables at the calendar time t (monthly observations) to the manager tenure year y. The spillover effect is the change in fund characteristics from tenure year y to $y+1$ after having any senior colleague in tenure year y. Let $\Delta F_{j,y+1}$ denote the change in fund characteristics for fund manager j from tenure year y to $y+1$. Fund characteristics include all variables defined in Section III.

Table II reports summary statistics of mutual fund managers and the new senior colleagues annually. Panel A shows the manager-level fund characteristics. Panel B shows the increased fund variables after excluding the new colleagues' funds. Mutual fund managers' total revenue, AUM, capital flows, and expense ratio on average increase slightly next year, whereas net alpha, gross alpha, and value added on average decrease slightly next year. Panel C shows that the mean of the new senior colleague dummy is 0.12, suggesting that 12% of the years in which fund managers have new senior colleagues. The experience difference between the fund manager and her most senior colleague is, on average, 8.67 years.

Table II: Summary Statistics

This table shows summary statistics for the sample of active equity mutual funds from January 1962 to December 2020. The unit of observation is the manager-tenure year. Panel A reports the manager-level fund characteristics before excluding the new colleagues' funds. Panel B reports the change in manager-level fund characteristics after excluding the new colleagues' funds. Panel C reports new colleague variables defined in Section II. Value added, net alpha, gross alpha are winsorized at the 1st and 99th percentiles. Flows are winsorized at the 2.5th and 97.5th percentiles to account for mutual fund mergers and splits (Huang et al. (2007)).

	Observations	Mean	SD	Min	Max
Panel A: Manager-Level Fund Characteristics					
AUM ($mil)	108,020	1,115	3,769	0.45	142,000
Net Alpha (%)	107,916	-0.62	7.37	-73.17	73.57
Gross Alpha (%)	107,916	0.61	7.37	-71.43	75.20
Expense Ratio (%)	107,891	1.24	0.45	0.003	9.74
Total Revenue ($mil)	107,702	9.58	27.28	0.001	1,142
Value Added ($mil)	107,744	6.00	165.20	-16,488	8,242
Panel B: Change in Fund Characteristics ($\Delta F_{j,y+1}$)					
$\Delta Flows$ ($mil)	84,141	201	1,486	-76,599	90,778
$\Delta NetAlpha$ (%)	84,683	-0.23	9.22	-99.49	131.40
$\Delta GrossAlpha$ (%)	84,674	-0.21	9.21	-99.40	131.90
$\Delta ExpenseRatio$ (%)	80,900	0.03	0.27	-3.85	9.19
$\Delta Revenue$ ($mil)	84,517	0.73	8.38	-263.4	452.5
$\Delta ValueAdded$ ($mil)	84,576	-0.42	221.8	-24,328	11,064
Panel C: Senior Colleague Measures					
$\mathbb{1}_y^{senior}$ (Senior Colleague Dummy)	84,693	0.12	0.32	0	1
$D_{j,y}$ (Experience Difference)	9,768	8.67	6.51	0	44

VI. Spillovers of Senior Managers' Capital Raising Ability

This section first describes the empirical model specification, then shows the results of capital flows and distinguishes between the spillover effects of senior managers' capital raising ability or active investment skill.

VI.A. Model Specification

The main model specification is as follows

$$\Delta F_{j,y+1} = a_t + a_j + \gamma \mathbb{1}_{j,y}^{senior} + \Psi X_{j,y} + \epsilon_{j,y}, \tag{26}$$

where a_t is a time fixed effect (calendar time), a_j is a manager fixed effect, $\mathbb{1}_{j,y}^{senior}$ is equal to one if the fund manager has any new senior colleague in the manager j's tenure year y and zero otherwise. $X_{j,y}$ is a vector of control variables including the manager tenure, AUMs, and previous three years' net alphas.

$\Delta F_{j,y+1} = F_{j,y+1} - F_{j,y}$ is the increased fund characteristics of fund manager j after excluding the new senior colleagues' funds as highlighted in Figure II. It is a value measure, not a percentage measure. The reason not to divide it by AUM is that size reflects valuable information. For example, value added divided by AUM is the gross alpha. One could argue that the value increment is neither a good measure given that there is a large dispersion of AUM. To address this problem, I add AUM as a control variable so that the change in value can be explained by AUM.

The coefficient γ captures the sign and economic magnitude of spillovers of senior colleagues' skill or ability. The sign of γ can be used to distinguish between the increase in capital raising ability or active investment skill after having new senior colleagues. For example, when $\Delta F_{j,y+1}$ is net alpha $\Delta \alpha_{j,y+1}^{n}$, $\gamma < 0$ implies that there is an increase in capital raising ability as predicted in *hypothesis 2*.

Moreover, I include the manager fixed effect in the model to address an endogeneity issue -

some fund managers keep getting senior colleagues while others do not. More skilled managers may be more likely to have new colleagues. I use the manager fixed effect by comparing the increased skill after getting new senior colleagues within each manager. This manager fixed-effect model can be described as a given fund manager solving a series of single-period problems. Manager fixed effect can also solve potential problems related to the heterogeneity of the fund manager, such as education and innate ability.

There is a potential reverse causality problem: when a fund family's flows are expected to increase, more human capitals (new senior managers) are likely to be hired to manage the growing funds. I add a family-time fixed effect and add the previous two-year capital flows as alternative model specifications to address this reverse causality problem.

VI.B. Capital Flows

Table III reports the change in capital flows. The first column shows that there is a higher capital flows for a given manager after having new senior colleagues, controlling for manager and time fixed effects and other characteristics. With new senior colleagues, a fund manager attracts $92 million higher capital flows (about 8.3% of AUM) in the next year compared to without new senior colleagues. The second column shows that a one-standard-deviation increase in years of experience of the most senior colleague leads to a $74 million increase in capital flows (about 6.6% of AUM) of the fund manager, highlighting the importance of experience in raising capital in the mutual fund industry. According to the *hypothesis 1*, the evidence of increased capital flows suggests that there exists the spillover effect of senior managers' capital raising ability or exists the spillover effect of senior managers' active investment skill when capital is not abundant.

The third and fourth columns of Table III show that the result holds using different specifications to address a reverse causality concern. When a fund family's capital flows are expected to increase, more new senior managers would be hired. I add a time-family fixed effect in the third column by controlling for the circumstance when a fund family is expected

to grow over time and show that the result of capital inflows still holds.[17] I also add the previous two-year capital flows as control variables in the fourth column. My findings in columns 3 and 4 consistently suggest that there are spillover effects.

Finally, the fourth to sixth rows of Table III show that the past net alpha positively predicts capital flows. This is consistent with the theory and empirical evidence that investors chase past performance (Sirri and Tufano (1998); Lynch and Musto (2003); Choi et al. (2016)). This paper shows that spillovers of senior colleagues' capital raising ability also explain the capital inflows in the next year. I compare the effect of past performance with the spillover effect on attracting investors. I standardize the net alphas to compare the economic magnitude. The first column shows that the effect of having any new senior colleague on a manager's capital flows is approximately 1.5 times the effect of a one-standard-deviation increase in net alphas ($92 mil compared to $66 mil). Table II shows that the chance of getting any senior colleague dummy in my data set is about 0.12 (the mean of $\mathbb{1}_y^{senior}$).

There are many possibilities of the spillover effect of senior managers' capital raising ability. For example, investors are willing to invest due to the reputations of senior colleagues. Senior colleagues might share client connections with less experienced managers.

VI.C. Net Alphas, Gross Alphas, and Fees

Table IV reports the change in net alphas, gross alphas, and fees. *Hypothesis 2* shows that after having new senior colleagues, both net and gross alphas increase if the active investment skill increases, whereas alphas decrease if the capital raising ability increases. The first column shows that net alpha decreases after getting any new senior colleague. It suggests that the fund manager's capital raising ability increases while the active investment skill does not increase. The second column also confirms the capital raising hypothesis that managers have a lower gross alpha after getting new senior colleagues.

[17] There are fewer observations in the model specification with time-family fixed effect. The reason is that some fund managers work in multiple funds that belong to different families. I only use the sample that fund managers belong to one fund family.

I also find that the change in fees is positively related to the senior colleague dummy, as shown in the third column of Table IV. It indicates that having new senior colleagues makes fund managers have the edge to raise fees. The result of higher capital flows and higher fees points to the spillover effect of senior managers' capital raising ability. This evidence is consistent with the model of Gennaioli et al. (2015), which shows that investors' trust in fund managers allows managers to charge high fees.

VI.D. Revenues and Value Added

Table V reports the change in revenues and value added. The first column shows that having new senior colleagues explains a higher increase in revenues in the next year. In particular, the spillover effect of senior colleagues' capital raising ability can help a given manager generate \$0.56 million higher revenues per year. According to the *hypothesis 3*, the result for getting senior colleagues confirms the increase in the capital raising ability or the active investment skill. I then compare the economic magnitude of spillovers with past net alphas in generating revenues. The first column shows that the effect of having any new senior colleague on the capital flows is about three quarters of (=0.56/0.745) the effect of a one-standard-deviation increase in net alphas.

The second column of Table V shows that there is no significant difference in value added for the fund manager when having and not having new senior colleagues. Since value added has a large dispersion, I create a dummy variable $\mathbb{1}_{y+1}^{ValueAdded}$ that is equal to 1 if the value added increases in the next year, and 0 if the value added decreases in the next year after having new senior colleagues. The third column shows that there is no evidence that the senior dummy is related to value added. According to hypothesis *H4*, the evidence of value added implies that there is no spillover effect of senior colleagues' active investment skills.

In sum, the results suggest that there are spillovers of fund managers' capital raising ability. The more experienced the new colleague compared with the fund manager is, the more capital inflows the fund manager can attract.

Table III: Change in Capital Flows After Having Senior Colleagues

This table reports the annual change in flows after having senior colleagues. $\Delta Flow_{y+1}$ is the change in flows ($million) from the manager's tenure year y to $y+1$. $\mathbb{1}_y^{senior}$ is a dummy variable that is equal to one if the fund manager has any new senior colleague in the manager's tenure year y, and zero otherwise. $D_{j,y}$ is the standardized experience difference between the fund manager and the manager's most senior new colleague. $NetAlpha_y$, $NetAlpha_{y-1}$, $NetAlpha_{y-2}$ are the standardized average net alphas of funds managed by the fund manager in year y, $y-1$, and $y-2$ by excluding the new senior colleagues' funds defined by Eq. (25). $Size_y$ is the standardized total assets under management of funds managed by the fund manager in the tenure year y by excluding the new senior colleagues' funds defined by Eq. (24). $Tenure_y$ is the standardized total number of years since the fund manager starts the career in the tenure year y. $Flow_{y-1}$ and $Flow_{y-2}$ are the standardized capital flows in year $y-1$ and year $y-2$. The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics clustered by manager × time are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	$\Delta Flow_{y+1}$			
	(1)	(2)	(3)	(4)
$\mathbb{1}_y^{senior}$	92.748***		127.884**	118.066***
	(3.35)		(2.12)	(4.84)
$D_{j,k,y}$		74.069**		
		(2.17)		
$NetAlpha_y$	66.339***	56.237	100.496***	85.830***
	(3.95)	(1.62)	(3.24)	(4.50)
$NetAlpha_{y-1}$	34.977***	85.272**	51.957**	26.383*
	(3.10)	(2.13)	(2.15)	(1.82)
$NetAlpha_{y-2}$	25.894***	54.129	22.626	26.142***
	(3.13)	(1.40)	(1.10)	(2.77)
$Size_y$	-472.634***	-993.546***	-502.994**	-45.614
	(-2.82)	(-5.10)	(-2.11)	(-0.50)
$Tenure_y$	-1,550.827*	-1,167.653	-1,133.824	-646.244
	(-1.81)	(-1.16)	(-0.52)	(-0.77)
$Flow_{y-1}$				-623.250***
				(-5.06)
$Flow_{y-2}$				-235.025*
				(-1.98)
Observations	60,397	6,334	28,020	60,274
R-squared	0.192	0.351	0.311	0.262
Manager FE	YES	YES	YES	YES
Time FE	YES	YES	NO	YES
Time-Family FE	NO	NO	YES	NO

Table IV: Changes in Alphas and Fees After Having Senior Colleagues

This table reports the annual changes in net alphas, gross alphas, and fees after having senior colleagues. $\Delta\alpha^n_{y+1}/\Delta\alpha^g_{y+1}$ is the change in net alphas/gross alphas (%) from the manager's tenure year y to $y+1$. ΔFee_{y+1} is the change in fees (%) from the manager's tenure year y to $y+1$. $\mathbb{1}^{senior}_y$ is a dummy variable that is equal to one if the fund manager has any new senior colleague in the manager's tenure year y, and zero otherwise. $NetAlpha_y$, $NetAlpha_{y-1}$, $NetAlpha_{y-2}$ are the standardized average net alphas of funds managed by the fund manager in year y, $y-1$, and $y-2$ by excluding the new senior colleagues' funds defined by Eq. (25). $Size_y$ is the standardized total assets under management of funds managed by the fund manager in the tenure year y by excluding the new senior colleagues' funds defined by Eq. (24). $Tenure_y$ is the standardized total number of years since the fund manager starts the career in the tenure year y. The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics clustered by manager × time are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	$\Delta\alpha^n_{y+1}$	$\Delta\alpha^g_{y+1}$	ΔFee_{y+1}
$\mathbb{1}^{senior}_y$	-0.396**	-0.291*	0.108***
	(-2.57)	(-1.91)	(15.94)
$NetAlpha_y$			0.007***
			(3.68)
$NetAlpha_{y-1}$	0.139	0.135	-0.004**
	(0.88)	(0.85)	(-2.31)
$NetAlpha_{y-2}$	0.200	0.196	-0.003
	(1.54)	(1.49)	(-1.39)
$Size_y$	-0.072	-0.075	-0.003
	(-1.08)	(-1.12)	(-1.29)
$Tenure_y$	4.866	6.411*	1.487***
	(1.44)	(1.91)	(8.29)
Observations	60,956	60,941	58,390
R-squared	0.101	0.101	0.173
Manager FE	YES	YES	YES
Time FE	YES	YES	YES

Table V: Changes in Revenues and Value Added After Having Senior Colleagues

This table reports the annual changes in revenues and value added after having senior colleagues. $\Delta Revenue_{y+1}$ is the change in revenues ($million) from the manager's tenure year y to $y+1$. $\Delta ValueAdded_{y+1}$ is the change in value added ($million) from the manager's tenure year y to $y+1$. Value added is also known as the revenue from the active investment skill. $\mathbb{1}_{y+1}^{ValueAdded}$ is a dummy variable that is equal to 1 if $\Delta ValueAdded_{y+1} > 0$, and 0 otherwise. $\mathbb{1}_{y}^{senior}$ is a dummy variable that is equal to one if the fund manager has any new senior colleague in the manager's tenure year y, and zero otherwise. $NetAlpha_y$, $NetAlpha_{y-1}$, $NetAlpha_{y-2}$ are the standardized average net alphas of funds managed by the fund manager in year y, $y-1$, and $y-2$ by excluding the new senior colleagues' funds defined by Eq. (25). $Size_y$ is the standardized total assets under management of funds managed by the fund manager in the tenure year y by excluding the new senior colleagues' funds defined by Eq. (24). $Tenure_y$ is the standardized total number of years since the fund manager starts the career in the tenure year y. The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics clustered by manager × time are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	$\Delta Revenue_{y+1}$	$\Delta ValueAdded_{y+1}$	$\mathbb{1}_{y+1}^{ValueAdded}$
$\mathbb{1}_{y}^{senior}$	0.560***	-1.659	-0.006
	(3.35)	(-0.64)	(-0.84)
$NetAlpha_y$	0.745***		
	(7.07)		
$NetAlpha_{y-1}$	0.324***	1.687	0.001
	(3.54)	(0.75)	(0.13)
$NetAlpha_{y-2}$	0.170***	-1.289	0.001
	(2.83)	(-0.67)	(0.14)
$Size_y$	-2.585***	-13.416	0.003
	(-3.93)	(-0.88)	(0.93)
$Tenure_y$	-7.291*	61.963	0.337**
	(-1.81)	(1.12)	(2.02)
Observations	60,872	60,918	60,922
R-squared	0.183	0.062	0.100
Manager FE	YES	YES	YES
Time FE	YES	YES	YES

VII. Spillovers Conditional on Fund Characteristics

This section investigates how spillovers of senior managers' capital raising ability are related to the characteristics of mutual funds and fund families. I provide further evidence on the spillovers of capital raising ability that are conditional on some fund characteristics.

First, I add an interaction term between the senior colleague dummy and AUM into the main model specification discussed in Section VI. The literature on mutual funds documents a decreasing returns to scale in the mutual fund industry (Chen et al. (2004); Pollet and Wilson (2008); Pástor et al. (2015)). It is possible that fund managers managing larger funds are less likely to attract flows due to underperformance. Smaller size fund managers, in contrast, are easier to raise capital due to possibly higher performance. Moreover, managers managing small funds tend to have insufficient performance records so that these fund managers are more likely to raise capital from the spillover effect of senior managers' capital raising ability. In addition, fund managers who manage large funds probably have a good capital raising ability evidenced in their high AUM such that the margin to benefit from more senior colleagues' capital raising ability is low.

The first row of Table VI shows that the spillover effect decreases with AUM. When a fund manager manages \$10,000 million total net assets, getting new senior colleagues makes her attract \$85 million (105-0.002*10,000) more capital flows. This evidence suggests that fund managers who manage small-size funds are more likely to benefit from the spillover effect of senior colleagues' capital raising ability.

Moreover, I hypothesize that the spillover effect is prominent among large families and high product differentiation families. I add an interaction term between the senior colleague dummy and the family size (the number of funds in the fund family). Fund family size is a proxy for the number of products, and the number of funds in the fund family is a proxy for the product differentiation. Some studies show that investors' preferences for product

Table VI: Conditional on AUM

This table reports the annual change in flows after having senior colleagues conditional on AUM. $\Delta Flow_{y+1}$ is the change in flows ($million) from the manager's tenure year y to $y+1$. $\mathbb{1}_y^{senior}$ x $Size_y$ is an interaction term between $\mathbb{1}_y^{senior}$ and $Size_y$. $\mathbb{1}_y^{senior}$ is a dummy variable that is equal to one if the fund manager has any new senior colleague in the manager's tenure year y, and zero otherwise. $Size_y$ is the total assets under management of funds managed by the fund manager in the tenure year y by excluding the new senior colleagues' funds defined by Eq. (24). $Tenure_y$ is the total number of years since the fund manager starts the career in the tenure year y. $NetAlpha_y$ is the average net alphas of funds managed by the fund manager in year y by excluding the new senior colleagues' funds defined by Eq. (25). The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	$\Delta Flow_{y+1}$
$\mathbb{1}_y^{senior}$ x $Size_y$	-0.002***
	(-3.70)
$\mathbb{1}_y^{senior}$	105.259***
	(5.43)
$Size_y$	-0.009***
	(-44.04)
$Tenure_y$	-96.574**
	(-2.47)
$NetAlpha_y$	6.813***
	(8.06)
Observations	82,202
R-squared	0.172
Manager FE	YES
Time FE	YES

differentiation determine the size of a fund.[18] If a fund family has a large number of funds under management, it is more likely that a fund manager would direct some investors to other types of funds to cater to different investors' tastes. For large families, there might be better customer service teams that direct capital flows from one fund to another fund. The hypothesis is that the new senior colleague plays a more important role in a large fund family with large number of funds. Table VII shows that the spillover effect of senior colleagues' capital raising ability increases with the size of fund families and the number of funds in the fund family.

[18] See, for example, Hortaçsu and Syverson (2004); Kostovetsky and Warner (2020).

Table VII: Conditional on Fund Family Size and Number of Funds

This table reports the annual change in flows after having senior colleagues conditional on fund family size and number of funds. $\Delta Flow_{y+1}$ is the change in flows ($million) from the manager's tenure year y to $y+1$. $\mathbb{1}_y^{senior}$ x $FamilySize_y$ is an interaction term between $\mathbb{1}_y^{senior}$ and $FamilySize_y$. $\mathbb{1}_y^{senior}$ x $\#FundsinFamily_y$ is an interaction term between $\mathbb{1}_y^{senior}$ and $\#FundsinFamily_y$. $\mathbb{1}_y^{senior}$ is a dummy variable that is equal to one if the fund manager has any new senior colleague in the manager's tenure year y, and zero otherwise. $FamilySize_y$ is the total net assets of the fund family that the fund manager belongs. $\#FundsinFamily_y$ is the number of funds of the fund family that the fund manager belongs. Controls include $Size_y$, $NetAlpha_y$, and $Tenure_y$. The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	$\Delta Flow_{y+1}$	
$\mathbb{1}_y^{senior}$ x $FamilySize_y$	0.0003***	
	(3.25)	
$\mathbb{1}_y^{senior}$ x $\#FundsinFamily_y$		2.092***
		(6.05)
$\mathbb{1}_y^{senior}$	58.444***	12.587
	(2.97)	(0.58)
$FamilySize_y$	0.0004***	
	(5.02)	
$\#FundsinFamily_y$		-0.041
		(-0.20)
Observations	82,202	82,202
R-squared	0.172	0.172
Controls	YES	YES
Manager FE	YES	YES
Time FE	YES	YES

VIII. Additional Results and Robustness Checks

This section conducts additional tests and robustness checks.

VIII.A. New Junior Colleagues

I investigate the spillovers when all new colleagues are more junior than the fund manager to further understand how the seniority is related to the capital raising ability. A fund manager sometimes has multiple new colleagues, some are more senior and some are more junior. The main analysis uses $\mathbb{1}^{senior}$, which is equal to one when *any* new colleague is more senior. In order to study the effect of junior colleagues, we need to construct a dummy variable that *all* new colleagues are more junior: $\mathbb{1}^{alljunior}$ is a dummy variable that is equal to one if the fund manager has at least one new colleague and *all* new colleagues are more junior, and zero if the fund manager does not have any new colleague.

Table VIII shows that when a fund manager has new colleagues who are all junior, the manager has more capital outflows in the next year. Given that some funds have persistent capital outflows, this result is not robust. I add the previous two-year capital flows as controls and find that having new junior colleagues does not decrease capital flows in the next year.

Table VIII: Change in Capital Flows After Getting New Junior Colleagues

This table reports the annual change in capital flows after getting new junior colleagues. $\Delta Flow_{y+1}$ is the change in flows ($million) from the manager's tenure year y to $y+1$. $\mathbb{1}^{alljunior}$ is a dummy variable that is equal to one if the fund manager has at least one new colleague and *all* new colleagues are more junior, and zero if the fund manager does not have any new colleague. $NetAlpha_y$, $NetAlpha_{y-1}$, $NetAlpha_{y-2}$ are the standardized average net alphas of funds managed by the fund manager in year y, $y-1$, and $y-2$ by excluding the new senior colleagues' funds defined by Eq. (25). $Size_y$ is the standardized total assets under management of all funds managed by the fund manager in the tenure year y defined by Eq. (24). $Tenure_y$ is the standardized total number of years since the fund manager starts the career in the tenure year y. $Flow_{y-1}$ and $Flow_{y-2}$ are the standardized capital flows in year $y-1$ and year $y-2$. The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics clustered by manager × time are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	$\Delta Flow_{y+1}$	
$\mathbb{1}_y^{alljunior}$	-145.647***	-24.109
	(-3.50)	(-0.87)
$NetAlpha_y$	67.989***	58.337***
	(3.95)	(3.83)
$NetAlpha_{y-1}$	32.648***	21.182***
	(3.07)	(2.80)
$NetAlpha_{y-2}$	22.981**	21.364**
	(2.42)	(2.24)
$Size_y$	-452.688**	-15.207
	(-2.45)	(-0.16)
$Tenure_y$	-1,535.414	-813.828
	(-1.46)	(-0.84)
$Flow_{y-1}$		-651.261***
		(-4.68)
$Flow_{y-2}$		-227.539*
		(-1.77)
Observations	52,156	52,037
R-squared	0.200	0.273
Manager FE	YES	YES
Time FE	YES	YES

VIII.B. Two Different Scenarios

I then investigate two different scenarios when fund managers have new senior colleagues as shown in the identifications strategy of Figure II. First, a new senior colleague joins a fund to co-manage this fund with the fund manager. Second, the fund manager joins the managing team of a fund, which is managed by a new senior colleague. I examine whether the result holds for both scenarios. Table IX shows that under both scenarios, spillovers from senior colleagues' capital raising ability increase the capital flows. The spillover effect of raising capital is stronger when the fund manager joins the managing team of a fund.

Table IX: Two Scenarios - New Manager Joins and Managing New Fund

This table reports the annual change in capital flows. $\Delta Flow_{y+1}$ is the change in flows ($million) from the manager's tenure year y to $y+1$. In Column 1, $\mathbb{1}_y^{senior}$ is a dummy variable that is equal to one if a new senior colleague joined a fund to co-manage this fund in the manager's tenure year y, and zero otherwise. In Column 2, $\mathbb{1}_y^{senior}$ is a dummy variable that is equal to one if the fund manager joined the managing team of a fund, which was managed by a new senior colleague in the manager's tenure year y, and zero otherwise. $NetAlpha_y$, $NetAlpha_{y-1}$, $NetAlpha_{y-2}$ are the standardized average net alphas of funds managed by the fund manager in year y, $y-1$, and $y-2$ by excluding the new senior colleagues' funds defined by Eq. (25). $Size_y$ is the standardized total assets under management of all funds managed by the fund manager in the tenure year y defined by Eq. (24). $Tenure_y$ is the standardized total number of years since the fund manager starts the career in the tenure year y. The sample period is from January 1962 to December 2020. Manager and time-fixed effects are included in all regression specifications. t-statistics clustered by manager × time are in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

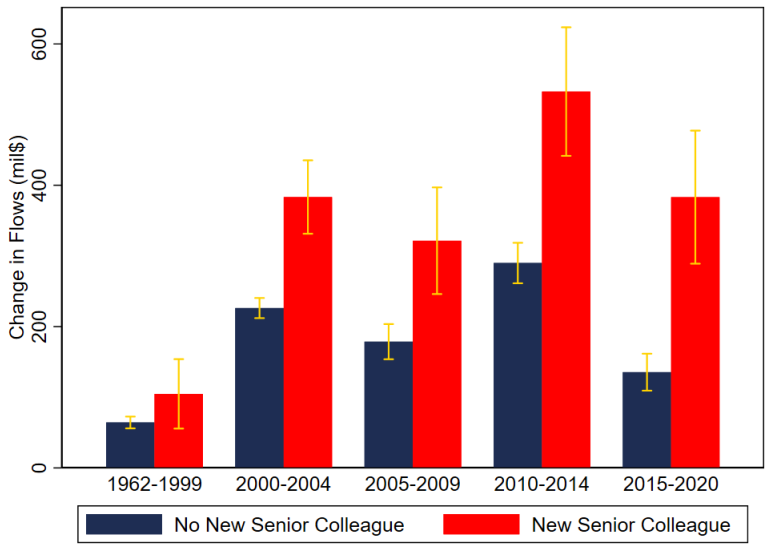
	$\Delta Flow_{y+1}$	
	New Manager Joins	Managing New fund
$\mathbb{1}_y^{senior}$	144.878***	41.648*
	(3.84)	(1.72)
$NetAlpha_y$	66.556***	67.127***
	(3.97)	(8.69)
$NetAlpha_{y-1}$	34.622***	35.008***
	(3.09)	(4.50)
$NetAlpha_{y-2}$	25.605***	26.026***
	(3.09)	(3.50)
$Size_y$	-472.629***	-473.415***
	(-2.82)	(-45.80)
$Tenure_y$	-1,491.536*	-1,586.512***
	(-1.75)	(-4.35)
Observations	60,397	60,397
R-squared	0.193	0.192
Manager FE	YES	YES
Time FE	YES	YES

VIII.C. Different Periods

Finally, I examine the spillover effect of senior managers' capital raising ability during different periods. Figure III depicts the change in capital flows for 5-year subperiods from 1962 to 2020 for fund managers with and without new senior colleagues.[19] The spillover effect is most prominent after 2010 when the gap between managers with and without senior colleagues is the largest and is economically and statistically significant.

Figure III: Capital Flows During Different Time Periods

This figure plots the change in capital flows for the fund managers who have and do not have new senior colleagues during different time periods. The gold bars represent 95% confidence intervals. The sample period is from January 1962 to December 2020.



[19]The sample size from 1962 to 1999 is too small, so observations from 1962 to 1999 are merged.

IX. Conclusion

Is there a spillover effect of senior fund managers' capital raising ability? This paper addresses this question by designing a methodology that examines a manager's other funds and proposes a theory to interpret the specific source of spillovers. The model features the capital raising ability, in which the main assumption follows the empirical findings that there is a large cross-sectional dispersion of net alphas and fees of mutual funds (e.g., Carhart (1997); Cooper et al. (2021)). The results reveal that there exists a spillover effect of senior managers' capital raising ability, while there is no spillover effect of active investment skill.

This paper highlights that fund managers play an important role in raising capital and experience matters, though the literature primarily focuses on the role of financial advisors and brokers in raising capital (e.g., Bergstresser et al. (2009)) and fund managers' role in investing actively. The capital raising ability of fund managers is one important reason that underperformed fund managers exist. This paper does not imply the specific channels of spillovers of senior managers' capital raising ability (e.g., sharing clients; manager reputation), which is left for future research.

Appendix A: Proofs When Capitals for the Active Investment is Constrained

If the total amount of capital raised by the fund manager is constrained (i.e., $q < q^{A*}$), the total revenue from both the active investment and the capital raising is:

$$V = V^A + V^C = (a + c)q - (b + k)q^2. \tag{27}$$

For a revenue maximizing fund manager, maximizing the total revenue with respect to the total assets under management q gives:

$$\frac{dV}{dq} = a + c - 2bq^* - 2kq^* = 0 \Rightarrow q^* = \frac{a + c}{2(b + k)}. \tag{28}$$

Eq. (28) shows that when the capital is not abundant for the active investment, the optimal q^* increases with both the active investment skill a and the capital raising ability c.

Substituting Eq. (28) into Eq. (6) gives the equilibrium net alpha as

$$\alpha^n = -c + kq^* = -c + \frac{k(a + c)}{2(b + k)}. \tag{29}$$

Eq. (29) shows that when the capital is not abundant for the active investment, the net alpha increases with the active investment skill a at a speed of $\frac{k}{2(b+k)}$ and decreases with the capital raising ability c at a speed of $\frac{2b+k}{2(b+k)}$.

The equilibrium gross alpha of the fund is:

$$\alpha^{g*} = \frac{V^{A*}}{q^*} = a - bq^* = a - \frac{b(a + c)}{2(b + k)}, \tag{30}$$

Eq. (30) shows that when the capital is not abundant for the active investment, the gross alpha increases with the skill of active investment a at a speed of $\frac{b+2k}{2(b+k)}$, and decreases with

the skill of raising cheap capital c at a speed of $\frac{b}{2(b+k)}$.

The equilibrium fee is equal to the maximized total revenues in Eq. (27) divided by the optimal AUM in Eq. (28) as:

$$f^* = \frac{V^*}{q^*} = \frac{a+c}{2}. \tag{31}$$

Eq. (31) shows that when the capital is not abundant for the active investment, the equilibrium fee increases with both the active investment skill a and the capital raising ability c.

Substituting Eq. (28) into Eq. (8) and Eq. (10) gives the revenues from the active investment and the capital raising as

$$V^{A*} = \frac{a^2b + 2a^2k + 2ack - bc^2}{4(b+k)^2}, \tag{32}$$

and

$$V^{C*} = \frac{2bc^2 + c^2k + 2abc - a^2k}{4(b+k)^2}. \tag{33}$$

Eq. (32) and (33) show that when the capital is not abundant for the active investment, the total revenues of a fund manager increases with both the active investment skill and the capital raising ability; the revenues from the active investment (value added) increases with the active investment skill.

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