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Individual Commitment and Team Performance: Evidence from Mutual Fund Managers

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Abstract

The psychology literature suggests that individual commitment has a positive effect on team performance by mitigating the free-rider problem. With its detailed management-team information, the mutual fund industry provides a unique opportunity to study how individual managerial commitment is related to performance. Committed fund managers are defined as those who work only for one fund. With few incentives to acquire private information, teams with no committed members underperform those with committed members. These findings remain robust after we incorporate various controls. We also explore why non-committed teams have been used increasingly often despite their poor performance.

> Individual commitment to a group effort — that is what makes a team work, a company work, a society work, a civilization work.
>
> — Vince Lombardi, Pro Football Hall of Fame

I. Introduction

The use of teams has become a mainstay for the organization of work. When forming a team, one often emphasizes the importance of individual commitment because conventional wisdom suggests that it is a key contributor to team performance.

The psychology literature has extensively studied commitment (see, e.g., Kanter (1968), Mowday, Steers, and Porter (1979), and Allen and Meyer (1990)). This literature describes commitment as the psychological attachment and loyalty of an employee to an organization;[1] further, it suggests that this commitment

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[1]For example, Mowday et al. ((1979), p. 226) describe commitment as "the relative strength of an individual's identification with and involvement in a particular organization."

provides a remedy to the free-rider problem in teams by increasing the cost to free ride and has a significantly positive effect on team performance. This view is echoed by the finance literature on the board of directors. A primary interest of this literature is whether "busy" directors, whose commitment may be distracted by holding multiple directorships, can be effective in monitoring executives.[2]

In this paper, we conduct a comprehensive empirical analysis of the effect of individual commitment on team performance. We use mutual fund data, which give us a rare opportunity to measure individual commitment in teams.[3] Our findings are consistent with the psychology literature and suggest that when forming a team, one should consider the implications of team composition for individual commitment and team performance.

Our measure of individual commitment in teams closely follows Mowday et al.'s (1979) definition (see above). If a fund is managed by a team of fund managers in which at least one manager works only for the fund, then the "full-time" fund manager is likely to be committed to the fund due to both monetary and career incentives. According to Ma, Tang, and Gomez (2019), a fund manager's pay can be based on both fund performance and family profitability. For the full-time manager, the fund-level performance pay is based only on the fund for which he works. Further, a fund manager usually has less control over family-level profitability. Therefore, the full-time manager has strong monetary incentives to improve the fund's performance. The manager may also have career-related incentives to improve the fund's performance.[4] If fund performance is good, then he may be promoted within the family or hop to another firm for a better position with higher pay; if it is poor, he may lose his job.

If a fund is managed by a team of fund managers in which every manager also works for other fund(s) at the same time (in other words, if there are no committed members), then there can be a severe free-rider problem. In this case, we can assume that every "part-time" manager has diversified monetary and career incentives among the funds he manages. Therefore, he has a tendency to free ride because his cost of a poor performance by any single fund is not very high.

Therefore, we hypothesize that relative to a committed team (i.e., a team with committed members), a non-committed team (i.e., a team without committed members) has few incentives to acquire private information and, therefore, produces poor fund performance. One might expect that asset management companies, which have superior information about each fund manager's ability and contribution, can reward each fund manager properly (Fang, Kempf, and Trapp (2014)) to eliminate the free-rider problem in a non-committed team. If this is the case, the performance of a non-committed team should be similar to that of

[2]See, for example, Core, Holthausen, and Larcker (1999) and Fich and Shivdasani (2006), both of which find evidence suggesting that busyness has a negative effect on the effectiveness of monitoring. We review papers in this literature in detail in Section II.

[3]The psychology literature usually studies commitment using questionnaires because commitment is often psychological and unobservable (see, e.g., Meyer, Paunonen, Gellatly, Goffin, and Jackson (1989)).

[4]See, for example, Chevalier and Ellison (1999) for a study of mutual fund managers' career concerns.

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a committed team. While we cannot rule out this possibility, we treat it as an alternative hypothesis.

Following similar logic, we define a solo manager as being committed (being non-committed) if he works only for the fund (if he also works for other fund(s) at the same time). However, we expect commitment to be less of an issue in this case, because the fund's performance can easily be traced back to the solo manager and asset management companies can reward the solo manager properly to eliminate any incentive problems.

We focus our empirical analysis of fund performance on open-end U.S. domestic equity mutual funds. We find consistent evidence that equity mutual funds managed by non-committed teams significantly underperform those managed by committed teams. The underperformance equals 3.8 basis points (bps) per month or 45.6 bps per annum (p.a.) before expenses and 3.1 bps per month or 37.2 bps p.a. after expenses. This underperformance remains robust after we control for risk and style differences using various factor models, including the capital asset pricing model (CAPM), the Fama–French (1993) 3-factor model, the Carhart (1997) 4-factor model, and the Pástor–Stambaugh (2003) 5-factor model. It is also robust to controlling for other fund characteristics, including fund total net assets (TNA), fund age, expense and turnover ratios, flow, the number of managers, manager experience and diversity, fund family size, and various fixed effects.

We provide two sets of additional tests to mitigate concerns regarding alternative explanations for the underperformance. First, one might suspect that non-committed teams have more members than committed teams; in that case, the large team size, rather than commitment issues, might be the reason that they are subject to a greater scale of the free-rider problem and underperform. To mitigate this concern, we match a fund managed by a non-committed team with a fund managed by a committed team, requiring that the 2 teams have the same number of fund managers. The treatment fund still significantly underperforms the matching fund. This implies that team size cannot entirely explain the underperformance. Second, one might suspect that the underperformance of funds managed by non-committed teams exists even if these funds use other management structures. To mitigate this concern, we identify events in which funds adopt (stop using) non-committed teams. We find that these funds have a significant performance deterioration (improvement) after the change of management structure. This implies that the underperformance is likely to be caused by non-committed teams.

We also examine the investment behavior of non-committed teams. This analysis sheds light on their incentives to acquire private information. We find that funds managed by non-committed teams exhibit low levels of industry concentration (Kacperczyk, Sialm, and Zheng (2005)) and local holdings (Coval and Moskowitz (1999), (2001)) and a high level of price synchronicity (Amihud and Goyenko (2013)). Kacperczyk et al. (2005) and Coval and Moskowitz suggest that fund managers tend to concentrate their portfolios in industries and local companies for which they have an information advantage. The low levels of industry concentration and local holdings indicate that non-committed teams have few incentives to acquire private information. As these teams rely mostly on public

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information, it is not surprising that a large portion of these funds' performance is explained by systematic risk factors.

Finally, we explore why non-committed teams have been used increasingly often despite their underperformance. We find that the expense ratio of funds managed by non-committed teams is lower than that of other funds. This finding is consistent with the notion that non-committed teams are cost-efficient, as an asset management company can easily assemble a task force to run a fund with existing fund managers. However, the lower expense ratio only partially offsets the underperformance. This implies that investors in these funds are unlikely to be business savvy. To test this implication, we examine the clientele of these funds and find that a large portion of them are invested by retirement savers. An important literature in economics and finance (e.g., Benartzi and Thaler (2001), Madrian and Shea (2001), Agnew, Balduzzi, and Sunden (2003), Duflo and Saez (2003), Huberman and Jiang (2006), and Carroll, Choi, Laibson, and Madrian (2009)) shows that retirement savers have a tendency to rebalance and trade infrequently and to follow default options, which indicates that they are unlikely to be business savvy.[5] Our finding here is consistent with this literature. We further use Sirri and Tufano's (1998) test to show that the flow-to-performance sensitivity is significantly weaker in funds managed by non-committed teams. This suggests that investors in these funds do indeed exhibit inertia.

The rest of the paper is organized as follows: Section II reviews the related literature. Section III describes the data. Section IV examines fund performance. Section V investigates fund investment behavior. Section VI explores why non-committed teams are used increasingly often, despite their poor performance. Section VII concludes.

II. Literature

Our study is related to the literature on teams in various fields, including psychology, economics, finance, and management. We use mutual fund data to conduct a comprehensive empirical analysis of an important aspect of teams: individual commitment, which is often mentioned in sports, business, and politics.

The psychology literature suggests that individual commitment provides a remedy to the free-rider problem in teams and has a positive effect on team performance (see, e.g., Kanter (1968), Mowday et al. (1979), and Meyer and Allen (1990)). This literature usually uses questionnaires to study commitment (see, e.g., Meyer et al. (1989)). We use a large data set of mutual fund managers. Our findings are consistent with the psychology literature and suggest that when forming a team, one should consider the implications of team composition for individual commitment, incentives, and team performance.

Economic theories of teams, beginning with Alchian and Demsetz (1972), have focused on the free-rider problem that arises when actions taken by team members are not observable and on how to design incentive mechanisms to mitigate the free-rider problem (see, e.g., Holmström (1982), Kandel and Lazear

[5]In an interesting study, Sialm, Starks, and Zhang (2015) show that even if retirement fund investors are less sophisticated, a defined contribution (DC) plan sponsor can offset the investors' inertia by adjusting investment options in a more optimal way.

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(1992)). These theories typically assume that team composition is a given. They provide no implications for how team composition affects incentives and team performance.

A few empirical studies in economics and management test the relation between team composition and team performance (see, e.g., Hamilton, Nickerson, and Owan (2003), Eesley, Hsu, and Roberts (2014), and Nadolska and Barkema (2014)). These studies are motivated by Lazear (1998), who argues that teams are economically desirable when they enable gains from complementarities in production among workers and encourage gains from knowledge transfer of idiosyncratic information that may be valuable to other team members. These studies show that workforce diversity contributes to team performance. We also find consistent evidence, but our focus is on the implications of team composition for individual commitment.

A fast-growing literature in mutual funds investigates how teams are associated with fund performance and risk. Chen, Hong, Huang, and Kubik (2004) find that equity mutual funds managed by teams significantly underperform those managed by solo managers. They interpret their findings as evidence consistent with that of Stein (2002), who points out that big teams tend to be bureaucratic and prevent communication and the acquisition of soft information. Dass, Nanda, and Wang (2013) focus on balanced funds and find that team-managed funds display lower timing ability. They interpret this as evidence of high coordination cost within decentralized teams. However, Dass et al. find that the overall performance is similar between solo- and team-managed funds (see, e.g., Prather and Middleton (2002)). They suggest that this demonstrates efficient contracting in equilibrium. Patel and Sarkissian (2017) use the Morningstar Direct database, instead of the Center for Research in Security Prices (CRSP) mutual fund database, to show that team-managed funds outperform solo-managed funds. Qiu (2003), Bliss, Potter, and Schwarz (2008), and Bar, Kempf, and Ruenzi (2011) find that team-managed funds display more passive strategies and lower volatilities. A common feature of these studies is that they all use a team dummy. Unlike these studies, we look into the composition of teams. We are primarily interested in the implications of team composition for commitment, incentives, and performance.

Our paper is also related to the finance literature on the board of directors. An important debate in this literature is whether busy directors (i.e., directors with multiple directorships) can be effective in monitoring executives. On the one hand, Fama (1980) and Fama and Jensen (1983) argue that the market for outside directorships serves as an important source of incentives for these directors to develop reputations as monitoring specialists. On the other hand, these directors may just be too busy to do the job. Further, their commitment can be diluted. The empirical evidence remains inconclusive. For example, Core et al. (1999) find that chief executive officers (CEOs) of firms with busy outside directors are paid excessively. Fich and Shivdasani (2006) find that firms with busy boards, those in which a majority of outside directors hold three or more directorships, exhibit lower market-to-book ratios, weaker profitability, and lower sensitivity of CEO turnover to firm performance. Both papers suggest that busy directors are not effective monitors. In contrast, Ferris, Jagannathan, and Pritchard (2003) find no significant relation between busy directors and market-to-book ratios.

Field, Lowry, and Mkrtchyan (2013) point out that the negative relation between busy directors and firm performance should be particularly pronounced among established firms, which have a strong demand for monitoring, though they find no such negative relation among these firms. We use the setting of mutual fund managers. Our findings on the positive effect of individual commitment on team performance shed new light on the debate.

III. Data

We obtain mutual fund and fund manager data from the Morningstar Direct database. The Morningstar database includes historical records of both active and dead mutual funds and is thus free of survivorship bias.[6] It also provides precise fund manager information. For example, it reports that the Vanguard Equity-Income fund was managed by "George U. Sauter [2003-08-08 to 2005-09-23], Joel M. Dickson [2003-08-08 to 2005-09-23], James P. Stetler [2003-12-31 to present]…" We infer from this information whether a fund is managed by a team or a solo fund manager.

We consider 4 types of management structures. First, if, in a given month, a fund is managed by a team of fund managers in which at least 1 member works only for the fund, then according to our discussion in Section I, the full-time fund manager is likely to be committed to this fund due to monetary and career incentives. We refer to this as the "Committed Team" management approach. Second, if a fund is managed by a team of fund managers in which every member also runs other fund(s) at the same time, then also according to our discussion in Section I, it is likely that no manager is committed to this fund. We refer to this as the "Non-Committed Team" management approach. Third, if a fund is managed by a solo manager who works only for this fund, then for similar reasons, the manager is likely to be committed to the fund. We refer to this as the "Committed Solo" management approach. Fourth, if a fund is managed by a solo manager who also works for other fund(s), we refer to this as the "Non-Committed Solo" management approach.[7]

We focus our empirical analysis of fund performance on open-end U.S. domestic equity mutual funds because the asset pricing literature has developed various performance measures for these funds. Morningstar categorizes the investment styles of these equity funds as large-cap growth, large-cap blend, large-cap value, mid-cap growth, mid-cap blend, mid-cap value, small-cap growth, small-cap blend, or small-cap value. When funds have multiple share classes, we aggregate the share classes to obtain fund-level information.[8] For each fund, we remove the first 12 months of observations after the inception date to avoid incubation bias (Evans (2010)).

[6] In the Supplemental Material, we check the representativeness of our fund sample. We show that our fund sample has similar qualities in terms of the number of distinct funds, fund characteristics, and fund performance as the fund samples obtained from the CRSP Mutual Fund Database.

[7] Here, we consider only the universe of mutual funds in the Morningstar database. The data do not allow us to identify whether a mutual fund manager also manages a hedge fund or holds a senior position in the asset management company.

[8] For most variables, we use a value-weighted average for the fund-level observations. The 1-month lagged share class TNA is set to be the weight.

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We end up with 4,232 distinct equity mutual funds and 438,076 fund-month observations for the sample period from Jan. 1992 to Dec. 2012. Figure 1 plots the numbers (Graph A) and percentages (Graph B) of funds using different management structures. The most striking observation is that Non-Committed Team structure has become increasingly popular. In Jan. 1992, for instance, 71 (or 12%) of our sample funds were managed by such teams. By Dec. 2012, this number (percentage) had increased to 1,117 (53%). In contrast, the numbers of funds using the other 3 management structures have not increased that much; they have even declined since the early 2000s.

Table 1 reports the summary statistics for the full sample. NCT, CT, NCS, and CS are dummy variables indicating the fund management structures, that is, Non-Committed Team, Committed Team, Non-Committed Solo, and Committed Solo, respectively. Each dummy variable equals 1 when a fund is under the corresponding management structure in a given month, and 0 otherwise. TNA is the total net assets of a fund. FUND_AGE is the number of years from the inception date of a fund. EXPENSE_RATIO and TURNOVER_RATIO are reported at annual frequency in the database. We follow Gruber (1996) and Zheng (1999) to compute flow as the growth rate of TNA under the assumption that all cash flows happen at the month end. Specifically, for fund i in month t,

$$(1)\quad \mathrm{FLOW}_{i,t} = [\mathrm{TNA}_{i,t} - (1 + \mathrm{AFTER_EXPENSE_RETURN}_{i,t}) \times \mathrm{TNA}_{i,t-1}]/\mathrm{TNA}_{i,t-1}.$$

MANAGER_COUNT is the number of fund managers. For a solo-managed fund, MANAGER_EXPERIENCE is the number of years since the first time the solo manager entered the Morningstar database; EXPERIENCE_DIVERSITY is 0. For a team-managed fund, we use team members' average MANAGER_EXPERIENCE; EXPERIENCE_DIVERSITY is computed as the standard deviation of team members' experience, normalized by team members' average experience.

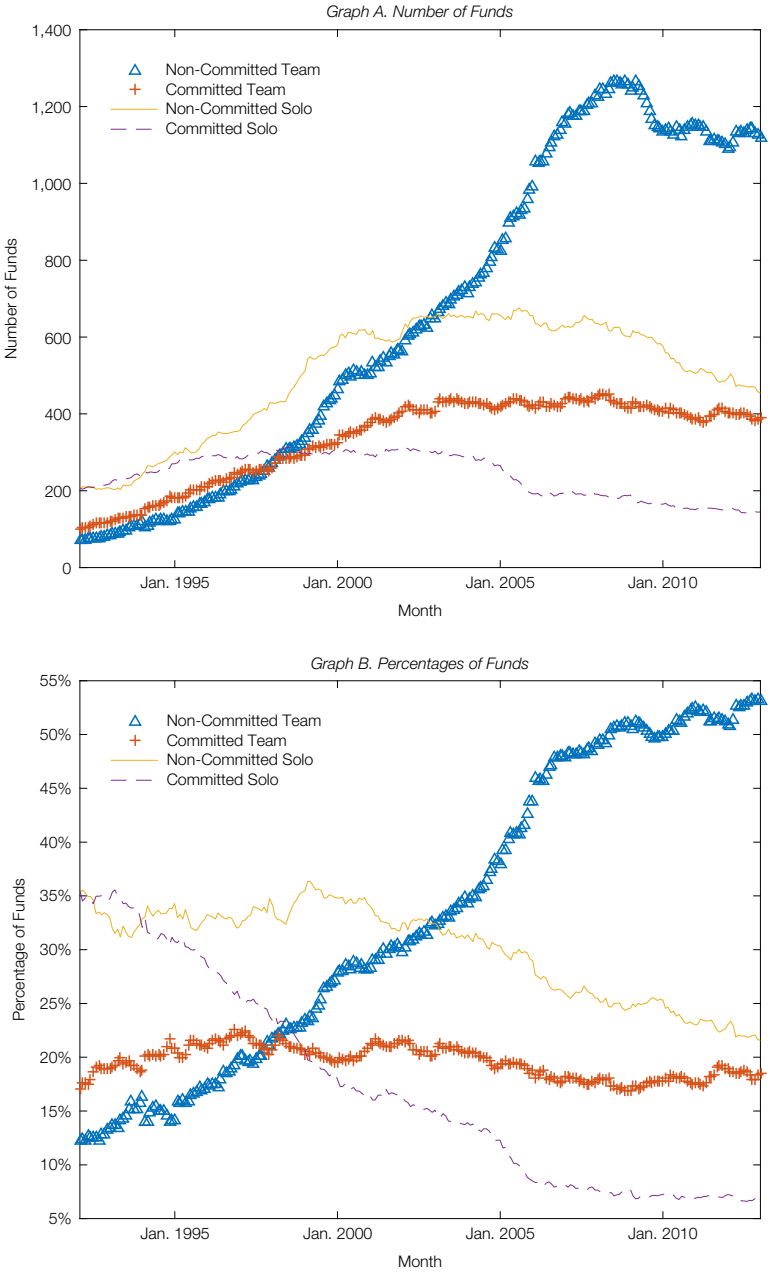
Panel A of Table 1 reports the means of these variables. The means of NCT, CT, NCS, and CS suggest that Non-Committed Team funds constitute the largest portion of the fund-month observations. Specifically, 33.2% of fund-months use the Non-Committed Team approach, while the percentages of fund-months with other management structures are as follows: 19.6% for Committed Team, 30% for Non-Committed Solo, and 17.2% for Committed Solo. This is broadly consistent with the pattern in Figure 1. The average fund TNA equals $933.248 million, the average fund age equals 12.652 years, the average number of fund managers equals 2.145, and the average manager experience equals 6.214 years.

Panel B of Table 1 reports the correlation matrix of the variables. Each fund management structure dummy is negatively related with the other fund management structure dummies. The team dummies, NCT and CT, have low correlations with most of the other fund variables (e.g., TNA, FUND_AGE, EXPENSE_RATIO, TURNOVER_RATIO, FLOW, and MANAGER_EXPERIENCE). The correlation between NCT (CT) and MANAGER_COUNT equals 42.8% (31%). The correlation between NCT (CT) and EXPERIENCE DIVERSITY equals 40.3% (32.6%). This suggests that team composition tends to be complex in non-committed teams.

FIGURE 1

Numbers and Percentages of Funds Using Different Management Structures

Figure 1 plots numbers (Graph A) and percentages (Graph B) of open-end U.S. domestic equity mutual funds with different management structures for the sample period Jan. 1992–Dec. 2012. We consider 4 management structures: i) Non-Committed Team; ii) Committed Team; iii) Non-Committed Solo; and iv) Committed Solo.



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TABLE 1
Summary Statistics

Panel A of Table 1 reports the time-series average of cross-sectional summary statistics of open-end U.S. domestic equity mutual funds for the sample period of Jan. 1992–Dec. 2012. Panel B presents the Pearson correlation matrix of the variables. The sample includes 4,232 distinct funds and 438,076 fund-month observations. NCT, CT, NCS, and CS are dummy variables indicating the fund management structures, that is, Non-Committed Team, Committed Team, Non-Committed Solo, and Committed Solo, respectively. Each dummy variable equals 1 when a fund is under the corresponding management structure in a given month, and 0 otherwise. RET is before-expense monthly fund return. TNA is the total net assets of a fund. FUND_AGE is the number of years from the inception date of a fund. EXPENSE_RATIO and TURNOVER_RATIO are reported at annual frequency in the database. We follow Gruber (1996) and Zheng (1999) to compute flow as the growth rate of TNA under the assumption that all cash flows happen at the month end. Specifically, for fund i in month t, $\text{FLOW}_{i,t} = [\text{TNA}_{i,t} - (1 + \text{AFTER_EXPENSE_RETURN}_{i,t}) \times \text{TNA}_{i,t-1}]/\text{TNA}_{i,t-1}$. MANAGER_COUNT is the number of fund managers of a fund. For a solo-managed fund, MANAGER_EXPERIENCE is the number of years since the first time the solo manager entered the Morningstar database; EXPERIENCE_DIVERSITY is 0. For a team-managed fund, we use team members' average experience; EXPERIENCE_DIVERSITY is computed as the standard deviation of the team members' experience, normalized by team members' average experience. All continuous variables are winsorized at the 1% and 99% levels.

Panel A. Summary Statistics

	Full Sample		
Variables	Mean	Median	Std. Dev.
#Distinct Funds	4,232		
#Fund-Months	438,076		
NCT	0.332	0.198	0.446
CT	0.196	0.000	0.396
NCS	0.300	0.000	0.456
CS	0.172	0.000	0.356
RET (before expenses; %)	0.845	0.805	2.122
TNA ($million)	933.248	177.808	2,392.144
FUND_AGE (yrs)	12.652	8.812	12.092
EXPENSE_RATIO (%)	1.207	1.174	0.479
TURNOVER_RATIO	0.826	0.618	0.775
FLOW (%)	0.731	0.004	5.016
MANAGER_COUNT	2.145	1.571	1.608
MANAGER_EXPERIENCE (yrs)	6.214	5.122	4.475
EXPERIENCE_DIVERSITY	0.261	0.068	0.372

Panel B. Correlation Matrix

Variables	(1) NCT	(2) CT	(3) NCS	(4) CS	(5) RET (before expenses; %)	(6) TNA ($million)	(7) FUND_AGE (yrs)	(8) EXPENSE_RATIO	(9) TURNOVER_RATIO	(10) FLOW (%)	(11) MANAGER_COUNT	(12) MANAGER_EXPERIENCE (yrs)	(13) EXPERIENCE_DIVERSITY
(1)	1.000												
(2)	−0.355	1.000											
(3)	−0.453	−0.324	1.000										
(4)	−0.287	−0.226	−0.297	1.000									
(5)	−0.003	0.003	0.003	−0.002	1.000								
(6)	0.030	−0.026	0.007	−0.008	−0.003	1.000							
(7)	−0.013	−0.006	0.012	0.014	−0.010	0.337	1.000						
(8)	−0.068	0.035	−0.035	0.091	0.004	−0.250	−0.124	1.000					
(9)	−0.018	−0.035	0.008	0.046	0.003	−0.105	−0.066	0.244	1.000				
(10)	0.004	0.011	0.005	−0.018	0.067	−0.020	−0.119	−0.003	−0.014	1.000			
(11)	0.428	0.310	−0.445	−0.297	−0.001	0.087	−0.003	−0.062	−0.028	0.006	1.000		
(12)	0.030	−0.111	0.142	−0.078	0.001	0.155	0.212	−0.041	−0.149	−0.031	−0.015	1.000	
(13)	0.403	0.326	−0.448	−0.292	0.004	0.065	0.071	−0.046	−0.007	−0.007	0.507	−0.018	1.000

We also conduct a comparison of the characteristics of non-committed and committed fund managers for our sample funds (the detailed methodology and results are reported in the Supplemental Material). In a team, non-committed managers tend to have longer work experience than committed managers, both in the

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profession and in the fund. Specifically, their average work experiences are 8.710 and 4.930 years, respectively. The difference, 3.780 years, is significant at the 1% level. Their average tenures are 4.175 and 3.372 years, respectively. The difference, 0.803 years, is significant at the 1% level. This evidence is consistent with the notion that non-committed managers tend to be senior or even team leaders; committed managers tend to be junior and be brought in to learn from the more senior managers.

IV. Fund Performance

In this section, we examine the performance of funds with different management structures. We use both portfolio analysis and regression analysis.

A. Portfolio Analysis

We construct 4 portfolios, each of which uses a specific management structure: Non-Committed Team, Committed Team, Non-Committed Solo, or Committed Solo. The monthly return of each portfolio is computed by weighting all funds in the portfolio equally. We use 5 risk- and style-adjusted performance measures. The first performance measure is the excess return over the market portfolio. The next 4 performance measures are the abnormal returns of the CAPM, the Fama–French (1993) 3-factor model, the Carhart (1997) 4-factor model, and the Pástor–Stambaugh (2003) 5-factor model.[9]

Table 2 reports the portfolio results for before-expense fund performance. Column 3 shows that before expenses, Non-Committed Team funds significantly underperform Committed Team funds by 3.8 bps per month (at the 5% significance level). This underperformance is robust if we use various factor models to control for risks and styles. It equals 5.0 bps per month (at the 1% significance level) after we use the CAPM to control for market risk, 4.8 bps per month (at the 1% significance level) after we use the Fama–French (1993) 3-factor model to further control for size and value, 4.8 bps per month (at the 1% significance level) after we use the Carhart (1997) 4-factor model to further control for momentum, and 4.6 bps per month (at the 1% significance level) after we use the Pástor–Stambaugh (Pástor and Stambaugh (2003)) 5-factor model to further control for liquidity. In contrast, column 6 shows that Non-Committed Solo funds perform similarly to Committed Solo funds.

[9]The abnormal return is given by the intercept of the following time-series regression:

$$R_{p,t} - \mathrm{RF}_t = \alpha_p + \beta_{p,M}(R_{M,t} - \mathrm{RF}_t) + \beta_{p,\mathrm{SMB}}\mathrm{SMB}_t + \beta_{p,\mathrm{HML}}\mathrm{HML}_t + \beta_{p,\mathrm{MOM}}\mathrm{MOM}_t + \beta_{p,\mathrm{LIQ}}\mathrm{LIQ}_t + s_{p,t}. \quad (2)$$

The dependent variable is the portfolio return minus the risk-free rate. The explanatory variables are the returns of the 5 zero-investment factor portfolios. $R_{M,t} - \mathrm{RF}_t$ is the market portfolio return minus the risk-free rate, SMB_t is the average return of small-cap stocks minus the average return of large-cap stocks, HML_t is the average return of high book-to-market stocks minus the average return of low book-to-market stocks, MOM_t is the average return of high momentum stocks minus the average return of low momentum stocks, and LIQ_t is the average return of low liquidity stocks minus the average return of high liquidity stocks. The CAPM uses the first factor. Fama and French (1993) use the first 3 factors. Carhart (1997) uses the first 4 factors. Pástor and Stambaugh (2003) use all 5 factors. We obtain the market, size, value, momentum, and liquidity factor returns through Wharton Research Data Services.

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TABLE 2

Portfolio Analysis of Fund Performance (before Expenses)

Table 2 reports the 5 risk- and style-adjusted returns (% per month), before expenses, for the portfolios of funds using different management structures: i) Non-Committed Team, ii) Committed Team, iii) Non-Committed Solo, and iv) Committed Solo. We compute the monthly portfolio return by weighting all funds in the portfolio equally. We use the excess return over the market portfolio and the abnormal returns of the CAPM, the Fama–French (FF) (1993) 3-factor model, the Carhart (1997) 4-factor model, and the Pástor–Stambaugh (PS) (2003) 5-factor model. The *t*-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The sample period is Jan. 1992–Dec. 2012.

	Team-Managed Funds			Solo-Managed Funds		
	Non-Committed	Committed	Diff.	Non-Committed	Committed	Diff.
	1	2	3=1−2	4	5	6=4−5
Excess Ret	0.058	0.096*	−0.038**	0.065	0.055	0.010
	(1.06)	(1.87)	(−2.54)	(1.23)	(1.01)	(0.56)
CAPM	0.050	0.100*	−0.050***	0.057	0.066	−0.009
	(0.91)	(1.93)	(−3.62)	(1.07)	(1.21)	(−0.60)
FF	−0.002	0.046	−0.048***	0.006	0.009	−0.003
	(−0.05)	(1.25)	(−3.55)	(0.15)	(0.22)	(−0.20)
Carhart	−0.000	0.048	−0.048***	0.005	0.023	−0.017
	(−0.00)	(1.29)	(−3.54)	(0.13)	(0.55)	(−1.22)
PS	−0.016	0.030	−0.046***	−0.012	0.001	−0.012
	(−0.41)	(0.80)	(−3.32)	(−0.29)	(0.02)	(−0.87)

Table 3 reports the portfolio results for after-expense fund performance. Column 3 shows that after expenses, Non-Committed Team funds still significantly underperform Committed Team funds before and after we control for various risk and style differences. The underperformance, 3.1 bps–4.2 bps per month, is slightly lower than the underperformance in before-expense fund return, 3.8 bps–5.0 bps per month (see column 3 of Table 2). A plausible explanation is that Non-Committed Team funds charge lower fees; we explore this possibility formally in Section VI. Column 6 shows that among solo-managed funds, Non-Committed Solo funds still perform similarly to Committed Solo funds.

TABLE 3

Portfolio Analysis of Fund Performance (after Expenses)

Table 3 reports the 5 risk- and style-adjusted returns (% per month), after expenses, for the portfolios of funds using different management structures: i) Non-Committed Team, ii) Committed Team, iii) Non-Committed Solo, and iv) Committed Solo. We compute the monthly portfolio return by weighting all funds in the portfolio equally. We use the excess return over the market portfolio and the abnormal returns of the CAPM, the Fama–French (FF) (1993) 3-factor model, the Carhart (1997) 5-factor model, and the Pástor–Stambaugh (PS) (2003) 5-factor model. The *t*-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The sample period is Jan. 1992–Dec. 2012.

	Team-Managed Funds			Solo-Managed Funds		
	Non-Committed	Committed	Diff.	Non-Committed	Committed	Diff.
	1	2	3=1−2	4	5	6=4−5
Excess Ret	−0.035	−0.004	−0.031**	−0.031	−0.060	0.030*
	(−0.63)	(−0.07)	(−2.11)	(−0.58)	(−1.10)	(1.67)
CAPM	−0.044	−0.002	−0.042***	−0.042	−0.052	0.011
	(−0.80)	(−0.04)	(−3.08)	(−0.78)	(−0.95)	(0.71)
FF	−0.095**	−0.055	−0.041***	−0.091**	−0.109***	0.018
	(−2.47)	(−1.49)	(−3.04)	(−2.25)	(−2.64)	(1.24)
Carhart	−0.094**	−0.053	−0.042***	−0.091**	−0.097**	0.006
	(−2.40)	(−1.40)	(−3.07)	(−2.22)	(−2.32)	(0.41)
PS	−0.110***	−0.070*	−0.040***	−0.107***	−0.118***	0.011
	(−2.80)	(−1.89)	(−2.90)	(−2.63)	(−2.86)	(0.75)

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Tables 2 and 3 also indicate that before expenses, equity funds perform similarly to the benchmarks, while after expenses, they tend to underperform the benchmarks. These results are in line with prior studies on mutual fund performance (see, e.g., Jensen (1967), Carhart (1997), Kacperczyk et al. (2005), Kacperczyk, Sialm, and Zheng (2008), and Pástor, Stambaugh, and Taylor (2017)).

B. Subsamples

We further analyze the portfolios of Non-Committed Team funds versus Committed Team funds within subsamples of funds. Table 4 reports the results. To save space, we report only the Carhart abnormal return. Panels A and B consider cap-based style and B/M-based style (according to the Morningstar classification) subsamples, respectively. The underperformance of Non-Committed Team funds relative to Committed Team funds is particularly pronounced in small-cap funds, value funds, and blend funds. The underperformance is also statistically significant at the 5% significance level in large-cap funds, but the economic magnitude is only 3.2 bps per month, which is much lower than the difference of 10.8 bps per month in small-cap funds.

These findings suggest that commitment is more important when funds invest in small stocks and value stocks. A plausible explanation for these findings is that as small stocks have higher information asymmetry (Barth, Kasznik, and McNichols (2001), Schultz (2010)), and value stocks are associated with high distress risk, high leverage, poor earnings, and more future earnings uncertainty (Fama and French (1993), (1995), Chen and Zhang (1998), and Griffin and Lemmon (2002)), investing in these stocks requires more effort to seek firm-specific information and identify good investment targets.

Panel C of Table 4 considers subsamples of funds based on fund size (TNA). Panel D considers subsamples of funds based on family size, which is measured by the sum of TNAs of all funds in the same fund family in a given month. We follow Fama and French (1993) to set the monthly cutoffs for fund size and fund family size terciles at 30% and 70%. Panels C and D show that the underperformance of Non-Committed Team funds relative to Committed Team funds is particularly pronounced in small funds and in small families.

A plausible explanation for these findings is that organizations, such as small funds and small families, are less effective in providing proper incentives. For example, small funds have lower fees (which are based on fund size) and tend to be less important in promoting a fund manager's career; thus, part-time managers are less incentivized to work hard when managing small funds. Gervais, Lynch, and Musto (2005) point out that large (small) fund families are more (less) effective in retaining and incentivizing fund managers by improving contract efficiency. Therefore, in these organizations, individual commitment is particularly important.

In sum, our portfolio analysis indicates that, broadly consistent with our expectation, Non-Committed Team funds significantly underperform Committed Team funds. This is especially true when funds invest in small stocks and value stocks, which requires effort to acquire firm-specific information and design good

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TABLE 4

Portfolio Analysis of Fund Performance: Subsamples

Table 4 reports the Carhart abnormal return (% per month), before expenses, for the portfolios of funds using the Non-Committed Team or Committed Team structure within subsamples. Panel A considers cap-based style subsamples. Panel B considers value, blend, and growth fund subsamples. Panel C considers subsamples of funds based on fund size (TNA). Panel D considers subsamples of funds based on family size, which is measured by the sum of TNAs of all funds in the same fund family in a given month. We follow Fama and French (1993) to set the monthly cutoffs for fund size and fund family size terciles at 30% and 70%. We compute the monthly portfolio return by weighting all funds in the portfolio equally. The *t*-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The sample period is Jan. 1992–Dec. 2012.

	Non-Committed Team	Committed Team	Diff.
	1	2	3=1−2
Panel A. Cap-Based Style Subsamples			
Small-Cap Funds	−0.040	0.068	−0.108***
	(−0.65)	(1.06)	(−3.79)
Mid-Cap Funds	0.033	0.058	−0.025
	(0.46)	(0.85)	(−0.90)
Large-Cap Funds	0.007	0.039	−0.032**
	(0.23)	(1.47)	(−2.17)
Panel B. Value, Blend, and Growth Subsamples			
Value Funds	0.012	0.066	−0.054***
	(0.24)	(1.23)	(−3.21)
Blend Funds	−0.033	0.038	−0.070***
	(−0.84)	(1.05)	(−3.88)
Growth Funds	0.032	0.048	−0.016
	(0.54)	(0.89)	(−0.76)
Panel C. Fund Size-Based Subsamples			
Small Funds	0.039	0.097**	−0.058**
	(0.78)	(2.22)	(−2.09)
Medium Funds	0.015	0.055	−0.040
	(0.34)	(1.32)	(−1.62)
Large Funds	−0.029	0.002	−0.031
	(−0.85)	(0.06)	(−1.60)
Panel D. Family Size-Based Subsamples			
Small Families	−0.137**	0.047	−0.184***
	(−2.28)	(1.10)	(−3.69)
Medium Families	−0.001	0.055	−0.056*
	(−0.02)	(1.38)	(−1.68)
Large Families	0.023	0.045	−0.022
	(0.63)	(1.17)	(−1.37)

strategies, and when organizations, such as small funds and small families, fail to provide proper incentives.

C. Regression Analysis

We continue our analysis using multivariate regressions. We use the Carhart (1997) 4-factor model to obtain abnormal return as our performance measure here. The regression analysis has two main differences from the portfolio analysis. First, it can simultaneously control for other fund and fund manager variables that may affect fund performance. Second, it considers the possibility that the factor loadings of individual funds may vary over time because the Carhart 4-factor model is estimated based on recent data in rolling windows.[10]

[10]Ferson and Schadt (1996) point out that risk levels and risk premia may move together, which causes factor loadings of funds in an unconditional factor model to vary over time.

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Table 5 reports the regression results. We use the panel regression approach and run the regression at a monthly frequency. The dependent variable, the Carhart abnormal return, is the difference between a fund-month's realized return and expected return from the Carhart (1997) 4-factor model estimated based on a 36-month rolling window (Kacperczyk et al. (2005), Jiang and Zheng (2018)). The explanatory variables, EXPENSE_RATIO and TURNOVER_RATIO, which are reported at annual frequency in the database, are lagged by 1 year. Other explanatory variables are lagged by 1 month. We take the natural logarithms of TNA, FUND_AGE, and MANAGER_EXPERIENCE

TABLE 5
Regression Analysis of Fund Performance

Table 5 reports the panel regression results. The dependent variable, the Carhart abnormal return (% per month), before expenses, is the difference between a fund-month's realized return and expected return from the 4-factor model of Carhart (1997) estimated based on 36 months of lagged data. The explanatory variables, NCT, CT, NCS, and CS, are dummy variables indicating the 4 fund management structures: Non-Committed Team, Committed Team, Non-Committed Solo, and Committed-Solo, respectively. Each dummy variable equals 1 when a fund is under the corresponding management structure in a given month, and 0 otherwise. TURNOVER_RATIO and EXPENSE_RATIOs, which are reported at annual frequency in the database, are lagged by 1 year. Other explanatory variables are lagged by 1 month. We take the natural logarithms of TNA, FUND_AGE, and MANAGER_EXPERIENCE because these variables are skewed to the right. We include style and time fixed effects (FEs). BIG_TEAM_DUM is a dummy variable that equals 1 if the fund-month is run by more than 3 fund managers, and 0 otherwise. Heteroscedasticity-robust standards errors are estimated and clustered at the firm level. The t-statistics are given in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. The sample period is Jan. 1992–Dec. 2012.

Variables	1	2	3	4	5	6
NCT	−0.021***		−0.020***		−0.020***	
	(−3.11)		(−2.92)		(−2.93)	
CT		0.022**		0.022**		0.021**
		(2.46)		(2.46)		(2.42)
NCS		0.018**		0.016*		0.016*
		(1.99)		(1.65)		(1.75)
CS		0.030**		0.028**		0.028**
		(2.16)		(1.96)		(2.02)
TNA	−0.018***	−0.019***	−0.018***	−0.018***	−0.018***	−0.018***
	(−7.62)	(−7.66)	(−7.55)	(−7.59)	(−7.56)	(−7.60)
FUND_AGE	−0.000	−0.000	−0.000	−0.000	−0.000	−0.000
	(−0.57)	(−0.61)	(−0.63)	(−0.66)	(−0.65)	(−0.69)
FLOW	0.782***	0.783***	0.781***	0.782***	0.781***	0.782***
	(9.47)	(9.48)	(9.47)	(9.48)	(9.47)	(9.47)
TURNOVER_RATIO	−0.015**	−0.015**	−0.015**	−0.015**	−0.015**	−0.015**
	(−2.51)	(−2.51)	(−2.52)	(−2.51)	(−2.52)	(−2.52)
EXPENSE_RATIO	0.007	0.007	0.007	0.007	0.007	0.007
	(0.81)	(0.77)	(0.81)	(0.76)	(0.80)	(0.75)
MANAGER_EXPERIENCE	0.009*	0.009**	0.009*	0.010**	0.009*	0.010**
	(1.88)	(2.00)	(1.88)	(2.02)	(1.90)	(2.03)
EXPERIENCE_DIVERSITY	0.034***	0.034***	0.037***	0.037***	0.038***	0.037***
	(3.64)	(3.13)	(3.71)	(3.27)	(3.88)	(3.35)
FAMILY_TNA	0.009***	0.009***	0.009***	0.009***	0.009***	0.009***
	(4.96)	(5.08)	(4.92)	(5.06)	(4.93)	(5.06)
MANAGER_COUNT			−0.001	−0.002		
			(−0.98)	(−1.05)		
BIG_TEAM_DUM					−0.013	−0.013
					(−1.61)	(−1.62)
CONSTANT	−0.054	−0.080*	−0.050	−0.076*	−0.052	−0.078*
	(−1.23)	(−1.82)	(−1.15)	(−1.70)	(−1.19)	(−1.76)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Style FE	Yes	Yes	Yes	Yes	Yes	Yes
F-tests on coefficient differences		CT = NCS: $F=0.21, p=0.65$		CT = NCS: $F=0.22, p=0.64$		CT = NCS: $F=0.17, p=0.68$
		CT = CS: $F=0.19, p=0.66$		CT = CS: $F=0.17, p=0.68$		CT = CS: $F=0.22, p=0.64$
		CS = NCS: $F=0.82, p=0.37$		CS = NCS: $F=0.76, p=0.38$		CS = NCS: $F=0.77, p=0.38$
No. of obs.	366,383	366,383	366,383	366,383	366,383	366,383
R^2	0.094	0.094	0.094	0.094	0.094	0.094

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because these variables are skewed to the right. Style and time fixed effects are included. Heteroscedasticity-robust standard errors are estimated and clustered at the fund level.

Column 1 of Table 5 shows that the coefficient of funds with the Non-Committed Team structure (indicated by NCT), −0.021, is significant at the 1% level, suggesting that funds with Non-Committed Team structures underperform those with the other 3 management structures by 2.1 bps per month. Column 2 examines the performance of funds with the other 3 management structures, Committed Team, Non-Committed Solo, and Committed Solo (indicated by CT, NCS, and CS, respectively), while taking Non-Committed Team funds (indicated by NCT) as the benchmark group. The coefficients of CT, NCS, and CS, which range from 0.018 to 0.030, are all significant at the 5% level, suggesting that funds with Non-Committed Team structures underperform those with the other 3 management structures by 1.8 bps–3.0 bps per month. We further conduct F-tests on the difference between the coefficients of CT and NCS (CT and CS) (CS and NCS). The F-tests display no statistically significant difference, suggesting that funds with the other 3 management structures perform similarly.

We also find that consistent with previous studies, fund performance is negatively related with fund TNA (e.g., Chen et al. (2004)) and TURNOVER_RATIO (Edelen (1999)) and is positively related with FAMILY_TNA (e.g., Chen et al. (2004)), FLOW (e.g., Gruber (1996), Zheng (1999), Keswani and Stolin (2008), Lou (2012), and Jiang and Zheng (2018)),[11] and EXPERIENCE_DIVERSITY (e.g., Lazear (1998)).

In columns 3 and 4 of Table 5, we include MANAGER_COUNT as a control variable. In columns 5 and 6, we include a dummy variable, BIG_TEAM_DUM (which equals 1 if the fund-month is run by more than 3 fund managers), as a control variable. The results are mostly consistent with those from columns 1 and 2.

In sum, our regression analysis indicates that after we control for various fund characteristics, Non-Committed Team funds still significantly underperform Committed Team funds. Non-Committed Team funds also significantly underperform solo-managed funds, where commitment is less of an issue for performance.

D. Additional Analyses

We now provide two additional analyses to show that while explanations other than commitment may contribute to the underperformance of Non-Committed Team funds, they cannot entirely explain the underperformance.

1. Matching Funds

Stein (2002) points out that big teams tend to be bureaucratic, which prevents communication and the acquisition of soft information. Thus, one might suspect that Non-Committed Team funds underperform because they are run by big teams, not because there is a lack of commitment. To address this suspicion, we conduct a matching fund analysis. Specifically, for each fund with a Non-Committed Team

[11] Here, we follow Keswani and Stolin (2008), Lou (2012), and Jiang and Zheng (2018) to use lagged 1-period flow as a control variable. In the Supplemental Material, we follow Kacperczyk et al. (2008) to use the average monthly flow in the prior 12 months as a control variable. While NCT is still significantly and negatively related to fund performance, the flow coefficient becomes insignificant.

structure, we first require the matching funds to have the same team size and investment style and then select the final 1-to-1 matching fund with the closest TNA.[12]

Table 6 reports the results. Column 3 shows that before we control for risk and style differences, Non-Committed Team funds and Committed Team funds have similar performance. However, after we control for risk and style differences, the underperformance of Non-Committed Team funds becomes significant. For example, the underperformance in the Carhart abnormal return equals 3.5 bps per month (at the 5% significance level). This underperformance is robust if we use other factor models to control for risk and style differences.

Taken together, our findings indicate that team size is unlikely to be the only explanation for the underperformance of Non-Committed Team funds.

2. Dynamic Analysis

One might suspect that asset management companies deliberately use the Non-Committed Team structure to manage funds that underperform. In that case, Non-Committed Team funds would still underperform even if they used other management structures. To address this suspicion, we employ the event-study method to conduct a dynamic analysis. Specifically, we identify 2,789 switches from other management structures to the Non-Committed Team structure and 5,039 switches from the Non-Committed Team structure to other management structures. We compare the fund performance before and after the switch.

Table 7 reports the results. We measure fund performance using objective-adjusted return (OAR), which equals the before-expense fund return minus the

TABLE 6
Portfolio Analysis of Fund Performance: Matching Funds

Table 6 reports the 5 risk- and style-adjusted returns (% per month), before expenses, for the portfolios of the Non-Committed Team funds and the Committed Team matching funds. We first require matching funds to have the same team size and investment style and then select the matching fund with the closest TNA. We compute the monthly portfolio return by weighting all funds in the portfolio equally. We use the excess return over the market portfolio and the abnormal returns of the CAPM, the Fama–French (FF) (1993) 3-factor model, the Carhart (1997) 4-factor model, and the Pástor–Stambaugh (PS) (2003) 5-factor model. The *t*-statistics are given in parentheses. * and ** indicate significance at the 10% and 5% levels, respectively. The sample period is Jan. 1992–Dec. 2012.

	Matching by Team Size, Style, and TNA		
	Non-Committed Team	Committed Team	Diff.
	1	2	3=1−2
Excess Ret	0.065	0.084*	−0.019
	(1.20)	(1.73)	(−0.93)
CAPM	0.056	0.089*	−0.033*
	(1.01)	(1.80)	(−1.73)
FF	0.003	0.033	−0.030*
	(0.09)	(0.89)	(−1.83)
Carhart	0.004	0.040	−0.035**
	(0.11)	(1.04)	(−2.16)
PS	−0.012	0.021	−0.033**
	(−0.31)	(0.56)	(−2.01)

[12]To avoid large sample size shrinkage, if a treatment fund cannot be matched by a fund of the same style, we skip the style condition and select a matched fund with the closest TNA. We always require the matching fund to have exactly the same number of managers as the treatment fund.

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TABLE 7

Fund Performance Before and After Switching to (from) Non-Committed Team Structure

Table 7 reports the fund performance before and after switching between the Non-Committed Team structure and other management structures (Month 0). We identify 2,789 fund switches from other management structures to the Non-Committed Team structure and 5,039 switches from the Non-Committed Team structure to other management structures. We measure fund performance using objective-adjusted return (OAR), which equals the before-expense fund return minus the average before-expense returns of all funds in the same objective. We calculate the equal-weighted average of all funds' OAR in a given event month. Panel A presents the monthly OARs in months [−60, −1] and in months [1,60]. Panel B presents the monthly OARs in months [−36, −1] and in months [1,36]. The *t*-statistics are given in parentheses. *** indicates significance at the 1% level. The sample period is Jan. 1992–Dec. 2012.

Panel A. Monthly OARs in Months [−60, −1] and in Months [1, 60]

	Monthly OAR (%)		
	Months [−60, −1]	Months [1,60]	Diff.
	1	2	3=2−1
From Others to Non-Committed Team	0.018 (1.60)	−0.028*** (−3.65)	−0.046*** (−3.18)
From Non-Committed Team to Others	−0.049*** (−5.34)	−0.009 (−0.77)	0.039*** (2.75)

Panel B. Monthly OARs in Months [−36, −1] and in Months [1, 36]

	Monthly OAR (%)		
	Months [−36, −1]	Months [1,36]	Diff.
	1	2	3=2−1
From Others to Non-Committed Team	0.011 (1.14)	−0.029*** (−2.93)	−0.040*** (−2.77)
From Non-Committed Team to Others	−0.065*** (−6.71)	−0.017 (−1.53)	0.048*** (3.31)

average before-expense returns of all funds in the same objective.[13] Panel A shows that in months [−60, −1] before a fund switches from another management structure to the Non-Committed Team structure (we set the switch month to be month 0), the monthly OAR is not significant. But in months [1,60] after the switch, the monthly OAR, −2.8 bps per month, is significant at the 1% level. The difference, −4.6 bps per month (significant at the 1% level), indicates a performance decline after the switch. Panel A also reports the results for funds switching from the Non-Committed Team structure to other management structures. In months [−60, −1] before the switch, the OAR, −4.9 bps per month, is significant at the 1% level; in months [1,60] after the switch, the OAR is not significant. The difference, 3.9 bps per month (significant at the 1% level), indicates a performance improvement after the switch. Panel B reports the OARs in months [−36, −1] and in months [1,36]. The evidence is broadly consistent with what we observe in Panel A.

Figure 2 further gives an illustration of the dynamics of fund performance around switching between the Non-Committed Team and Committed Team structures. The pattern is broadly consistent with our findings in Table 7. That is, once a fund switches to (from) the Non-Committed Team structure, there is a performance decline (improvement).

Taken together, our findings indicate that the underperformance of Non-Committed Team funds does not manifest before they adopt this management

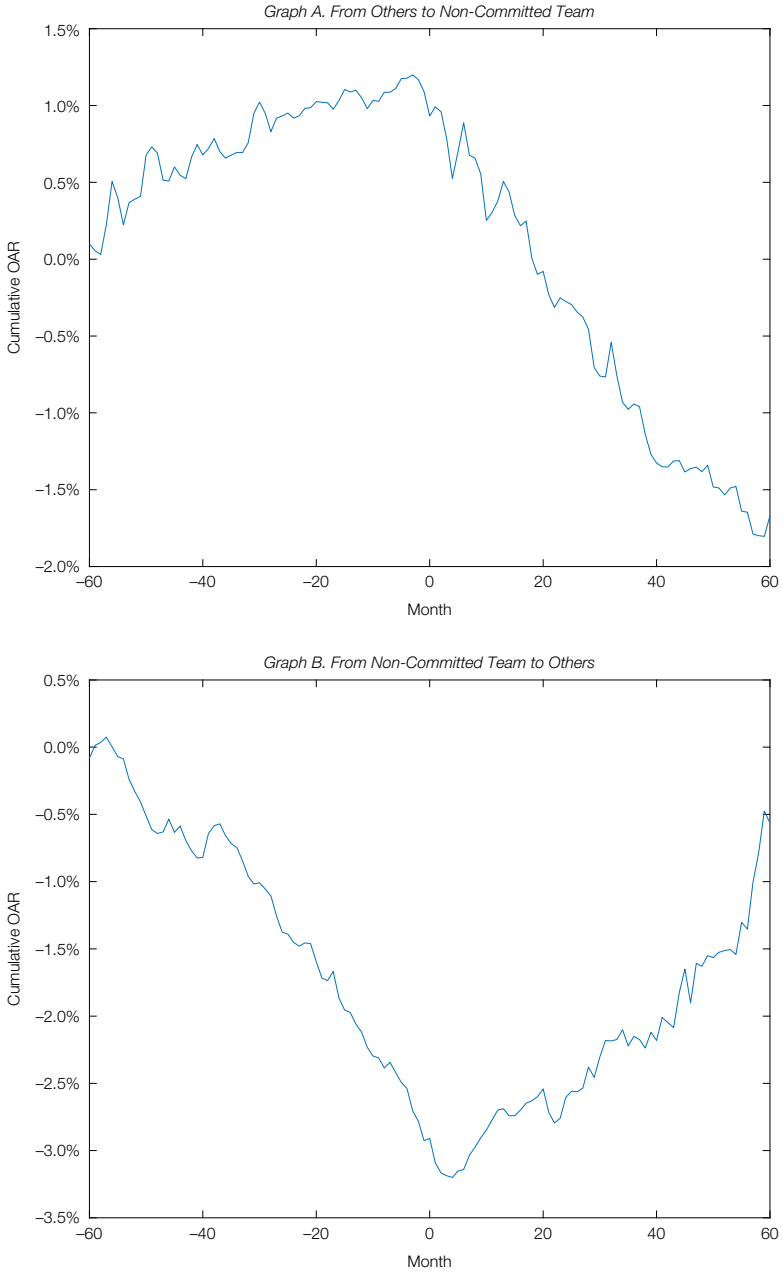
[13] We follow previous studies on mutual funds (e.g., Jayaraman, Khorana, and Nelling (2002)) to use OAR as a convenient and reasonably good measure to adjust for risk and style differences. We do not use abnormal returns of factor models here because it is not clear which data should be used to estimate the factor models during a structural change.

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FIGURE 2

Cumulative OAR around the Switch between the Non-Committed Team Structure and Other Management Structures

Figure 2 plots the equal-weighted cumulative OAR, before expenses, around the switch between the Non-Committed Team structure and other management structures (month 0). Graph A considers 2,789 funds switching from other management structures to the Non-Committed Team structure. Graph B considers 5,039 funds switching from the Non-Committed Team structure to other management structures. The sample period is Jan. 1992–Dec. 2012.



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structure and it disappears after they stop using this management structure. Therefore, this underperformance is likely to be due to the Non-Committed Team management structure.

V. Investment Behavior

We now examine the investment behaviors of Non-Committed Team funds versus those of funds with other management structures. This analysis sheds light on how commitment affects teams' incentives to acquire private information. Table 8 reports the results.

A. Industry Concentration

We follow Kacperczyk et al. (2005) to compute a fund-month's industry concentration index (ICI) as the sum of the squared deviations of the value weights for each of the 10 industries held by the mutual fund from the industry weights of the market portfolio. The portfolio weights are computed using the latest holdings information obtained from the Thomson Reuters CDA/Spectrum database.[14]

TABLE 8
Investment Behavior

Table 8 reports the equal-weighted average levels of the industry concentration index (ICI), local holdings, and active investing for funds with the Non-Committed Team structure and other management structures (Panel A) and for funds with the Non-Committed Team structure and matching funds based on team size, style, and TNA (Panel B). For a fund-month, the ICI is computed following Kacperczyk et al. (2005) as the sum of the squared deviations of the value weights for each of 10 industries held by the mutual fund from the industry weights of the market portfolio. We follow Chen et al. (2004) to define a stock as a local stock if the company's headquarters and the fund's headquarters are located in the same census region. LOCAL_HOLDINGS is computed as the total value weight of local stocks held by the fund, adjusted by deducting the total value weight of all stocks in the census region in the market portfolio. We estimate the Carhart (1997) 4-factor model using daily returns. ACTIVE_INVESTING is computed following Amihud and Goyenko (2013) as $1-R^2$. The t-statistics are given in parentheses. *** indicates significance at the 1% level. The sample period is Jan. 1992–Dec. 2012.

Panel A. Non-Committed Team versus Other Management Structures

Variables	Non-Committed Team 1	Others 2	Diff. 3=1−2
ICI	0.051	0.059	−0.008*** (−28.92)
LOCAL_HOLDINGS	−0.005	0.008	−0.013*** (−12.43)
ACTIVE_INVESTING	0.072	0.085	−0.014*** (−17.37)

Panel B. Matching Funds

	Matching by Team Size, Style, and TNA		
Variables	Non-Committed Team 1	Committed Team 2	Diff. 3=1−2
ICI	0.051	0.057	−0.005*** (−15.38)
LOCAL_HOLDINGS	−0.003	0.005	−0.008*** (−11.70)
ACTIVE_INVESTING	0.064	0.071	−0.007*** (−20.59)

[14]The CDA/Spectrum database collects information on the stockholdings of mutual funds from their filings with the U.S. Securities and Exchange Commission and their voluntary reports. Most

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The evidence shows that Non-Committed Team funds have a relatively low level of industry concentration. Specifically, row 1 in Panel A of Table 8 shows that the ICI of Non-Committed Team funds is 0.008 lower than that of funds with other management structures (significant at the 1% level). Row 1 in Panel B shows that the ICI of Non-Committed Team funds is 0.005 lower than that of matching Committed Team funds (significant at the 1% level).

Kacperczyk et al. (2005) show that fund managers tend to concentrate their portfolios in industries about which they have private information. Thus, the evidence that Non-Committed Team funds have a low level of industry concentration suggests that managers in such teams have few incentives to acquire private information at the industry level.

B. Local Holdings

We follow Chen et al. (2004) to compute a fund-month's local holdings. The stockholdings of the fund-month are divided into local stocks and non-local stocks. A stock is considered local if the company's headquarters and the fund's headquarters are located in the same census region.[15] LOCAL_HOLDINGS is computed as the total value weight of local stocks held by the fund, adjusted by deducting the total value weight of all stocks in the census region in the market portfolio.

The evidence shows that Non-Committed Team funds have a relatively low level of local holdings. Specifically, row 2 in Panel A of Table 8 shows that the local holdings of Non-Committed Team funds are 1.3% lower than those of funds with other management structures (significant at the 1% level). Row 2 in Panel B shows that the local holdings of Non-Committed Team funds are 0.8% lower than those of the matching Committed Team funds (significant at the 1% level).

Coval and Moskowitz (1999), (2001) show that mutual fund managers tend to concentrate their portfolios in local companies about which they have private information. Thus, the evidence that Non-Committed Team funds have a low level of local holdings suggests that managers in such teams have few incentives to acquire private information about local companies.

C. Active Investing

We follow Amihud and Goyenko (2013) to measure active investing for a fund-month using $1 - R^2$ of the Carhart (1997) 4-factor model estimated from daily returns. This active investing measure (ACTIVE_INVESTING) captures the extent to which the fund performance is not explained by factor returns.

The evidence shows that Non-Committed Team funds have a relatively low ACTIVE_INVESTING. Specifically, row 3 in Panel A of Table 8 shows that the ACTIVE_INVESTING of Non-Committed Team funds is 1.4% lower than that of funds with other management structures (significant at the 1% level). Row 3 in

mutual funds disclose their holdings quarterly in our sample period, even though they are required to disclose their holdings only semiannually before 2004. After 2004, all funds are required to disclose their holdings on a quarterly basis.

[15] There are 9 census regions in the United States, including New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific.

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Panel B shows that the ACTIVE_INVESTING of Non-Committed Team funds is 0.7% lower than that of the matching Committed Team funds (significant at the 1% level).

The evidence here is consistent with the preceding analysis, which shows that managers in Non-Committed Team funds have few incentives to acquire private information. As these managers rely mostly on public information in making their investment decisions, a large portion of these funds' performance is explained by systematic risk factors.

Taken together, our findings on industry concentration, local holdings, and active investing suggest that a plausible explanation for the underperformance of Non-Committed Team funds is that managers in such teams have few incentives to acquire private information.

VI. Further Analysis: Why Do Asset Management Companies Use Non-Committed Teams?

So far, we have found that funds with Non-Committed Teams underperform those with other management structures, possibly because managers in such teams have few incentives to acquire private information. Naturally, one would expect asset management companies to stop using this management structure. However, as shown in Section III, it has in fact been used increasingly often (see Figure 1). This is puzzling. In this section, we explore why asset management companies increasingly use the Non-Committed Team structure despite its performance disadvantage.

A. Expenses

Intuitively, one might surmise that an asset management company finds that managing a fund using the Non-Committed Team structure is cost-efficient because it can easily assemble a task force from existing fund managers. To test this intuition, it would be ideal to look at the total compensation of a team. However, due to lack of data on team compensation, we look at fund expenses, which should be low if the asset management company does not have to pay the team very much.

The evidence in Table 9 shows that consistent with the intuition above, Non-Committed Team funds have a relatively low EXPENSE_RATIO. Specifically, row 1 shows that the mean expense ratio of these funds is 10.5 bps p.a. lower than that of funds with other management structures (significant at the 1% level).

However, the lower expenses of Non-Committed Team funds only partially offset their underperformance. Look at Table 5 again. Before expenses, these funds underperform funds with other management structures by 2.1 bps per month, which is equivalent to 25.2 bps p.a. and is more than two times the difference in expense ratios, 10.5 bps p.a. An interesting implication here is that investors in these funds are unlikely to be business savvy. We test this implication in what follows.

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TABLE 9
Expense Ratio and Clientele

Table 9 compares the expense ratios and clienteles between funds with the Non-Committed Team structure and those with other management structures. For each fund-month observation, we set the RETIREMENT_FLAG to be 1 if at least 1 share class type of the fund receives investment from retirement plans. The *t*-statistics are given in parentheses. *** indicates significance at the 1% level. The sample period is Jan. 1992–Dec. 2012.

Variables	Non-Committed Team 1	Others 2	Diff. 3=1−2
EXPENSE_RATIO (%)	1.154	1.259	−0.105*** (−31.82)
RETIREMENT_FLAG	0.271	0.213	0.058*** (24.62)

B. Clientele and Flow-to-Performance Sensitivity

The Morningstar database provides information on whether a fund share class receives investment from retirement plans or not. For each fund-month observation, we set the RETIREMENT_FLAG variable to be 1 if at least 1 share class type of the fund is marked as "Retirement." Row 2 of Table 9 shows that retirement savers invest in a large proportion of Non-Committed Team funds. Specifically, 27.1% of Non-Committed Team funds receive investment from retirement plans, whereas this percentage is only 21.3% for funds with other management structures. The difference, 5.8%, is significant at the 1% level.

These findings are consistent with the important literature in economics and finance (e.g., Benartzi and Thaler (2001), Madrian and Shea (2001), Agnew et al. (2003), Duflo and Saez (2003), Huberman and Jiang (2006), and Carroll et al. (2009)), which shows that retirement savers exhibit inertia and are unlikely to be business savvy.[16] In our case, it is plausible that retirement savers are attracted by the lower expenses of Non-Committed Team funds, even though the lower expenses do not fully offset the underperformance.

We further test the flow-to-performance sensitivity of Non-Committed Team funds. Intuitively, if investors in these funds do indeed exhibit inertia, then these funds should have low flow-to-performance sensitivity.

Table 10 reports the results. We follow Sirri and Tufano's (1998) piecewise linear regression specification. The dependent variable is fund monthly flow. To construct the performance measures, in each month, we rank all funds by before-expense monthly return and assign the percentile values for each fund. LOWPERF is defined as min (0.2, percentile). MIDPERF is defined as min (0.6, percentile-LOWPERF). HIGHPERF is defined as (percentile-LOWPERF-MIDPERF). STYLE_FLOW is the average flow for each Morningstar category in a given month. RET_SD is the prior 12-month standard deviation of before-expense monthly returns. We take the natural logarithms of fund TNA because it is skewed to the right. All explanatory variables are lagged by 1 month, except for EXPENSE_RATIO, which is lagged by 1 year.

[16] In a recent paper, Sialm et al. (2015) show that DC plan sponsors can mitigate retirement savers' inertia by adjusting recommendations of investment options.

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TABLE 10
Flow-to-Performance Sensitivity

Table 10 reports the regression results for the flow-to-performance sensitivity. We follow Sirri and Tufano's (1998) specification. The dependent variable, fund monthly flow, is computed as the growth rate of TNA under the assumption that all cash flows happen at the month end. Specifically, for fund i in month t, $\text{FLOW}_{i,t} = [\text{TNA}_{i,t} - (1 + \text{AFTER_EXPENSE_RETURN}_{i,t}) \times \text{TNA}_{i,t-1}]/\text{TNA}_{i,t-1}$. To construct the performance measures, in each month, we rank all funds by before-expense monthly return and assign the percentile values for each fund. LOWPERF is defined as min (0.2, percentile). MIDPERF is defined as min (0.6, percentile-LOWPERF). HIGHPERF is defined as (percentile-LOWPERF-MIDPERF). NCT is a dummy variable. It equals 1 if a fund is managed using the Non-Committed Team structure, and 0 otherwise. STYLE_FLOW is the average flow for each Morningstar category in a given month. RET_SD is the prior 12-month standard deviation of before-expense monthly returns. We take the natural logarithms of fund TNA because it is skewed to the right. All explanatory variables are lagged by 1 month, except for EXPENSE_RATIO, which is lagged by 1 year. The t-statistics are given in parentheses. ** and *** indicate significance at the 5% and 1% levels, respectively. The sample period is Jan. 1992–Dec. 2012.

Variables	1	2
LOWPERF	0.031***	0.032***
	(11.19)	(9.23)
MIDPERF	0.004***	0.005***
	(6.76)	(6.61)
HIGHPERF	0.059***	0.064***
	(16.41)	(13.63)
LOWPERF × NCT		−0.005
		(−0.85)
MIDPERF × NCT		−0.002**
		(−2.04)
HIGHPERF × NCT		−0.014**
		(−2.02)
NCT		0.002**
		(2.45)
TNA	−0.002***	−0.002***
	(−15.79)	(−15.83)
STYLE_FLOW	0.910***	0.914***
	(41.95)	(42.05)
RET_SD	−0.033***	−0.034***
	(−3.60)	(−3.65)
EXPENSE_RATIO	−0.002***	−0.002***
	(−3.97)	(−3.91)
CONSTANT	0.006***	0.005***
	(4.41)	(3.55)
F-tests on coefficient differences	LOWPERF = HIGHPERF: $F = 43.84, p = 0.000$	
No. of obs.	394,424	394,424
R^2	0.043	0.044

Column 1 of Table 10 replicates Sirri and Tufano's (1998) test.[17] We find consistent evidence that flow is less sensitive to fund performance when the performance is poor. Specifically, the F-test shows that the coefficient on LOWPERF, 0.031, is significantly lower than that on HIGHPERF, 0.059, at the 1% significance level. Column 2 presents the results of our test. Here, we interact the NCT with the performance measures. The coefficients on the interaction items are generally negative. The coefficients on MIDPERF × NCT and HIGHPERF × NCT, −0.002 and −0.014, are significant at the 5% significance level.

Our findings indicate that flow to Non-Committed Team funds has a relatively low sensitivity to performance. This is consistent with the notion that investors do indeed exhibit inertia.

[17] The flow and performance measures in Sirri and Tufano (1998) are at the annual frequency. Our measures are at the monthly frequency.

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VII. Conclusions

In this paper, we study an important aspect of teams: individual commitment, which is often mentioned in sports, business, and politics. The psychology literature has extensively studied individual commitment. This literature suggests that individual commitment has a significantly positive effect on incentives and team performance, because it provides a remedy to the free-rider problem in teams by making the cost to free ride very high.

We use fund manager history data from the Morningstar database to measure individual commitment and study its effect on teams. We distinguish between 2 team structures: a committed team, in which at least 1 team member works only for the fund, and a non-committed team, in which every team member also runs other fund(s) at the same time. Consistent with the psychology literature, we find that relative to a committed team, a non-committed team exhibits few incentives to acquire private information and thus underperforms. These findings are robust to including various controls. We also explore why non-committed teams have been used increasingly often despite their underperformance. Our study has practical implications for selecting mutual funds.

Supplementary Material

Supplementary Material for this article is available at https://doi.org/10.1017/S0022109019000346.

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