Spillover Effects in Mutual Fund Companies

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Motivation

- Mutual funds are often managed by diversified financial firms that are also active in other business segments.
- Such diversified companies can exhibit spillovers across segments.
- Our paper investigates whether the financial performance of the diversified management company has an impact on money flows and manager turnover.

Justifications for Spillover Effects

- Direct Effects:
  - Performance of the management company might simply reflect the performance of the mutual fund segment.

- Indirect Effects:
  - Poorly performing management companies might be more constrained in their resources justifying capital outflows and manager turnover.
  - Fund investors might mistakenly associate the performance of the management company with the performance of the mutual funds.

Main Results

- Prior management company performance plays an important role in explaining mutual fund flows and manager turnover.
- Results do not depend on the relative size of the mutual fund segment.
- Company performance is negatively related to future fund performance.

Related Literature

- A very extensive literature shows that mutual fund flows chase prior fund performance.

  - Chevalier and Ellison (1997); Sirri and Tufano (1998); Huang, Wei, and Yan (2007); Ivkovich and Weisbenner (2009).

- Several more recent papers study spillovers within fund families.

  - Massa (2003); Nanda, Wang, and Zheng (2004); Gaspar, Massa, and Matos (2006); Ivkovich (2006); Massa and Rehman (2008); Gallaher, Kaniel, and Starks (2010).

Company Performance

- Sample includes 118 publicly traded fund management companies.
- The Company Performance (CR) is defined as the average monthly industry-adjusted return of management companies over the prior 12, 24, and 36 months.
- The Revenue Percentage (REVPCT) is defined as the ratio between the total management fees of equity or bond funds divided by the total revenues of the company.
  - Largest companies: GE, J.P. Morgan, and Bank of America with REVPCT of 0.01%, 0.11%, and 0.14%.
  - Largest REVPCT: Pimco, Alliance Capital, and Calamos with REVPCT of 70.53%, 44.07%, and 31.34%.

Fund Performance and Fund Flows

- We aggregate separately all domestic equity funds and all domestic corporate and government bond funds managed by the same company.

- The performance of funds is computed as the factor-adjusted return (FR) or the style-adjusted return (FSAR) over the prior 12, 24, and 36 months.

- The fund flows (NMG) are computed as the percentage growth rates in new assets in the subsequent month:

$$NMG_{f,t+1} = \frac{TNA_{f,t+1} - TNA_{f,t}(1 + R_{f,t+1})}{TNA_{f,t}}.$$

Key Summary Statistics

	Mean	Std.Dev.	Median
Panel A: Fund Management Companies			
CR (Industry Adjusted Return; in %)	0.25	2.67	0.12
REVPCT Equity Funds (Revenue Percent; in %)	4.90	12.38	0.32
REVPCT Bond Funds (Revenue Percent; in %)	1.13	4.98	0.14
Panel B: Equity Mutual Funds			
NMG (New Money Growth; in %)	0.05	2.81	-0.14
FR (Four-Factor Adjusted Return; in %)	-0.12	0.49	-0.13
Panel C: Bond Mutual Funds			
NMG (New Money Growth; in %)	0.03	3.14	-0.19
FSAR (Style Adjusted Return; in %)	-0.01	0.33	0.01

Returns are measured in % per month over prior 12 months.
Fund flows are measured in % per month over subsequent month.
Revenue percentages are measured in % of total firm revenue.

Mutual Fund Flows

- We study the relationship between flows to equity and bond mutual funds and the performance of the management company.
    - Decile portfolios by company performance.
    - Independent double-sort quartile portfolios by company performance and fund performance.
    - Multi-variate linear and piecewise linear flow regressions.
    - Separate into sub-samples by revenue percentage.

Equity Fund Flows by Company Performance Deciles
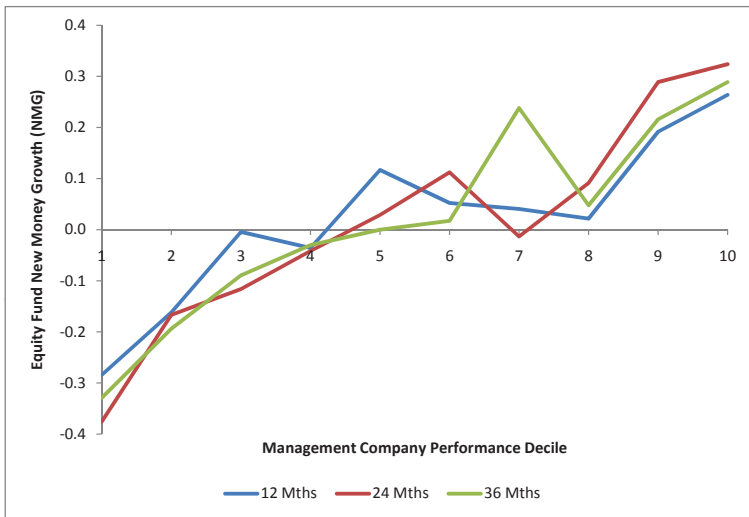
New Money Growth Rates by Fund and Company Performance (24 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.54	-0.03	0.17	0.77	1.31^{***}
						(0.07)
CR 1	-0.16	-0.90	-0.32	-0.14	0.72	1.62^{***}
						(0.16)
CR 2	0.02	-0.58	-0.07	0.07	0.67	1.25^{***}
						(0.14)
CR 3	0.10	-0.38	-0.01	0.27	0.49	0.87^{***}
						(0.19)
CR 4	0.40	-0.30	0.26	0.46	1.20	1.50^{***}
						(0.16)
4-1	0.56^{***}	0.59^{***}	0.58^{***}	0.60^{***}	0.48^{***}	
	(0.07)	(0.15)	(0.17)	(0.13)	(0.17)	

New Money Growth Regressions: Equity Funds

	Dependent Variable: Monthly Equity Flows (NMG)		
	12 Mths	24 Mths	36 Mths
CR	0.080***	0.158***	0.158***
	(0.024)	(0.043)	(0.049)
FR	0.804***	0.780***	0.712***
	(0.145)	(0.187)	(0.212)
Std. Dev. CR	0.003	0.024	0.035
	(0.018)	(0.026)	(0.032)
Std. Dev. FR	0.032	0.027	0.024
	(0.048)	(0.048)	(0.049)
LOG(TNA)	0.001	0.001	0.000
	(0.000)	(0.001)	(0.001)
TO	−0.001	−0.001	−0.001
	(0.002)	(0.002)	(0.002)
EXP	0.123	0.031	−0.007
	(0.243)	(0.224)	(0.220)
LOG(1+NUMFDS)	−0.002***	−0.002**	−0.002**
	(0.001)	(0.001)	(0.001)
STAR	0.007***	0.007***	0.007***
	(0.001)	(0.001)	(0.001)
Observations	11,951	11,951	11,951
R-Squared	0.093	0.097	0.092

Revenue Percentage Subsamples: Equity Funds (24 Mths)

	Dependent Variable: Monthly Family Flows (NMG)	
	Below Median Revenue Percentage	Above Median Revenue Percentage
CR	0.179***	0.177***
	(0.045)	(0.061)
FR	0.736***	1.043***
	(0.259)	(0.299)
Std. Dev. CR	0.038	0.007
	(0.034)	(0.029)
Std. Dev. FR	0.098	−0.069
	(0.086)	(0.076)
LOG(TNA)	0.002**	0.000
	(0.001)	(0.001)
TO	0.001	−0.004
	(0.002)	(0.003)
EXP	0.127	0.322
	(0.302)	(0.395)
LOG(1+NUMFDS)	−0.004**	−0.002
	(0.001)	(0.002)
STAR	0.007***	0.006**
	(0.002)	(0.002)
Observations	4,506	4,486
R-Squared	0.093	0.156

Piecewise Linear Specification: Equity Funds

	Dependent Variable: Monthly Equity Flows (NMG)		
	12 Mths	24 Mths	36 Mths
Min(CR, 0)	0.087**	0.185***	0.206***
	(0.041)	(0.056)	(0.065)
Max(CR, 0)	0.075*	0.136*	0.119
	(0.040)	(0.076)	(0.080)
Min(FR, 0)	0.828**	0.634	0.111
	(0.376)	(0.438)	(0.413)
Max(FR, 0)	0.794***	0.840***	0.949***
	(0.163)	(0.211)	(0.265)
Std. Dev. CR	0.004	0.027	0.041
	(0.014)	(0.023)	(0.031)
Std. Dev. FR	0.001	0.001	0.001
	(0.000)	(0.000)	(0.001)
LOG(TNA)	−0.001	−0.001	−0.001
	(0.002)	(0.002)	(0.002)
TO	0.134	0.050	0.023
	(0.237)	(0.221)	(0.219)
EXP	0.032	0.029	0.028
	(0.048)	(0.048)	(0.049)
LOG(1+NUMFDS)	−0.003***	−0.002**	−0.002**
	(0.001)	(0.001)	(0.001)
STAR	0.007***	0.007***	0.007***
	(0.001)	(0.001)	(0.001)
Observations	11,951	11,951	11,951
R-squared	0.094	0.097	0.094

Robustness Tests

- Replace industry-adjusted company performance with raw company performance or four-factor adjusted company performance.
- Replace four-factor adjusted fund performance with raw fund performance or investment objective adjusted company performance.
- Measure performance over the prior 12, 24, and 36 months.
- Replace new money growth with change in market share or percentage change in market share.
- Analyze subperiods (1992-2000 vs. 2001-2009), NBER recession and boom periods.
- Run Fama-MacBeth regressions.
- Study index fund subsample.
- Study subsamples by the proportion of defined contribution assets.

Bond Fund Flows by Company Performance Deciles
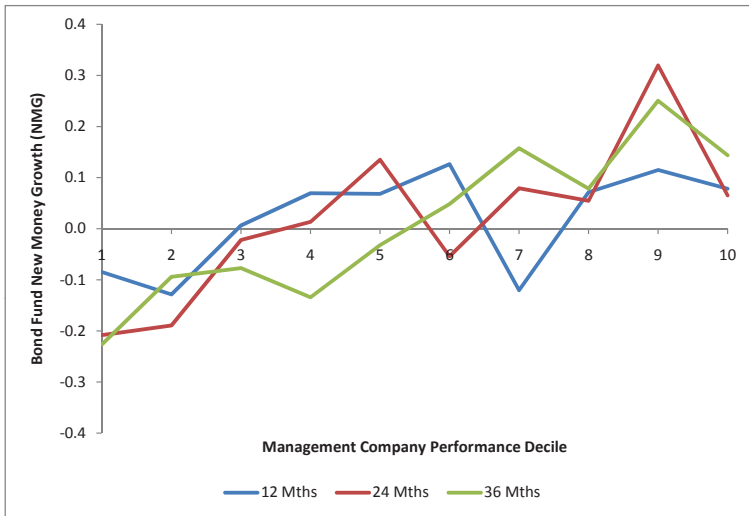
Double Sorts by Company and Bond Fund Performance (24 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.38	0.00	0.11	0.65	1.03***
						(0.10)
CR 1	-0.12	-0.67	-0.03	0.02	0.19	0.86***
						(0.18)
CR 2	0.11	-0.13	0.01	0.07	0.47	0.59***
						(0.18)
CR 3	0.10	-0.33	-0.06	-0.01	0.80	1.12***
						(0.17)
CR 4	0.29	-0.41	0.09	0.36	1.13	1.54***
						(0.19)
4-1	0.41***	0.27*	0.12	0.34*	0.95***	
	(0.09)	(0.16)	(0.17)	(0.20)	(0.20)	

New Money Growth Regressions: Bond Funds

	Dependent Variable: Monthly Equity Flows (NMG)		
	12 Mths	24 Mths	36 Mths
CR	0.015	0.075*	0.117**
	(0.030)	(0.042)	(0.050)
FR	1.435***	2.184***	2.738***
	(0.232)	(0.394)	(0.537)
Std. Dev. CR	0.017	0.028	0.03
	(0.021)	(0.024)	(0.027)
Std. Dev. FR	0.186*	0.141	0.082
	(0.097)	(0.092)	(0.088)
LOG(TNA)	−0.001*	−0.002**	−0.002**
	(0.001)	(0.001)	(0.001)
TO	−0.001	−0.001	−0.001
	(0.001)	(0.001)	(0.001)
EXP	−0.59	−0.576	−0.56
	(0.420)	(0.416)	(0.409)
LOG(1+NUMFDS)	0.003	0.003*	0.004**
	(0.002)	(0.002)	(0.002)
STAR	0.002*	0.002*	0.002*
	(0.001)	(0.001)	(0.001)
Observations	11,103	11,103	11,103
R-Squared	0.085	0.088	0.087

Fund Manager Turnover

- Mutual fund companies might lose key employees in case of poor performance.
- We follow Khorana (1996) and define turnover as an indicator variable for whether managers depart a specific mutual fund.
- We run multi-variate linear probability models to address this hypothesis.

Fund Manager Turnover

	Dependent Variable: Management Turnover	
	Equity Funds	Bond Funds
CR	-3.925^{***}	-2.147
	(1.250)	(1.681)
FR	-8.866^{**}	-7.633
	(3.637)	(9.700)
LOG(TNA)	0.077^{***}	0.065^{***}
	(0.019)	(0.021)
LOG(AGE)	-0.060	-0.019
	(0.078)	(0.119)
TO	0.008	-0.041^{*}
	(0.034)	(0.024)
EXP	4.213	-21.422^{*}
	(6.244)	(11.921)
STAR	-0.270^{**}	-0.074
	(0.118)	(0.192)
LOG(TENURE)	-1.013^{***}	-1.051^{***}
	(0.032)	(0.038)
TEAM	0.525^{***}	0.522^{***}
	(0.064)	(0.085)
Observations	94,870	55,817
R-Squared	0.150	0.160

Subsequent Fund Performance

- To investigate whether the performance of the management company has an impact on future fund performance, we study the future abnormal performance of equity and mutual funds.

Future Carhart-Adjusted Equity Fund Performance (12 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.18^{***}	-0.15^{***}	-0.13^{***}	-0.07	0.11^{***}
						(0.05)
CR 1	-0.16^{***}	-0.26^{***}	-0.19^{***}	-0.12^{***}	-0.07	0.19^{**}
						(0.08)
CR 2	-0.12^{***}	-0.23^{***}	-0.13^{***}	-0.13^{**}	-0.02	0.20^{**}
						(0.085)
CR 3	-0.14^{***}	-0.13^{**}	-0.20^{***}	-0.13^{**}	-0.09	0.05
						(0.07)
CR 4	-0.11^{***}	-0.12^{***}	-0.09^{*}	-0.14^{***}	-0.09	0.03
						(0.09)
4-1	0.05	0.15^{**}	0.09^{*}	-0.02	-0.02	
	(0.03)	(0.06)	(0.06)	(0.05)	(0.07)	

Future Style Adjusted Bond Fund Performance (12 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.15^{***}	-0.00	0.04	0.08^{***}	0.22^{***}
						(0.06)
CR 1	-0.02	-0.24^{*}	0.00	0.05	0.10^{***}	0.34^{**}
						(0.138)
CR 2	-0.02	-0.15^{***}	-0.01	0.03^{*}	0.04	0.19^{***}
						(0.07)
CR 3	-0.00	-0.11^{***}	0.00	0.05^{***}	0.05	0.16^{**}
						(0.064)
CR 4	0.02	-0.08	-0.01	0.02	0.11^{***}	0.19^{***}
						(0.07)
4-1	0.04	0.16	-0.01	-0.03	0.01	
	(0.04)	(0.14)	(0.02)	(0.02)	(0.04)	

Conclusions

- Company performance has a significant impact on future fund flows and manager turnover.
- Results are likely driven by indirect spillover effects since results are not stronger for companies where mutual funds account for a larger fraction of their total revenues.
- Funds affiliated with poorly performing management companies tend to exhibit inferior future performance.

Fund Performance by Fund and Company Performance (24 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.50	-0.21	-0.06	0.23	0.73***
						(0.04)
CR 1	-0.14	-0.53	-0.22	-0.06	0.25	0.78***
						(0.05)
CR 2	-0.14	-0.51	-0.21	-0.05	0.22	0.73***
						(0.04)
CR 3	-0.14	-0.49	-0.21	-0.06	0.20	0.70***
						(0.04)
CR 4	-0.14	-0.49	-0.21	-0.06	0.24	0.73***
						(0.05)
4-1	0.00	0.04	0.01	0.00	-0.01	
	(0.03)	(0.04)	(0.01)	(0.01)	(0.05)	

New Money Growth Rates by Fund and Company Performance (12 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.52	0.00	0.12	0.82	1.34^{***}
						(0.080)
CR 1	-0.02	-0.61	-0.22	-0.03	0.76	1.37^{***}
						(0.16)
CR 2	0.10	-0.50	-0.02	0.10	0.80	1.30^{***}
						(0.15)
CR 3	0.08	-0.49	-0.01	0.17	0.67	1.16^{***}
						(0.16)
CR 4	0.26	-0.49	0.25	0.26	1.03	1.52^{***}
						(0.16)
4-1	0.29^{***}	0.12	0.46^{***}	0.30^{**}	0.26	
	(0.067)	(0.14)	(0.15)	(0.14)	(0.18)	

New Money Growth Rates by Fund and Company Performance (36 Months)

	ALL	FR 1	FR 2	FR 3	FR 4	4-1
ALL		-0.54	-0.07	0.29	0.72	1.26^{***}
						(0.079)
CR 1	-0.12	-0.78	-0.31	-0.04	0.65	1.43^{***}
						(0.15)
CR 2	0.04	-0.59	-0.19	0.35	0.60	1.19^{***}
						(0.14)
CR 3	0.12	-0.37	0.11	0.28	0.48	0.85^{***}
						(0.15)
CR 4	0.36	-0.41	0.12	0.57	1.17	1.58^{***}
						(0.17)
4-1	0.48^{***}	0.37^{**}	0.43^{***}	0.61^{***}	0.51^{***}	
	(0.075)	(0.16)	(0.14)	(0.13)	(0.17)	

Individual Fund Flows: Equity Funds

	Dependent Variable: Monthly Equity Flows (NMG)		
	12 Mths	24 Mths	36 Mths
CR	0.048^{**}	0.075^{**}	0.073^{**}
	(0.019)	(0.029)	(0.033)
FR	1.533^{***}	1.955^{***}	2.158^{***}
	(0.106)	(0.151)	(0.168)
Std. Dev. CR	-0.002	0.006	0.009
	(0.010)	(0.014)	(0.018)
Std. Dev. FR	0.064	-0.019	-0.054
	(0.070)	(0.091)	(0.095)
LOG(TNA)	-0.003^{***}	-0.003^{***}	-0.003^{***}
	(0.000)	(0.000)	(0.000)
TO	0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)
EXP	-0.984^{***}	-0.939^{***}	-0.918^{***}
	(0.119)	(0.121)	(0.121)
LOG(1+NUMFDS)	-0.002	-0.001	-0.001
	(0.002)	(0.002)	(0.002)
STAR	0.024^{***}	0.023^{***}	0.023^{***}
	(0.002)	(0.002)	(0.002)
Observations	301,121	301,121	301,121
R-squared	0.054	0.056	0.055