

Internet Appendix for “Competition and cooperation in mutual fund families”

Richard B. Evans, Melissa Porras Prado, and Rafael Zambrana Galacho

This Internet Appendix reports the results of supplementary and robustness tests as described below:

Figure A1: Figure of Net competitive index over time

Table A1: Individual components: competitive

Table A2: Individual components: cooperative

Table A3: Individual components

Table A4: Robustness checks: family characteristics

Table A5: Alternative approaches: Equity, TNA-Weighted, and EW components

Table A6: Fund performance: net returns

Table A7: Fund performance: other measures

Table A8: Star funds: fund level

Table A9: Family star funds: dummy variables

Table A10: Performance dispersion: dummy variables

Table A11: Recapturing flows

Table A12: Coordinated behavior: other variables

Table A13: Robustness checks: financial conglomerates

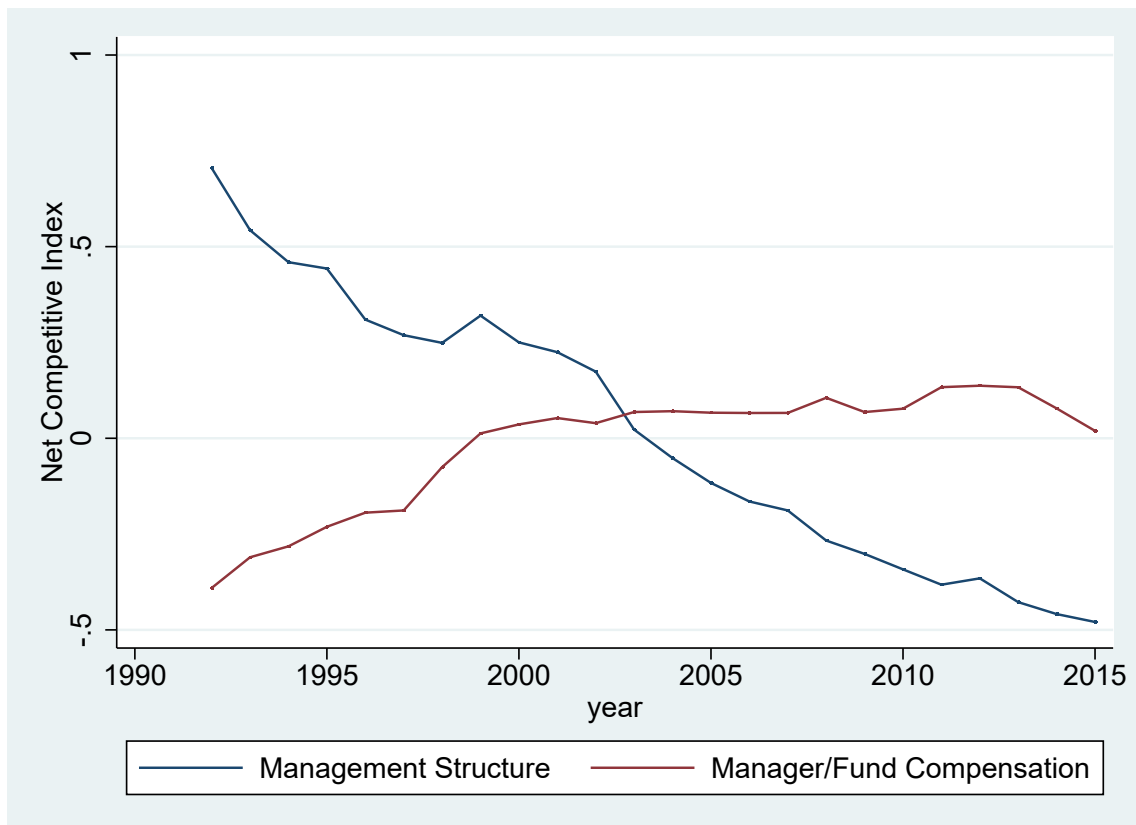


Figure 1: Net competitive index over time.

This plot shows the breakdown of our indices of fund manager incentives, competitive and cooperative, into two categories of the variables used: manager compensation incentives (e.g. manager ownership of the fund - competitive, manager ownership of the investment advisor - cooperative) and fund management structure (e.g. solo-managed fund - competitive or team-managed - cooperative).

Table A1: Individual components: competitive

This table shows the Fama-MacBeth (1973) estimation of the effect of competitive and cooperative incentives on fund family strategies. The dependent variables are the percentage cross-trading and cross-holding activity of the fund and the star fund family strategies (proportion of star funds). Competitive and Cooperative are cross-sectional ranks. Variable definitions are the Data Appendix. The constant term and family control variables are included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
CIR measure	0.041*** (4.27)	0.128*** (3.66)	0.329*** (3.06)	-0.011 (-1.64)	0.007*** (3.23)
No. of observations	96,834	82,740	45,447	88,640	88,640
Adjusted R^2	0.057	0.120	0.133	0.176	0.227

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Individual fund	0.015*** (3.34)	0.160*** (6.36)	-0.080*** (-7.39)	-0.025*** (-3.54)	0.007*** (3.33)
No. of observations	105,299	86,209	49,009	93,492	93,492
Adjusted R^2	0.053	0.120	0.090	0.185	0.238

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Manager ownership	0.079*** (12.74)	0.132*** (8.05)	0.072 (1.27)	0.126*** (43.65)	0.016*** (14.14)
No. of observations	81,893	66,566	44,131	71,572	71,572
Adjusted R^2	0.070	0.115	0.140	0.263	0.208

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Bonus fund performance	-0.094*** (-5.54)	0.074* (1.86)	0.066 (1.35)	-0.015 (-1.49)	0.011** (2.56)
No. of observations	35,070	36,871	19,702	37,000	37,000
Adjusted R^2	0.131	0.165	0.062	0.224	0.179

	Competitive and cooperative incentives				
	Family Stars	Performance dispersion	Cross-trading	Active share	Tracking error
Bonus paid fund shares	-0.013** (-2.19)	-0.028 (-1.61)	-0.316*** (-4.36)	0.010*** (2.62)	0.004*** (3.56)
No. of observations	35,070	36,871	19,702	37,000	37,000
Adjusted R^2	0.126	0.165	0.113	0.223	0.175

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Bonus fund revenue	0.015*** (2.65)	0.038** (2.28)	0.047 (1.54)	0.041*** (23.27)	0.003*** (3.97)
No. of observations	35,070	36,871	19,702	37,000	37,000
Adjusted R^2	0.132	0.169	0.095	0.231	0.175

Table A2: Individual components: cooperative

This table shows the Fama-MacBeth (1973) estimation of the effect of competitive and cooperative incentives on fund family strategies. The dependent variables are the percentage cross-trading and cross-holding activity of the fund and the star fund family strategies (proportion of star funds). Competitive and Cooperative are cross-sectional ranks. Variable definitions are the Data Appendix. The constant term and family control variables are included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Other funds fee	-0.031*** (-10.98)	0.003 (0.22)	0.028 (0.90)	-0.025*** (-8.66)	-0.002** (-2.00)
No. of observations	102,100	85,452	48,279	91,829	91,829
Adjusted R^2	0.053	0.118	0.108	0.184	0.229

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Team fund	-0.038*** (-7.08)	-0.119*** (-4.00)	0.171*** (11.04)	0.004 (0.65)	-0.017*** (-9.71)
No. of observations	105,299	86,209	49,009	93,492	93,492
Adjusted R^2	0.054	0.119	0.101	0.185	0.242

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Manager connected	-0.013** (-2.51)	-0.078*** (-6.07)	0.043** (2.23)	-0.014*** (-3.58)	-0.006*** (-7.83)
No. of observations	97,945	82,901	47,963	88,173	88,173
Adjusted R^2	0.059	0.117	0.123	0.196	0.198

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Managers/Fund ratio	-0.047*** (-8.81)	-0.104*** (-6.87)	0.136*** (16.80)	-0.018*** (-7.09)	-0.011*** (-8.91)
No. of observations	97,806	82,763	48,635	87,802	87,802
Adjusted R^2	0.064	0.118	0.099	0.196	0.206

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Bonus paid adv equity	-0.019** (-2.53)	0.150*** (4.18)	0.302*** (23.59)	0.056*** (9.36)	0.010*** (12.20)
No. of observations	35,070	36,871	19,702	37,000	37,000
Adjusted R^2	0.128	0.167	0.079	0.228	0.175

	Competitive and cooperative incentives				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Bonus adv contribution	-0.010** (-2.59)	-0.124*** (-5.87)	-0.066*** (-2.72)	0.002 (0.55)	0.009*** (8.34)
No. of observations	35,070	36,871	19,702	37,000	37,000
Adjusted R^2	0.126	0.168	0.075	0.224	0.183

Table A3: Individual components

This table shows the Fama-MacBeth (1973) estimation of the effect of competitive and cooperative incentives on fund family strategies. The dependent variables are the percentage cross-trading and cross-holding activity of the fund and the star fund family strategies (proportion of star funds). Competitive and Cooperative are cross-sectional ranks. Variable definitions are the Data Appendix. The constant term and family control variables are included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

Panel A: competitive incentives					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
CIR measure	0.031** (2.53)	0.419*** (6.91)	0.235*** (15.07)	0.018 (1.16)	0.017*** (7.15)
Individual fund	0.009 (0.66)	0.062 (1.34)	-0.065*** (-2.89)	0.023*** (2.79)	0.011*** (5.62)
Manager ownership	0.094*** (12.33)	0.163*** (10.12)	-0.058*** (-4.81)	0.135*** (34.96)	0.022*** (12.59)
Bonus-fund performance	-0.094*** (-3.84)	0.163*** (2.94)	0.186*** (4.68)	-0.023** (-2.04)	0.015*** (3.70)
Bonus-paid in fund shares	-0.005 (-0.79)	0.001 (0.06)	-0.143*** (-8.14)	0.007*** (3.03)	0.006*** (5.77)
Bonus-fund revenue	0.007* (1.82)	-0.000 (-0.01)	0.050* (1.93)	0.032*** (10.81)	-0.000 (-0.60)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.177	0.174	0.155	0.294	0.234
Panel B: cooperative incentives					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Other funds fee	-0.006** (-2.33)	-0.012 (-1.09)	-0.006 (-0.16)	-0.016*** (-3.59)	-0.001 (-1.11)
Team fund	0.007 (0.43)	-0.106*** (-2.60)	0.026 (0.53)	-0.014 (-1.02)	-0.015*** (-9.20)
Manager connected	-0.012** (-2.51)	-0.087*** (-5.34)	0.072*** (3.92)	-0.009** (-2.40)	-0.008*** (-4.84)
Managers/Funds ratio	-0.064*** (-7.14)	-0.066*** (-3.46)	0.102*** (5.39)	-0.046*** (-8.04)	-0.005*** (-6.09)
Bonus-paid in advisor equity	-0.017** (-2.16)	0.162*** (4.39)	0.354*** (9.40)	0.057*** (10.73)	0.009*** (10.65)
Bonus-overall advisor revenue	-0.015*** (-4.08)	-0.134*** (-6.09)	-0.050* (-1.76)	-0.002 (-0.53)	0.008*** (8.82)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.150	0.173	0.192	0.232	0.196

Table A4: Robustness checks: family characteristics

Variable definitions are the Data Appendix. We estimate these models by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

Panel A: style concentrated (HHI>0.95) families					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.019*** (10.50)	0.068*** (3.37)	-0.037*** (-10.66)	0.007*** (3.46)	0.003*** (6.32)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.063	0.072	0.085	0.120	0.201
Panel B: large families (top 4th quartile)					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.031*** (8.23)	0.086*** (12.49)	-0.103*** (-3.20)	0.021*** (11.54)	0.003*** (5.92)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.140	0.150	0.067	0.283	0.198
Panel C: families with shrinking assets					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.008*** (4.51)	0.044*** (4.31)	-0.042*** (-6.06)	0.012*** (5.16)	0.004*** (6.39)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.052	0.157	0.172	0.180	0.286
Panel D: families with growing assets					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.025*** (11.41)	0.041*** (5.53)	-0.079*** (-3.49)	0.012*** (5.56)	0.005*** (10.80)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.082	0.123	0.134	0.214	0.241

Continue on next page

Continued from previous page

Panel E: families with below median fee					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.014*** (6.80)	0.037*** (5.48)	-0.125*** (-3.15)	0.008*** (3.45)	0.003*** (5.90)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.055	0.085	0.123	0.210	0.144
Panel F: families with above median fee					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.022*** (10.33)	0.059*** (6.04)	0.100 (0.70)	0.013*** (8.53)	0.006*** (13.46)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.057	0.077	0.127	0.170	0.219
Panel G: sample period: 2005-2015					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.021*** (9.48)	0.069*** (8.76)	-0.035*** (-10.50)	0.025*** (18.47)	0.007*** (14.87)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.056	0.114	0.143	0.249	0.237
Panel H: sample period: 2005-2015 (excluding financial crisis (2007-2010))					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.018*** (5.39)	0.050*** (6.52)	-0.036*** (-7.01)	0.025*** (12.62)	0.007*** (13.31)
Control variables	Y	Y	Y	Y	Y
Adjusted R^2	0.031	0.117	0.129	0.236	0.240

Table A5: Alternative approaches: Equity, TNA-Weighted, and EW components

This table shows the Fama-MacBeth (1973) estimation of the effect of competitive and cooperative incentives on fund family strategies considering different ways of estimating family incentive scheme indices. In Panel A we consider only the equity information of fund families. Panel B shows the results of creating the indices using a TNA-weighted average of the fund characteristics. In Panel C, we aggregate the components of the indices into two categories (human capital, and fund/manager compensation incentives) and give the same weight to each category. The dependent variables are the percentage cross-trading and cross-holding activity of the fund and the star fund family strategies (proportion of star funds). Competitive/Cooperative is a standardized index that measures fund family j competitive, cooperative and Net competitive (competitive - cooperative) incentives. Variable definitions are the Data Appendix. The constant term and family control variables are included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

Panel A: Only domestic equity					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.020*** (13.98)	0.046*** (7.66)	-0.052*** (-7.42)	0.010*** (5.08)	0.004*** (10.01)
No. of observations	98,159	83,799	46,362	93,037	93,037
Adjusted R^2	0.068	0.125	0.097	0.196	0.239
Panel B: TNA-weighted					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.020*** (13.16)	0.051*** (8.68)	-0.060*** (-5.92)	0.012*** (6.34)	0.004*** (11.17)
No. of observations	105,299	86,209	49,009	93,492	93,492
Adjusted R^2	0.059	0.120	0.111	0.191	0.242
Panel C: Equally-weighted components					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.018*** (13.26)	0.041*** (7.09)	-0.055*** (-4.47)	0.010*** (6.02)	0.004*** (10.23)
No. of observations	105,299	86,209	49,009	93,492	93,492
Adjusted R^2	0.059	0.120	0.115	0.190	0.241

Continue on next page

Continued from previous page

Panel D: Components ranked by investment objective					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Net competitive	0.017*** (11.22)	0.049*** (9.21)	-0.050*** (-7.29)	0.013*** (7.19)	0.004*** (9.66)
No. of observations	105,299	86,209	49,009	93,492	93,492
Adjusted R^2	0.058	0.120	0.100	0.192	0.241

Panel E: PCA for cooperative incentives					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
PCA cooperative	-0.006** (-2.35)	-0.055*** (-9.81)	0.060** (2.48)	-0.003* (-1.83)	-0.001*** (-4.52)
No. of Observations	34,655	36,529	19,601	36,603	36,603
Adjusted R^2	0.136	0.171	0.180	0.229	0.176

Panel F: PCA for competitive incentives					
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
PCA competitive	0.016*** (6.38)	0.018*** (2.72)	0.086 (0.72)	0.023*** (12.98)	0.004*** (9.86)
No. of observations	28,512	29,577	17,091	29,791	29,791
Adjusted R^2	0.147	0.163	0.174	0.250	0.219

Table A6: Fund performance: net returns

The table lists the results of following regression specification: $FundPerformance_{i,t} = \beta_0 + \beta_1 Competitive/Cooperative_{j,t} + controls + \epsilon_{i,t}$, where $FundPerformance_{i,t}$ measures the performance of fund i at time t using the objective-adjusted returns after fees. $Competitive/Cooperative_{j,t}$ is a standardized index that measures the fund family j competitive and cooperative incentives at time t . We also include the *Net competitive* (competitive - cooperative) effect. Variable definitions are the Data Appendix. We estimate the above model by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Net performance					
Competitive	0.018*** (4.11)	0.016*** (3.85)				
Cooperative			-0.010** (-2.39)	-0.010** (-2.43)		
Net competitive					0.018*** (3.53)	0.017*** (3.43)
Family size (log TNA)	0.012*** (5.63)	0.010*** (3.03)	0.011*** (5.26)	0.009*** (2.83)	0.012*** (6.18)	0.011*** (3.37)
Family funds (log)	0.004 (0.58)	0.003 (0.49)	0.005 (0.73)	0.004 (0.65)	0.005 (0.68)	0.004 (0.59)
Fund size (log TNA)		0.005 (1.10)		0.005 (1.02)		0.005 (1.05)
Fund turnover		0.009 (0.60)		0.010 (0.61)		0.010 (0.61)
Fund flows (monthly)		0.343*** (6.83)		0.342*** (6.85)		0.343*** (6.84)
Fund age		-0.010* (-1.72)		-0.009* (-1.66)		-0.010* (-1.73)
Style dummies	Y	Y	Y	Y	Y	Y
No. of observations	1,015,964	1,006,554	1,015,964	1,006,554	1,015,964	1,006,554
Adjusted R^2	0.005	0.019	0.005	0.019	0.006	0.019

Table A7: Fund performance: other measures

The table lists the results of following regression specification: $FundPerformance_{i,t} = \beta_0 + \beta_1 NetCompetitive_{j,t} + controls + \epsilon_{i,t}$, where $FundPerformance_{i,t}$ measures the performance of US domestic equity fund i at time t using different benchmark and risk-adjusted measures. We estimate benchmark-adjusted performance following Daniel, Grinblatt, Titman and Wermers (DGTW 1997) and the decomposition in characteristic selection (CS) and characteristic timing (CT), and risk-adjusted performance using the CAPM model and the Carhart (1997) four factor model. $NetCompetitive_{j,t}$ is a standardized index that measures the fund family j et competitive incentives at time t . Variable definitions are the Data Appendix. We estimate the above model by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Alpha CAPM (gross)	Alpha Carhart (gross)	Alpha CAPM (net)	Alpha Carhart (net)	CS	CT	DGTW Return
Net competitive	0.026*** (3.86)	0.019*** (2.84)	0.031*** (4.64)	0.023*** (3.64)	0.012** (2.35)	0.056*** (2.67)	0.011** (2.12)
Family size (log TNA)	0.038*** (5.16)	0.031*** (5.06)	0.020*** (2.69)	0.012*** (2.05)	0.002 (0.34)	0.011 (1.34)	0.003 (0.57)
Family funds (log)	-0.009 (-0.77)	-0.002 (-0.26)	-0.005 (-0.43)	0.002 (0.21)	-0.008 (-0.95)	-0.062** (-2.14)	-0.002 (-0.25)
Fund size (log TNA)	0.014 (1.21)	0.013 (1.61)	0.002 (0.17)	0.001 (0.07)	0.017* (1.83)	-0.081*** (-4.23)	0.012 (1.42)
Expense ratio (%)	0.141*** (3.10)	0.138*** (4.45)	-0.093** (-2.05)	-0.096*** (-3.19)	0.044 (1.37)	0.439*** (2.60)	0.017 (0.61)
Fund turnover	-0.011 (-0.30)	-0.018 (-0.98)	0.003 (0.08)	-0.004 (-0.24)	0.021 (0.88)	-0.017 (-1.27)	0.013 (0.56)
Fund flows (monthly)	2.139*** (7.70)	1.861*** (7.21)	2.160*** (7.71)	1.882*** (7.23)	1.060*** (7.08)	0.178 (1.64)	1.008*** (7.54)
Fund age	0.000 (0.01)	0.002 (0.22)	0.007 (0.64)	0.009 (0.90)	0.014 (1.45)	0.058* (1.86)	0.013 (1.51)
No. of observations	437,871	437,871	437,871	437,871	398,660	398,660	398,660
Adjusted R^2	0.051	0.037	0.051	0.035	0.032	0.061	0.034

Table A8: Star funds: fund level

The table lists a logistic specification to determine the likelihood associated with a fund being a star fund. We present both the odd ratio and t -statistics. $CompetitiveFamily/CooperativeFamily_{j,t}$ is indicator variable for families with above median competitive, cooperative and net competitive incentives scheme. We also include the *Net competitive* (competitive - cooperative) effect. Variable definitions are the Data Appendix. Time dummies, investment objective dummies and the constant term are also included but not reported. We estimate the above model by using logistic regression. Robust t -statistics adjusted for fund-level clustering are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Prob (Star fund==1)					
Competitive	1.267*** (9.08)	1.239*** (8.43)				
Cooperative			0.818*** (-7.10)	0.859*** (-5.48)		
Net competitive					1.321*** (10.02)	1.263*** (8.59)
Family size (log TNA)	0.985 (-1.11)	0.931*** (-3.42)	0.983 (-1.24)	0.930*** (-3.38)	1.003 (0.20)	0.951** (-2.32)
Family funds (log)	1.030 (1.04)	1.205*** (3.76)	1.039 (1.36)	1.240*** (4.25)	1.036 (1.26)	1.214*** (3.87)
Family stocks (log)		0.902*** (-3.37)		0.887*** (-3.90)		0.899*** (-3.45)
Fund size (log TNA)		1.173*** (4.55)		1.156*** (4.05)		1.150*** (3.96)
Expense ratio (%)		1.963*** (11.95)		1.910*** (11.53)		1.917*** (11.57)
Fund turnover		1.114*** (5.88)		1.109*** (5.57)		1.113*** (5.85)
Past returns (yearly)		18.889*** (37.17)		19.110*** (37.33)		18.835*** (37.13)
Fund flows (monthly)		1.000 (1.12)		1.000 (1.24)		1.000 (1.29)
Fund ranking revenues		1.010 (0.59)		1.014 (0.86)		1.017 (1.02)
Style dummies	Y	Y	Y	Y	Y	Y
Time dummies	Y	Y	Y	Y	Y	Y
No. of observations	794,685	780,678	794,685	780,678	794,685	780,678

Table A9: Family star funds: dummy variables

The table lists the results of following regression specification: $FamStarFunds_{j,t} = \beta_0 + \beta_1 CompetitiveFamily/CooperativeFamily_{j,t} + controls + \epsilon_{j,t}$, where $FamStarFunds_{j,t}$ is the proportion of star funds in family j at time t . $CompetitiveFamily/CooperativeFamily_{j,t}$ is indicator variable for families with above median competitive, cooperative and net competitive incentives scheme. We also include the *Net competitive* (competitive - cooperative) effect. Variable definitions are the Data Appendix. We estimate the above model by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Star funds strategy					
Competitive family	0.025*** (13.28)	0.020*** (11.18)				
Cooperative family			-0.024*** (-6.73)	-0.028*** (-7.85)		
Net competitive family					0.030*** (10.30)	0.028*** (10.61)
Family size (log TNA)	0.010*** (10.74)	0.020*** (16.67)	0.010*** (10.21)	0.021*** (16.30)	0.011*** (10.77)	0.020*** (16.87)
Family funds (log)	-0.025*** (-7.84)	-0.027*** (-9.41)	-0.025*** (-7.81)	-0.026*** (-9.16)	-0.025*** (-7.76)	-0.026*** (-9.26)
Family age (log)		-0.023*** (-14.27)		-0.025*** (-16.42)		-0.024*** (-15.78)
Family cash		0.002*** (5.86)		0.002*** (6.01)		0.001*** (5.86)
Family expense ratio		0.050*** (15.80)		0.050*** (15.81)		0.049*** (15.41)
Family turnover		0.005** (2.24)		0.005** (2.05)		0.005** (2.27)
Family front load		-0.029*** (-10.18)		-0.031*** (-10.89)		-0.029*** (-10.25)
Family gross return		0.359*** (2.91)		0.368*** (3.02)		0.361*** (2.95)
No. of observations	105,435	105,299	105,435	105,299	105,435	105,299
Adjusted R^2	0.016	0.072	0.019	0.076	0.019	0.074

Table A10: Performance dispersion: dummy variables

The table lists the results of following regression specification: $PerfDisp_{j,t} = \beta_0 + \beta_1 CompetitiveFamily/CooperativeFamily_{j,t} + controls + \epsilon_{j,t}$, where $PerfDisp_{j,t}$ is the cross-sectional standard deviation of objective-adjusted fund returns of family j at time t . $CompetitiveFamily/CooperativeFamily_{j,t}$ is indicator variable for families with above median competitive, cooperative and net competitive incentives scheme. We also include the *Net competitive* (competitive - cooperative) effect. Variable definitions are the Data Appendix. We estimate the above model by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Family performance dispersion					
Competitive family	0.056*** (6.00)	0.033*** (3.85)				
Cooperative family			-0.041*** (-5.06)	-0.043*** (-4.56)		
Net competitive family					0.096*** (10.14)	0.066*** (6.66)
Family size (log TNA)	-0.016*** (-4.05)	0.027*** (5.96)	-0.016*** (-4.06)	0.029*** (6.32)	-0.013*** (-3.30)	0.029*** (6.36)
Family funds (log)	0.085*** (7.60)	0.038*** (6.21)	0.084*** (7.75)	0.038*** (6.43)	0.089*** (8.13)	0.040*** (6.77)
Family age (log)		0.020** (2.26)		0.018** (2.02)		0.018** (2.01)
Family cash		0.007*** (7.06)		0.008*** (7.42)		0.007*** (7.05)
Family expense ratio		0.497*** (23.23)		0.499*** (23.69)		0.494*** (23.43)
Family turnover		0.114*** (8.91)		0.115*** (8.99)		0.117*** (9.15)
Family front load		-0.121*** (-11.33)		-0.124*** (-11.50)		-0.121*** (-11.20)
Family gross return		1.198* (1.73)		1.226* (1.76)		1.216* (1.76)
No. of observations	86,333	86,209	86,333	86,209	86,333	86,209
Adjusted R^2	0.009	0.144	0.008	0.144	0.011	0.145

Table A11: Recapturing flows

This table reports estimates of regressions of monthly fund outflows on family and fund characteristics. The fund outflows data come from N-SAR question 28a-f. The independent variables include a standardized index that measures the fund family competitive incentives (Competitive), a standardized index that measures the fund family cooperative incentives (Cooperative), the average outflows to all other funds in the fund family (Family outflows), the family size and number of funds, the size, expense ratio, turnover, performance, fund ranking revenues, the lagged fund outflows (Fund outflows $t-1$), and the average outflows to all funds in the same investment objective (Style outflows). Variable definitions are the Data Appendix. We estimate the above model by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Fund outflows					
Competitive	0.110*** (6.38)	0.093*** (5.09)			0.112*** (5.32)	0.088*** (4.13)
Cooperative			-0.045** (-2.54)	-0.052*** (-2.81)	-0.005 (-0.26)	-0.018 (-0.89)
Competitive x Family inflows	-0.030*** (-4.59)	-0.026*** (-3.95)			-0.027*** (-3.62)	-0.024*** (-3.30)
Cooperative x Family inflows			0.020*** (3.12)	0.013** (1.98)	0.014** (2.07)	0.008 (1.12)
Family inflows	0.267*** (28.17)	0.265*** (28.35)	0.274*** (26.24)	0.271*** (26.44)	0.264*** (29.06)	0.262*** (29.15)
Fund outflows t-1	0.699*** (53.23)	0.687*** (51.99)	0.702*** (55.64)	0.689*** (54.37)	0.704*** (55.29)	0.692*** (53.95)
Style outflows	0.389*** (16.04)	0.371*** (13.48)	0.378*** (15.54)	0.361*** (12.78)	0.382*** (15.72)	0.367*** (13.21)
Family size (log TNA)		0.136*** (11.53)		0.138*** (11.50)		0.136*** (11.50)
Family funds (log)		-0.028*** (-2.75)		-0.023** (-2.17)		-0.032*** (-3.06)
Fund size (log TNA)		-0.301*** (-14.20)		-0.306*** (-14.28)		-0.299*** (-14.20)
Expense ratio (%)		0.065*** (2.91)		0.055** (2.42)		0.062*** (2.79)
Fund turnover		0.087*** (5.64)		0.107*** (6.52)		0.089*** (5.90)
Gross performance		-0.063*** (-8.23)		-0.064*** (-8.36)		-0.063*** (-8.30)
Fund ranking revenues		0.040*** (5.44)		0.042*** (5.54)		0.039*** (5.25)
Style dummies	Y	Y	Y	Y	Y	Y
No. of observations	607,815	600,576	607,815	600,576	607,815	600,576
Adjusted R^2	0.683	0.688	0.681	0.687	0.685	0.690

Table A12: Coordinated behavior: other variables

The table lists the results of the following regression specification: $Coordination_{j,t} = \beta_0 + \beta_1 NetCompetitive_{j,t} + controls + \epsilon_{j,t}$, where $Coordination_{j,t}$ proxies for coordinated behavior and resource sharing. *Cross-assets trading* is the average frequency in which both equity and bond funds simultaneously hold a security of the same firm as a fraction of the total number of holdings in the asset management company. *Stock weight % funds* is the average across all stocks in the family of the number of portfolios holding a stock over the number of portfolios in the family. *Stock weight % assets* is a Herfindahl index of the fund family holdings, more precisely its the sum of the squares of the portfolio holdings within a fund family weighted by the family total holdings size. *Adopt time* is the average across funds in the family of the time lapsed in quarters between the initiation of the position (the date the first fund in the family purchased the stock over the past year) and when other funds in the family also purchased the stock. Variable definitions are the Data Appendix. We estimate the above model by using the Fama-MacBeth (1973) method. The constant term is included but not reported. The t -statistics adjusted for serial correlation using Newey-West (1987) are reported in parentheses. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Cross-assets trading	Stock weight % funds	Stock weight % assets	Adopt time
Net competitive	-1.034*** (-6.85)	-0.115*** (-2.68)	-0.143** (-2.06)	0.625*** (5.25)
Family size (log TNA)	1.824*** (6.63)	0.239*** (5.89)	0.274*** (8.83)	0.048 (1.04)
Family age (log)	2.401*** (10.23)	-0.584*** (-5.18)	-0.080 (-0.81)	5.235*** (15.71)
Family funds (log)	4.938*** (6.35)	-1.671*** (-18.25)	-1.524*** (-21.46)	1.056*** (6.84)
Family turnover	0.977*** (4.96)	0.545*** (5.86)	0.804*** (9.23)	-0.949*** (-7.41)
Gross performance	0.049 (0.71)	-0.067** (-2.22)	-0.072 (-1.64)	0.060 (1.45)
No. of observations	52,254	127,880	127,880	120,044
Adjusted R^2	0.200	0.085	0.023	0.096

Table A13: Robustness checks: financial conglomerates

After is a dummy equal 1 for families that are part of a large financial conglomerates. Variable definitions are the Data Appendix. The constant term is included but not reported. The t -statistics are reported in parentheses, standard errors are clustered at the family level. * denotes significance at the 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level.

	Financial conglomerates				
	Family stars	Performance dispersion	Cross-trading	Active share	Tracking error
Financial conglomerate parent	-0.021 (-1.30)	0.049 (0.68)	0.051 (0.89)	-0.007 (-0.25)	-0.007 (-1.32)
Net competitive	0.021*** (5.58)	0.047** (2.43)	-0.037*** (-2.84)	0.009* (1.93)	0.005*** (3.56)
Financial conglomerate parent × Net competitive	-0.005 (-0.37)	0.045 (0.80)	0.013 (0.22)	0.032 (1.48)	-0.006 (-1.35)
Family size (log TNA)	0.022*** (10.58)	0.034*** (3.22)	0.007 (0.86)	0.005* (1.86)	0.000 (0.10)
Family funds (log)	-0.025*** (-5.93)	0.047** (2.53)	0.030** (1.97)	-0.030*** (-5.30)	-0.005*** (-4.46)
Family age (log)	-0.026*** (-5.29)	0.022 (1.09)	0.004 (0.19)	-0.006 (-1.00)	-0.000 (-0.04)
Family cash	0.001*** (3.27)	0.005* (1.68)	-0.001 (-0.97)	0.001 (1.02)	0.001*** (3.26)
Family expense ratio	0.057*** (7.19)	0.585*** (13.12)	-0.079** (-2.48)	0.097*** (8.14)	0.034*** (7.82)
Family turnover	0.007 (1.64)	0.158*** (4.87)	0.004 (0.28)	-0.010 (-1.46)	0.007*** (2.89)
Family front load	-0.033*** (-4.34)	-0.174*** (-4.18)	0.119*** (3.61)	-0.037*** (-3.28)	-0.014*** (-4.17)
Time dummies	Y	Y	Y	Y	Y
No. of observations	105,299	86,209	49,009	93,492	93,492
Adjusted R^2	0.056	0.402	0.152	0.193	0.351