Race, Discrimination, and Hedge Funds

Yan Lu[a] Narayan Naik[b] Melvyn Teo[c]

[a]University of Central Florida

[b]London Business School

[c]Singapore Management University

Motivation

- The asset management industry suffers from an **inclusion problem**.
- Racial minorities are **severely underrepresented** at the senior management teams of investment firms.
- Media reports allude to **discriminatory practices** directed towards minorities at large asset managers.
- These developments seem to point to **taste-based discrimination** that create barriers to entry for minorities.
- However, a plausible alternative view is that minorities are discriminated against because they are less qualified.

Motivation

- We explore the implications of race for hedge funds.
- Hedge funds collectively manage **US$5.14 trillion of assets** on behalf of societally important institutional investors
- Hedge fund firms tend to be **small, start-up businesses** that may not have policies in place to combat discrimination.
- Investors often interact closely with hedge fund managers as part of the due diligence process therefore manager race is more salient.
- **Homophily induced biases** affecting investors may create barriers to entry for aspiring minority hedge fund managers.

Motivation

- In our work, we distinguish between taste-based discrimination and statistical discrimination
- **Taste-based discrimination**: discrimination against a group based on an observable *non-productive* characteristic (Becker, 1971)
- **Statistical discrimination**: discrimination against a group based on beliefs that individuals from that group are *less productive* (Arrow, 1973; Phelps, 1972)
- To differentiate, we will analyze performance differences between minority and non-minority operated hedge funds.

Research questions

- Do investors discriminate against hedge funds operated by racial minorities?
- Is such investor behavior driven by taste-based or statistical discrimination?
- What are the underlying mechanisms that drive any performance differentials between minorities and nonminorities?
- Why do investors discriminate against minority fund managers, if not for productivity reasons?

Related literature

- **Hedge fund performance:** Agarwal, Daniel, and Naik (2009), Teo (2009), Aggarwal and Jorion (2010), Sun, Wang, and Zheng (2012), Cao, Farnsworth, and Zhang (2021).
  Our contribution: Show that fund manager race shapes investment performance via barriers to entry
- **Discrimination in asset management:** Kumar, Niessen-Ruenzi, and Spalt (2015), Niessen-Ruenzi and Ruenzi (2019), Han, Huang, Kadan, and Wu (2022), Aggarwal and Boyson (2015)
  Our contribution: Provide much stronger evidence of taste-based discrimination that is incongruent with other alternative explanations (e.g., network size)
- **Discrimination in the US judicial system and labor market:** Bertrand and Mullainathan (2004), Alesina and La Ferrara (2014), Arnold, Dobbie, and Yang (2018), Goncalves and Mello (2021)
  Our contribution: Study discrimination against asians in addition to blacks and latinos.

Hedge fund data

- Hedge fund data from Lipper TASS, Morningstar, Hedge Fund Research (HFR) and Barclayhedge from Jan 1994 to Jun 2016
- To alleviate backfill bias (Liang, 2000; Fung and Hsieh, 2009; Bhardwaj, Gorton, and Rowenhorst, 2014), we study fund returns reported post fund listing date.
- For funds from databases that do not collect listing date information we use the Jorion and Schwarz (2019) algorithm to estimate listing date.
- Hedge fund performance is estimated relative to the Fung and Hsieh (2004) seven factor model
- In the union sample, we have a total of 27,751 hedge funds, of which 10,228 are live funds and 17,523 are dead funds.

Race data

- We rely on the Namsor API to predict fund manager race from name.
- We obtain race information for 13,578 managers running 18,696 funds
- For robustness, we will employ alternative racial classifications based on Ye et al (2017), Imai and Khanna (2016), and manager facial photos.
- We supplement the race data with hand-collected LinkedIn data for 2,845 managers operating 4,454 funds.
- The LinkedIn data contain manager education and past employment information as well as fund entry and exit dates.

Summary statistics

Table: Summary statistics

Panel A: Distribution of fund manager race

	All hedge funds		U.S.-based hedge funds		Fund of funds	
Race	Number of managers	Percentage of managers	Number of managers	Percentage of managers	Number of managers	Percentage of managers
White	8783	64.69%	5303	75.50%	1701	70.43%
Asian	2232	16.44%	734	10.45%	242	10.02%
Black	1546	11.39%	678	9.65%	319	13.21%
Hispanic	1017	7.49%	309	4.40%	153	6.34%

Panel B: Distribution of key variables

Variable	Mean	10%	25%	Median	75%	90%	Std dev
MINORITY	0.345	0.000	0.000	0.200	0.500	1.000	0.398
MINORITY_DUMMY	0.225	0.000	0.000	0.000	0.000	1.000	0.418
RETURN	0.630	-3.640	-0.900	0.580	2.006	4.660	6.104
ALPHA	0.406	-2.669	-0.773	0.438	1.500	3.351	1.013
MGTFEE	1.451	0.640	1.000	1.500	2.000	2.000	0.712
PERFFEE	16.521	0.000	15.000	20.000	20.000	20.000	7.611
HWM	0.635	0.000	0.000	1.000	1.000	1.000	0.481
LOCKUP	0.589	0.000	0.000	1.000	1.000	1.000	0.492
LEVERAGE	0.586	0.000	0.000	1.000	1.000	1.000	0.492
AGE	5.758	1.083	2.250	4.500	7.917	12.250	4.826
REDEMPTION	1.547	0.000	0.033	1.000	3.000	3.000	2.337
FUNDSIZE	315.72	2.600	9.820	35.758	132.330	440.946	2297.780

Empirical results: Capital raising

Table: Regressions on hedge fund flow and inception size

	FLOW						log(*INCEPTIONSIZE*)	
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MINORITY	**-3.590***		**-3.298***		**-3.135***		**-0.405****	
	(-2.34)		**(-2.56)**		**(-2.46)**		**(-10.10)**	
MINORITY_DUMMY		**-3.614***		**-3.301***		**-3.130***		**-0.413****
		(-2.32)		**(-2.51)**		**(-2.40)**		**(-10.05)**
RANK_RETURN	5.290**	5.306**						
	(5.62)	(5.63)						
RANK_CAPM			2.556*	2.572*				
			(2.40)	(2.41)				
RANK_FH					3.283**	3.297**		
					(2.90)	(2.90)		
Other fund controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.012	0.012	0.010	0.010	0.010	0.010	0.046	0.043
N	40158	40158	39622	39622	39622	39622	16667	16667

Empirical results: Investment performance

Table: Multivariate regressions on hedge fund performance

	OLS regressions				Fama-Macbeth regressions			
	RETURN	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MINORITY	**0.261****	**0.334****			**0.314****	**0.356****		
	(6.65)	**(8.20)**			**(3.74)**	**(4.79)**		
MINORITY_DUMMY			**0.274****	**0.289****			**0.324****	**0.297****
			(7.35)	**(7.81)**			**(3.71)**	**(4.23)**
MGTFEE	-0.002	-0.011	-0.002	-0.012	0.047	0.031	0.046	0.029
	(-0.07)	(-0.54)	(-0.09)	(-0.58)	(1.17)	(0.96)	(1.15)	(0.90)
PERFFEE	-0.005*	-0.003	-0.005*	-0.002	-0.001	-0.003	-0.001	-0.003
	(-1.98)	(-1.10)	(-2.00)	(-0.80)	(-0.41)	(-0.62)	(-0.42)	(-0.52)
HWM	-0.019	-0.093**	-0.019	-0.077**	-0.006	-0.028	-0.007	-0.003
	(-0.46)	(-3.34)	(-0.46)	(-2.78)	(-0.12)	(-0.62)	(-0.14)	(-0.07)
LOCKUP	-0.018	-0.028	-0.018	-0.029	0.104	0.438	0.094	0.303
	(-0.55)	(-0.76)	(-0.55)	(-0.79)	(0.06)	(0.24)	(0.06)	(0.17)
LEVERAGE	0.052	0.085**	0.052	0.086**	0.038	0.035	0.038	0.038
	(1.90)	(3.64)	(1.89)	(3.67)	(0.95)	(0.98)	(0.94)	(1.08)
AGE	-0.001	-0.010**	-0.001	-0.009**	0.003	-0.014	0.003	-0.012
	(-0.35)	(-4.40)	(-0.36)	(-4.00)	(0.52)	(-1.64)	(0.55)	(-1.49)
REDEMPTION	0.002	-0.000	0.002	0.001	0.018	0.006	0.018	0.006
	(0.24)	(-0.10)	(0.22)	(0.22)	(1.23)	(0.89)	(1.23)	(0.91)
log(*FUNDSIZE*)	0.001	0.032**	0.001	0.034**	0.010	0.040**	0.010	0.041**
	(0.17)	(4.42)	(0.12)	(4.62)	(0.55)	(3.83)	(0.54)	(3.91)
Year-month fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.019	0.001	0.019	0.001	0.063	0.039	0.063	0.039
N	495173	495173	495173	495173	495173	495173	495173	495173

Empirical results: Investment performance

Table: Portfolio sorts on hedge fund manager race

Hedge fund/firm portfolio	Number of funds/firms	Residuals (annualized)	t-statistic of residuals	Alpha from residuals (annualized)	t-statistic of alpha	SNPMRF	SCMLC	BD10RET	BAAMTSY	PTFSBD	PTFSFX	PTFSCOM	Adj. R^2
Panel A: Equal-weighted portfolios													
Portfolio 1 (all minorities)	4,332	4.87	2.42	2.52	1.47	0.28**	0.18**	-1.06	-2.51**	0.00	0.02	0.00	0.400
Portfolio 2	1,776	4.61	2.75	3.36	2.26	0.22**	0.15**	-0.48	-2.34**	0.01	0.01	0.01	0.339
Portfolio 3	1,862	3.47	1.61	3.24	1.54	0.23**	0.14**	0.28	-2.72**	0.02	0.01	-0.01	0.380
Portfolio 4	1,649	2.18	1.27	0.75	0.47	0.19**	0.14**	-1.12	-2.41**	0.00	0.01	0.02*	0.263
Portfolio 5 (no minorities)	10,946	0.16	0.11	-1.46	-1.13	0.16**	0.15**	-1.77**	-2.59**	-0.01	0.02**	0.01	0.305
Spread (1-5)		**4.71***	2.28	**3.98****	2.82	0.12**	0.03*	0.71	0.08	0.01	0.00	-0.01	0.088
Panel B: Excluding hedge funds with AUM ¡ US$50 million													
Portfolio 1 (all minorities)	1,653	3.96	2.93	3.48	2.56	0.24**	0.18**	-0.88	-1.61*	0.00	0.02*	0.01	0.337
Portfolio 2	802	4.92	2.54	4.32	2.26	0.23**	0.16**	-0.33	-2.27*	0.03	0.00	0.01	0.249
Portfolio 3	790	0.92	0.43	-0.52	-0.22	0.15**	0.10	-1.05	-2.52*	-0.00	0.00	0.02	0.099
Portfolio 4	815	0.77	0.33	-0.63	-0.31	0.19**	0.16**	-2.67*	-4.39**	0.01	0.01	0.02	0.210
Portfolio 5 (no minorities)	3,870	-0.90	-0.06	-1.80	-1.59	0.17**	0.14**	-1.13*	-2.52**	-0.01	0.02**	0.01	0.370
Spread (1-5)		**4.86***	2.28	**5.28****	5.40	0.07**	0.04	0.25	0.91	0.01	0.00	0.00	0.107
Panel C: Value-weighted portfolios													
Portfolio 1 (all minorities)	4,332	4.32	1.59	2.70	1.13	0.33**	0.09	-2.15*	-1.63	0.03	0.02	0.02	0.183
Portfolio 2	1,776	5.04	2.44	4.80	2.25	0.15**	0.18**	-0.83	-2.63**	0.03	0.00	0.02	0.163
Portfolio 3	1,862	2.64	1.27	1.32	0.57	0.11**	0.07	-1.47	-1.73	-0.01	0.00	0.01	0.060
Portfolio 4	1,649	1.32	0.53	0.44	0.19	0.18**	0.12*	-1.34	-3.20*	0.02	0.01	0.02	0.129
Portfolio 5 (no minorities)	10,946	-1.20	-0.70	-3.60	-2.35	0.21**	0.13**	-2.66**	-3.43**	-0.02*	0.02*	0.01	0.341
Spread (1-5)		**5.52****	2.95	**6.30****	2.97	0.12**	-0.04	0.51	1.80	0.05	0.00	0.01	0.084

Empirical results: Investment performance

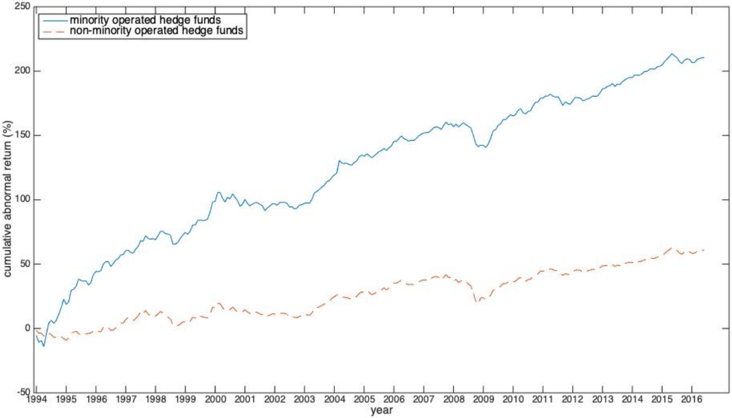

Figure: Cumulative abnormal returns of hedge funds sorted by manager race

Empirical results: Endogeneity

- To tackle endogeneity concerns we adopt a three-prong identification strategy:
- First, to address time invariant differences between minority and nonminority hedge funds, we analyze an **event study of minority manager fund transitions**
- Difference-in-differences estimates from the event study help address observable time varying differences in fund characteristics
- Second, to cater for unobservable time varying differences in fund characteristics we employ an **instrumental variable analysis**
- Our instrument is the proportion of racial minorities at the hedge fund firm founder's hometown.
- Third, to further address endogeneity concerns, we **exploit information in minority manager first names**.

Empirical results: Endogeneity

Table: Event study with difference-in-differences analysis

Fund performance attribute	Before (1)	After (2)	After-before (3)	*t*-statistic (4)
Panel A: Event window = 36 months				
Fund return (percent/month), treatment group	0.400	0.811	0.411	8.69
Fund return (percent/month), control group	0.422	0.331	-0.091	-1.19
Difference in return (percent/month)			**0.502****	5.58
Fund alpha (percent/month), treatment group	0.266	0.778	0.512	3.5
Fund alpha (percent/month), control group	0.252	0.285	0.033	0.21
Difference in alpha (percent/month)			**0.479***	2.33
Panel B: Event window = 24 months				
Fund return (percent/month), treatment group	0.402	0.828	0.426	10.27
Fund return (percent/month), control group	0.420	0.417	-0.003	-0.05
Difference in return (percent/month)			**0.429****	4.96
Fund alpha (percent/month), treatment group	0.268	0.699	0.431	4.30
Fund alpha (percent/month), control group	0.268	0.246	-0.022	-0.15
Difference in alpha (percent/month)			**0.453***	2.54
Panel C: Event window = 60 months				
Fund return (percent/month), treatment group	0.408	0.822	0.414	8.23
Fund return (percent/month), control group	0.417	0.325	-0.092	-1.21
Difference in return (percent/month)			**0.506****	5.60
Fund alpha (percent/month), treatment group	0.269	0.781	0.512	3.49
Fund alpha (percent/month), control group	0.256	0.277	0.021	0.14
Difference in alpha (percent/month)			**0.491***	2.36

Empirical results: Endogeneity

Table: Racial composition of hedge fund management teams

	Dependent variables							
	WHITE	*BLACK*	*ASIAN*	*LATINO*	*WHITE*	*BLACK*	*ASIAN*	*LATINO*
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Team racial percentages computed after including hedge fund firm founder								
HOMETOWN_WHITE	5.079**				5.476**			
	(4.43)				(4.54)			
HOMETOWN_BLACK		3.216*				3.890*		
		(2.04)				(2.45)		
HOMETOWN_ASIAN			10.249**				11.191**	
			(3.71)				(3.96)	
HOMETOWN_LATINO				52.075**				58.387**
				(9.29)				(8.90)
Team size fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.225	0.074	0.082	0.414	0.290	0.155	0.132	0.475
N	1729	1729	1729	1729	1729	1729	1729	1729
Panel B: Team racial percentages computed after excluding hedge fund firm founder								
HOMETOWN_WHITE	3.876**				3.782**			
	(5.16)				(5.09)			
HOMETOWN_BLACK		3.216*				3.890*		
		(2.04)				(2.45)		
HOMETOWN_ASIAN			10.249**				11.191**	
			(3.71)				(3.96)	
HOMETOWN_LATINO				21.703**				23.144**
				(3.25)				(3.68)
Team size fixed effects	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.225	0.074	0.082	0.167	0.290	0.155	0.132	0.253
N	1729	1729	1729	1729	1729	1729	1729	1729

Empirical results: Endogeneity

Table: Instrumental variable analysis

	IV first stage		IV second stage				OLS regressions			
	MINORITY	*MINORITY _DUMMY*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MINORITY			**1.248***	**1.145****			**0.418****	**0.762****		
			(2.35)	**(4.65)**			**(5.47)**	**(9.24)**		
MINORITY_DUMMY					**1.205***	**0.419***			**0.449****	**0.627****
					(2.35)	**(2.50)**			**(5.62)**	**(7.59)**
MGTFEE	-0.009	0.002	0.089	0.032	0.075	0.033	0.088	0.041	0.083	0.020
	(-0.38)	(0.08)	(1.18)	(0.48)	(1.02)	(0.47)	(1.18)	(0.66)	(1.12)	(0.30)
PERFFEE	0.002	0.003	0.003	0.022**	0.001	0.023**	0.005	0.022**	0.004	0.023**
	(0.78)	(1.33)	(0.38)	(3.92)	(0.21)	(3.96)	(0.65)	(4.14)	(0.57)	(4.24)
HWM	0.030	0.008	0.022	-0.005	0.050	0.026	0.036	0.002	0.046	0.031
	(0.77)	(0.24)	(0.25)	(-0.06)	(0.60)	(0.30)	(0.43)	(0.02)	(0.55)	(0.37)
LOCKUP	0.058	0.032	-0.016	-0.124	0.018	-0.097	0.017	-0.111	0.028	-0.102
	(1.34)	(0.78)	(-0.14)	(-1.01)	(0.17)	(-0.80)	(0.17)	(-0.99)	(0.28)	(-0.90)
LEVERAGE	-0.016	-0.009	0.024	-0.036	0.016	-0.038	0.014	-0.040	0.012	-0.034
	(-0.54)	(-0.34)	(0.30)	(-0.45)	(0.19)	(-0.47)	(0.18)	(-0.50)	(0.14)	(-0.42)
AGE	-0.003	-0.003	-0.020	-0.017*	-0.020	-0.018*	-0.022	-0.018*	-0.022	-0.017*
	(-0.94)	(-1.08)	(-1.57)	(-2.02)	(-1.56)	(-2.05)	(-1.70)	(-2.21)	(-1.69)	(-2.00)
REDEMPTION	-0.001	0.005	0.005	-0.008	-0.002	-0.005	0.008	-0.007	0.005	-0.005
	(-0.08)	(0.72)	(0.32)	(-0.61)	(-0.11)	(-0.39)	(0.55)	(-0.62)	(0.37)	(-0.44)
log(*FUNDSIZE*)	0.000	0.004	-0.039	0.002	-0.043	0.003	-0.033	0.003	-0.035	0.003
	(0.06)	(0.54)	(-1.37)	(0.13)	(-1.47)	(0.19)	(-1.22)	(0.15)	(-1.30)	(0.19)
HOMETOWN_MINORITY	**1.849****	**1.916****								
	(4.94)	**(5.49)**								
F-test: *HOMETOWN_MINORITY* = 0	**24.40**	**30.14**								
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.157	0.401	0.014	0.006	0.014	0.006	0.014	0.008	0.014	0.007
N	41192	41192	41192	41192	41192	41192	41192	41192	41192	41192

Empirical results: Endogeneity

Table: Exploiting information in manager first names

Independent variable	Dependent variable *RETURN* (1)	*ALPHA* (2)	*RETURN* (3)	*ALPHA* (4)
MINORITY	0.150**	0.290**		
	(2.72)	(7.19)		
MINORITY_DUMMY			0.206**	0.203**
			(3.37)	(6.54)
NONENGLISH_FIRSTNAME	-0.083		0.044	
	(-0.76)		(0.43)	
NONENGLISH_FIRSTNAME_DUMMY		-0.006		0.040
		(-0.07)		(0.70)
*MINORITY*NONENGLISH_FIRSTNAME*	**0.527****	**0.344***		
	(4.21)	(2.47)		
*MINORITY_DUMMY*NONENGLISH_FIRSTNAME_DUMMY*			**0.479****	**0.406****
			(3.84)	(3.77)
Fund controls	Yes	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes
R^2	0.021	0.009	0.021	0.009
N	495173	495173	495173	495173

Empirical results: Underlying mechanisms

Table: Manager characteristics of portfolios sorted by fund manager race

Hedge fund/fund manager portfolio	College SAT score	Manager quality Fraction with Ivy League degrees	Fraction with degrees from top 10 US colleges	Fraction with post graduate degrees	Fraction with PhDs	Number of Conferences	Manager network Share class	Databases
Panel A: Hedge funds sorted by manager race								
Portfolio 1 (all minorities)	1422.39	0.154	0.151	0.140	0.069	0.067	1.892	1.543
Portfolio 2	1390.63	0.080	0.076	0.074	0.029	0.053	1.734	1.432
Portfolio 3	1408.12	0.058	0.055	0.071	0.021	0.061	1.632	1.556
Portfolio 4	1382.82	0.062	0.040	0.065	0.015	0.072	1.667	1.319
Portfolio 5 (no minorities)	1398.24	0.073	0.078	0.066	0.016	0.045	1.539	1.308
Spread (1-5)	23.15*	0.081**	0.073**	0.074**	0.053**	0.022*	0.353**	0.235**
Panel B: Fund managers sorted by manager race								
Portfolio A (minorities)	1429.36	0.234	0.224	0.225	0.067	0.069	1.745	1.556
Portfolio B (non-minorities)	1380.45	0.070	0.068	0.087	0.022	0.055	1.634	1.342
Spread (A-B)	48.91**	0.164**	0.156**	0.138**	0.045**	0.014*	0.111*	0.214**

Empirical results: Discussion

Table: Fund of fund loadings on race factors derived from hedge fund returns

			FOF portfolio		
Hedge fund portfolio	FOFWHITE	FOFASIAN	FOFBLACK	FOFLATINO	FOFALL
Panel A: Equal-weighted portfolios					
HFWHITE	**4.417****	**0.129****	**0.289****	**0.298****	**2.752***
	(12.52)	**(5.38)**	**(4.58)**	**(3.36)**	**(2.36)**
HFASIAN	-0.234**	**0.029****	-0.009	-0.002	-0.219
	(-4.14)	**(7.60)**	(-0.85)	(-0.16)	(-1.18)
HFBLACK	0.139	0.116**	**0.148****	-0.015	0.058
	(0.67)	(8.19)	**(3.97)**	(-0.29)	(0.08)
HFLATINO	2.040	0.440	-1.153	**5.372****	3.740
	(0.30)	(0.95)	(-0.94)	**(3.13)**	(0.17)
Adj R^2	0.737	0.874	0.576	0.220	0.136
N	258	258	258	258	258
Panel B: Value-weighted portfolios					
HFWHITE	**4.460****	**0.140****	**0.290****	**0.341****	**3.979****
	(12.76)	**(5.62)**	**(7.03)**	**(4.16)**	**(3.82)**
HFASIAN	-0.208**	**0.038****	-0.005	-0.002	-0.047
	(-3.28)	**(8.34)**	(-0.68)	(-0.12)	(-0.25)
HFBLACK	0.026	0.099**	**0.140****	-0.057	0.006
	(0.12)	(6.54)	**(5.57)**	(-1.15)	(0.01)
HFLATINO	0.579	0.575	-0.170	**5.275****	1.042
	(0.08)	(1.16)	(-0.21)	**(3.23)**	(0.05)
Adj R^2	0.740	0.874	0.768	0.239	0.238
N	258	258	258	258	258

Empirical results: Robustness tests

Table: Robustness tests

OLS regressions				Fama-Macbeth regressions			
Independent variable							
MINORITY		*MINORITY_DUMMY*		*MINORITY*		*MINORITY_DUMMY*	
Dependent variable							
RETURN	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Panel A: Alternative racial classification based on the Ye at al. (2017) *NamePrism* algorithm							
0.349**	0.432**	0.385**	0.437**	0.269**	0.259**	0.331**	0.284**
(7.88)	(10.17)	(8.89)	(9.94)	(4.50)	(3.09)	(5.32)	(3.09)
Panel B: Alternative racial classification based on Imai and Khanna (2016)							
0.377**	0.471**	0.384**	0.375**	0.280**	0.349**	0.281**	0.263**
(10.14)	(13.67)	(10.26)	(12.71)	(4.75)	(6.24)	(4.70)	(5.62)
Panel C: Race determined using manager facial photos							
0.449**	0.318*	0.455**	0.325*	0.640**	0.506	0.675**	0.527
(3.90)	(2.32)	(3.90)	(2.36)	(3.11)	(1.73)	(3.33)	(1.80)
Panel D: Subsample period (1994 - 2004)							
0.195	0.285**	0.204	0.224**	0.319*	0.349**	0.334*	0.316*
(1.88)	(3.46)	(1.89)	(2.66)	(2.09)	(2.82)	(2.03)	(2.54)
Panel E: Subsample period (2005 - 2016)							
0.274**	0.330**	0.289**	0.292**	0.292**	0.345**	0.322**	0.294**
(6.68)	(7.47)	(7.30)	(7.36)	(5.22)	(6.80)	(5.65)	(6.56)
Panel F: Single manager hedge funds							
0.422**	0.609**	0.422**	0.605**	0.451**	0.568**	0.452**	0.562**
(6.56)	(5.63)	(6.50)	(5.55)	(4.60)	(6.81)	(4.59)	(6.75)
Panel G: Team managed hedge funds							
0.151**	0.180**	0.165**	0.168**	0.231**	0.312**	0.280**	0.316**
(4.32)	(6.22)	(5.07)	(6.39)	(4.77)	(4.86)	(5.24)	(5.86)
Panel H: Controlling for aggregate diversity							
0.278*	0.487**	0.359**	0.404**	0.178	0.451**	0.289	0.364**
(2.56)	(7.54)	(2.89)	(7.81)	(1.27)	(4.91)	(1.92)	(3.93)
Panel I: Alternative investment strategy classification							
0.258**	0.340**	0.273**	0.290**	0.373**	0.466**	0.402**	0.394**
(6.81)	(7.79)	(7.58)	(7.37)	(8.38)	(11.65)	(8.74)	(11.02)
Panel J: Controlling for the fraction of female managers							
0.199**	0.269**	0.212**	0.248**	0.462*	0.552*	0.504*	0.590*
(5.82)	(7.04)	(6.66)	(7.15)	(2.21)	(2.04)	(2.14)	(2.30)
Panel K: Minorities comprise blacks and latinos only							
0.106*	0.412**	0.152**	0.508**	0.164*	0.286**	0.259**	0.401**
(2.42)	(3.63)	(3.52)	(3.79)	(1.98)	(3.79)	(2.80)	(4.92)

Conclusion

- We provide strong and novel evidence of taste-based discrimination against racial minorities in the hedge fund industry
- Investors direct lower flows and allocate less start-up capital to minority managed hedge funds
- Inconsistent with a statistical model of discrimination, minority operated hedge funds deliver higher alphas, sharpe ratios, information ratios, MPPMs, and value added skill measures.
- Minority fund managers are also better educated, better trained, and more judicious when managing risk
- Investors appear to shun minority led hedge funds due to in-group bias and a belief that non-minority managers deliver superior performance.
- Our baseline results extend to mutual funds $=>$ racial bias is pervasive in asset management.

Appendix: Summary statistics

Table: Summary statistics

Panel C: Correlations with race variables

Variable	*MINORITY*	*MINORITY_DUMMY*
MINORITY	1.000	
MINORITY_DUMMY	0.875	1.000
RETURN	0.016	0.013
ALPHA	0.008	0.008
MGTFEE	-0.024	-0.028
PERFFEE	0.089	0.012
HWM	0.095	0.008
LOCKUP	0.042	0.026
LEVERAGE	0.008	-0.002
AGE	0.114	0.063
REDEMPTION	0.064	0.022
log(*FUNDSIZE*)	0.004	-0.035

Appendix: Summary statistics

Table: Summary statistics

Panel D: Fund characteristics of minority versus non-minority managed hedge funds

Variable	Minority managed funds	Non-minority managed funds	Difference
RETURN	0.897	0.524	0.373**
ALPHA	0.619	0.341	0.278**
MGTFEE	1.419	1.461	-0.042**
PERFFEE	16.714	16.462	0.252**
HWM	0.673	0.482	0.191**
LOCKUP	0.493	0.415	0.078**
LEVERAGE	0.567	0.491	0.076**
AGE	6.229	4.765	1.464**
REDEMPTION	1.612	1.528	0.084**
FUNDSIZE	390.65	294.830	95.820**

Appendix: Race specific variables

Table: Multivariate regressions on hedge fund flow with race specific variables

	FLOW								
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ASIAN	-6.314**	-5.987**	-5.928**						
	(-4.71)	(-4.53)	(-4.48)						
BLACK				-4.829	-4.346	-4.265			
				(-1.77)	(-1.54)	(-1.52)			
LATINO							-8.988	-8.313	-8.267
							(-1.89)	(-1.73)	(-1.72)
RANK_RETURN	3.786**			3.748**			3.716**		
	(6.00)			(6.02)			(5.92)		
RANK_CAPM		2.106**			2.086**			2.048**	
		(2.74)			(2.72)			(2.65)	
RANK_FH			3.204**			3.201**			3.190**
			(4.11)			(4.15)			(4.12)
Other fund controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
N	40151	39629	39629	40151	39629	39629	40151	39629	39629

Appendix: Race specific variables

Table: Multivariate regressions on hedge fund performance with race specific variables

	RETURN			ALPHA			RETURN	ALPHA
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ASIAN	0.239**			0.210**			0.253**	0.236**
	(2.80)			(2.91)			(2.85)	(5.15)
BLACK		0.135**			0.130**		0.159**	0.159**
		(3.50)			(3.14)		(3.12)	(3.79)
LATINO			0.075			0.332	0.103	0.359
			(1.28)			(1.12)	(1.08)	(1.21)
Fund controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.019	0.019	0.019	0.001	0.001	0.001	0.019	0.019
N	495173	495173	495173	495173	495173	495173	495173	495173

Appendix: Race specific variables

Table: Multivariate regressions on hedge fund flow with race specific variables

	FLOW					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
EAST_ASIAN	-7.285**	-6.548**	-6.528**			
	(-3.59)	(-3.26)	(-3.24)			
SOUTH_ASIAN				-8.773**	-8.484**	-8.521**
				(-5.09)	(-4.73)	(-4.64)
RANK_RETURN	3.309**			4.151**		
	(3.83)			(4.93)		
RANK_CAPM		1.457			2.566**	
		(1.84)			(3.17)	
RANK_FH			2.585*			3.478**
			(2.48)			(3.17)
Other fund controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.009	0.009	0.009	0.010	0.010	0.010
N	40131	39611	39611	40131	39611	39611

Appendix: Race specific variables

Table: Multivariate regressions on hedge fund performance with race specific variables

	RETURN		*ALPHA*	
Independent variable	(1)	(2)	(3)	(4)
EAST_ASIAN	0.674**		0.681**	
	(5.28)		(8.48)	
SOUTH_ASIAN		0.504**		0.617**
		(6.80)		(12.98)
Fund controls	Yes	Yes	Yes	Yes
Year-month fixed effects	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes
R^2	0.019	0.019	0.001	0.001
N	495146	495146	495146	495146

Appendix: Investment performance

Table: Portfolio sorts on hedge fund manager race, robustness

Risk model	Portfolio	Alpha	*t*-statistic of alpha	HML	UMD	RMW	CMA	PS	BAB	MACRO	CALL	PUT	EM	Adj R^2
Panel A: Equal-weighted portfolios														
FH (24-month rolling betas)	Spread (1-5)	4.332**	3.04											0.289
FH (with structural breaks)	Spread (1-5)	5.820**	5.16											0.191
FH + HML + UMD	Spread (1-5)	6.284**	5.56	-0.080**	-0.007									0.168
FH + RMW + CMA	Spread (1-5)	6.852**	6.11			-0.001**	-0.001*							0.175
FH + PS	Spread (1-5)	6.203**	5.37					0.009						0.145
FH + BAB	Spread (1-5)	6.585**	5.59						-0.045					0.151
FH + MACRO	Spread (1-5)	6.209**	5.20							-0.038				0.148
FH + CALL + PUT	Spread (1-5)	5.714**	5.31								-0.142	-0.128		0.149
FH + EM	Spread (1-5)	6.097**	5.40										1.630	0.147
Panel B: Excluding hedge funds with AUM < US$50 million														
FH (24-month rolling betas)	Spread (1-5)	3.144*	2.48											0.307
FH (with structural breaks)	Spread (1-5)	3.660**	4.99											0.281
FH + HML + UMD	Spread (1-5)	4.432**	6.09	-0.032	-0.002									0.191
FH + RMW + CMA	Spread (1-5)	4.739**	6.22			-0.001*	-0.000							0.199
FH + PS	Spread (1-5)	4.489**	6.01					0.002						0.177
FH + BAB	Spread (1-5)	4.905**	6.21						-0.048*					0.198
FH + MACRO	Spread (1-5)	4.151**	5.44							0.051*				0.192
FH + CALL + PUT	Spread (1-5)	3.987**	4.88								-0.217	-0.073		0.199
FH + EM	Spread (1-5)	4.497**	6.52										7.068**	0.260

Appendix: Investment performance

Table: Portfolio sorts on hedge fund manager race, robustness

Risk model	Portfolio	Alpha	*t*-statistic of alpha	HML	UMD	RMW	CMA	PS	BAB	MACRO	CALL	PUT	EM	Adj R^2
Panel C: Value-weighted portfolios														
FH (24-month rolling betas)	Spread (1-5)	4.368**	4.53											0.186
FH (with structural breaks)	Spread (1-5)	5.484**	4.60											0.166
FH + HML + UMD	Spread (1-5)	5.477**	4.44	0.045	0.020									0.049
FH + RMW + CMA	Spread (1-5)	5.770**	4.65			-0.000	0.000							0.045
FH + PS	Spread (1-5)	5.885**	4.66					-0.009						0.043
FH + BAB	Spread (1-5)	5.759**	4.75						-0.005					0.041
FH + MACRO	Spread (1-5)	5.464**	4.26							0.061				0.047
FH + CALL + PUT	Spread (1-5)	5.936**	4.48								-0.057	0.217		0.052
FH + EM	Spread (1-5)	5.708**	4.60										0.475	0.042
Panel D: Hedge fund firms														
FH (24-month rolling betas)	Spread (1-5)	4.680**	3.61											0.284
FH (with structural breaks)	Spread (1-5)	6.468**	5.72											0.174
FH + HML + UMD	Spread (1-5)	6.875**	5.99	-0.075**	-0.008									0.150
FH + RMW + CMA	Spread (1-5)	7.371**	6.47			-0.001*	-0.001*							0.155
FH + PS	Spread (1-5)	6.781**	5.76					0.010						0.131
FH + BAB	Spread (1-5)	7.055**	5.90						-0.034					0.134
FH + MACRO	Spread (1-5)	6.807**	5.60							-0.038				0.133
FH + CALL + PUT	Spread (1-5)	6.331**	5.77								-0.131	-0.123		0.134
FH + EM	Spread (1-5)	6.697**	5.84										1.736	0.133

Appendix: Event study

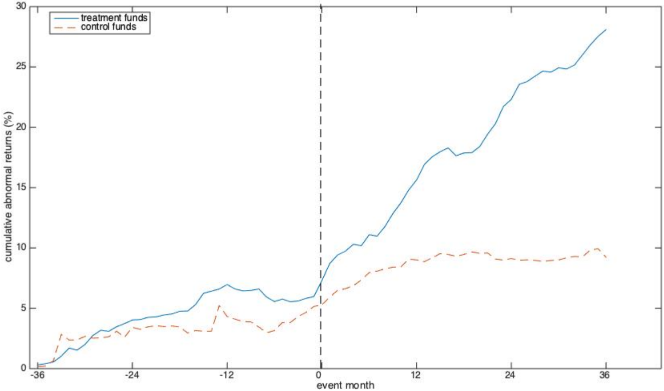

Figure: Event study analysis of minority fund manager additions to hedge fund management teams

Appendix: Event study

Table: Event study with difference-in-differences when firms hire non-minorities

Fund performance attribute	Before (1)	After (2)	After-before (3)	*t*-statistic (4)
Panel A: Event window = 36 months				
Fund return (percent/month), treatment group	0.413	0.211	-0.202	-7.32
Fund return (percent/month), control group	0.417	0.409	-0.008	-0.09
Difference in return (percent/month)			**-0.194***	-2.00
Fund alpha (percent/month), treatment group	0.215	0.112	-0.103	-1.85
Fund alpha (percent/month), control group	0.256	0.372	0.116	2.22
Difference in alpha (percent/month)			**-0.219****	-2.87
Panel B: Event window = 24 months				
Fund return (percent/month), treatment group	0.416	0.281	-0.135	-14.41
Fund return (percent/month), control group	0.440	0.475	0.035	1.16
Difference in return (percent/month)			**-0.170****	-5.36
Fund alpha (percent/month), treatment group	0.215	0.154	-0.061	-1.56
Fund alpha (percent/month), control group	0.269	0.357	0.088	1.76
Difference in alpha (percent/month)			**-0.149***	-2.35
Panel C: Event window = 48 months				
Fund return (percent/month), treatment group	0.416	0.205	-0.211	-17.30
Fund return (percent/month), control group	0.438	0.458	0.020	0.69
Difference in return (percent/month)			**-0.231****	-5.45
Fund alpha (percent/month), treatment group	0.215	0.118	-0.097	-1.67
Fund alpha (percent/month), control group	0.259	0.326	0.067	1.21
Difference in alpha (percent/month)			**-0.164***	-2.04

Appendix: U.S.-based hedge funds

Table: Multivariate regressions on hedge fund flow with U.S.-based hedge funds

	FLOW					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
MINORITY	-4.385**		-4.840**		-4.543**	
	(-4.05)		(-5.47)		(-5.11)	
MINORITY_DUMMY		-4.220**		-4.636**		-4.327**
		(-3.88)		(-5.29)		(-4.94)
RANK_RETURN	6.737**	6.749**				
	(7.35)	(7.54)				
RANK_CAPM			4.644**	4.638**		
			(4.89)	(4.89)		
RANK_FH					5.238**	5.253**
					(3.95)	(3.98)
Other fund controls	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.014	0.014	0.015	0.015	0.016	0.015
N	20731	20731	20470	20470	20470	20470

Appendix: U.S.-based hedge funds

Table: Multivariate regressions on hedge fund performance with U.S.-based hedge funds

	OLS regressions				Fama-Macbeth regressions			
	RETURN	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MINORITY	0.293**	0.379**			0.366**	0.378**		
	(6.29)	(9.62)			(3.64)	(5.45)		
MINORITY_DUMMY			0.318**	0.307**			0.386**	0.308**
			(6.62)	(8.69)			(3.69)	(4.63)
MGTFEE	0.036	-0.007	0.035	-0.012	0.050	0.016	0.049	0.012
	(1.12)	(-0.32)	(1.08)	(-0.51)	(1.36)	(0.59)	(1.33)	(0.46)
PERFFEE	-0.002	0.003	-0.002	0.003	0.004	0.002	0.004	0.002
	(-0.35)	(0.85)	(-0.35)	(0.83)	(0.78)	(0.42)	(0.77)	(0.38)
HWM	0.049	-0.027	0.047	-0.015	0.053	0.014	0.049	0.040
	(1.17)	(-0.68)	(1.12)	(-0.37)	(0.71)	(0.26)	(0.64)	(0.72)
LOCKUP	0.016	0.009	0.016	0.020	2.129	0.971	2.235	1.169
	(0.35)	(0.17)	(0.35)	(0.38)	(0.33)	(0.22)	(0.35)	(0.26)
LEVERAGE	0.023	0.058	0.022	0.064*	-0.008	0.035	-0.009	0.041
	(0.78)	(1.88)	(0.75)	(2.08)	(-0.17)	(0.70)	(-0.17)	(0.84)
AGE	0.002	-0.006*	0.002	-0.005	0.008	-0.008	0.008	-0.008
	(0.70)	(-2.34)	(0.70)	(-1.92)	(1.34)	(-0.96)	(1.35)	(-0.87)
REDEMPTION	0.009	0.004	0.009	0.005	0.018	0.000	0.017	-0.001
	(1.39)	(1.08)	(1.36)	(1.26)	(0.69)	(0.03)	(0.68)	(-0.07)
log(*FUNDSIZE*)	-0.003	0.038**	-0.003	0.039**	0.002	0.031*	0.002	0.032*
	(-0.24)	(3.83)	(-0.29)	(3.94)	(0.09)	(2.32)	(0.08)	(2.42)
Year-month fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.021	0.006	0.021	0.006	0.085	0.055	0.085	0.055
N	238833	238833	238833	238833	238833	238833	238833	238833

Appendix: Mutual funds

Table: Race and mutual fund flows

	FLOW					
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
MINORITY	**-0.461****		**-0.486****		**-0.541****	
	(-4.93)		**(-4.41)**		**(-5.04)**	
MINORITY_DUMMY		**-0.567****		**-0.565****		**-0.589****
		(-8.03)		**(-9.82)**		**(-10.01)**
RANK_RETURN	2.981**	2.980**				
	(7.95)	(7.88)				
RANK_CAPM			2.221**	2.219**		
			(31.05)	(31.11)		
RANK_CARHART					2.046**	2.045**
					(23.44)	(23.60)
EXPENSE	-0.353**	-0.372**	-0.322**	-0.340**	-0.349**	-0.365**
	(-9.74)	(-11.03)	(-7.62)	(-8.99)	(-8.23)	(-9.61)
LOAD	-0.025*	-0.022	0.005	0.008	0.005	0.009
	(-2.01)	(-1.72)	(0.28)	(0.47)	(0.33)	(0.55)
log(*TNA*)	-0.324**	-0.325**	-0.332**	-0.333**	-0.339**	-0.340**
	(-4.32)	(-4.30)	(-4.30)	(-4.28)	(-4.33)	(-4.32)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.082	0.083	0.080	0.081	0.079	0.080
N	47037	47037	45970	45970	45970	45970

Appendix: Mutual funds

Table: Race and mutual fund performance

Panel A: Portfolio sorts on mutual fund manager race

Mutual fund portfolio	Number of funds	Excess return	t-stat of excess return	Alpha	t-stat of alpha	RMRF	SMB	HML	UMD	Adj. R^2
Portfolio 1 (all minorities)	705	7.56**	10.49	1.11	1.78	0.94**	0.28**	-0.07**	0.01	0.962
Portfolio 2	2,504	6.72**	8.28	-0.11	-0.17	0.97**	0.33**	-0.01	0.01	0.965
Portfolio 3	2,998	8.76**	11.96	-0.27	-0.41	0.94**	0.30**	0.00	0.00	0.961
Portfolio 4	3,913	4.32**	4.72	-1.43*	-2.44	0.96**	0.35**	-0.02	0.02	0.967
Portfolio 5 (no minorities)	16,180	4.68**	8.07	-2.61**	-6.45	0.94**	0.34**	-0.02	0.02	0.965
Spread (1-5)		**2.88****	3.07	**3.73****	5.52	0.00	-0.06**	-0.05**	-0.01	0.138

Panel B: Multivariate regressions on mutual fund performance

	OLS regressions				Fama-Macbeth regressions			
	RETURN	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*	*RETURN*	*ALPHA*
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MINORITY	**0.056****	**0.041****			**0.111**	**0.044***		
	(3.67)	**(3.10)**			**(1.93)**	**(2.40)**		
MINORITY_DUMMY			**0.026****	**0.026****			**0.038**	**0.030***
			(3.79)	**(2.81)**			**(0.84)**	**(2.59)**
EXPENSE	-0.094**	-0.072**	-0.095**	-0.072**	-0.011	-0.065**	-0.005	-0.065**
	(-4.88)	(-3.98)	(-4.93)	(-3.98)	(-0.19)	(-7.07)	(-0.08)	(-7.11)
LOAD	0.002	0.001	0.002	0.001	-0.185	-0.221	-0.196	-0.235
	(0.98)	(0.81)	(0.87)	(0.71)	(-0.15)	(-1.62)	(-0.16)	(-1.74)
log(*TNA*)	-0.026**	0.006	-0.025**	0.006	-0.010	0.009**	-0.016	0.009**
	(-3.24)	(1.08)	(-3.19)	(1.10)	(-0.44)	(4.80)	(-0.67)	(4.72)
Year-month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strategy fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team size fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.068	0.020	0.068	0.020	0.439	0.360	0.442	0.360
N	514587	514587	514587	514587	514587	514587	514587	514587