Internet Appendix for "Business Networks, Corporate Governance, and Contracting in the Mutual Fund Industry"*

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Table IA.I
Predictors of Advisory Firms Winning Subadvisory Contracts – Robustness Checks

The table shows the coefficient estimates from the conditional logit model of subadvisor selection in equation (1) in the paper. Each fund hiring a subadvisor at time t can choose among 19 firms actively managing funds at $t-1$ and the chosen candidate. In Panel A, the 19 alternative advisory firms are selected at random over 100 repetitions (bootstrap method). In Panel B, the 19 alternatives are those advisors with the highest propensity score to be selected based on non-connection measures only. In Panel C, they are the 19 advisors with the closest propensity score to the chosen firm to be selected based on non-connection measures only. The dependent variable is a dummy equal to one for the fund-candidate subadvisor pairs that contracted with each other at t. Standard errors are adjusted for heteroskedasticity and correlation among observations belonging to the same fund-year. t-statistics are in parentheses. All independent variables refer to characteristics of the candidate subadvisor, and are defined in Table I of the paper.

Dependent variable	Indicator equal to one if the fund hired the candidate advisory firm						
Panel A: Each fund can select from a set of 20 advisory firms: the chosen one and 19 others selected at random (bootstrap method, 100 repetitions)							
$AdvisorBoardInfluence_{t-1}$			88.29				
			(6.25)***				
$AdvisorBoardInfluence_{t-3,t-1}$				89.93			
				(3.10)***			
$AdvisorBoardJointDegree_{t-1}$					0.09		
					(3.42)**		
$AdvisorBoardJointdDegree_{t-3,t-1}$						0.07	
						(1.91)*	
$AdvisorBoardRelationshipLength_{t-1}$							1.09
							(8.40)***
$CandidateAdvisorPrimaryAdvisorJointDegree_{t-1}$		0.43	0.12	0.23	0.39	0.42	0.26
		(2.31)**	(1.08)	(1.47)	(2.08)**	(2.22)**	(1.83)*
$AdvisorDegree_{t-1}$		0.01	0.01	0.01	0.01	0.01	0.01
		(7.06)***	(5.28)***	(5.50)***	(6.06)***	(6.44)***	(2.95)***
$AdvisorAge_{t-1}$	–0.06	–0.04	–0.02	–0.05	–0.03	–0.04	–0.08
	(–5.03)**	(–1.81)*	(–0.73)	(–1.88)*	(–1.43)	(–1.77)*	(–2.91)***
$AdvisorFractionFundsInCategory_{t-1}$	1.36	1.25	1.23	1.25	1.24	1.25	1.26
	(15.19)***	(14.00)***	(14.24)***	(13.46)***	(14.04)***	(14.05)***	(13.01)***
$AdvisorLnAssetsUnderManagement_{t-1}$	0.39	0.21	0.23	0.22	0.20	0.21	0.23
	(32.38)***	(11.96)***	(10.48)***	(11.25)***	(11.23)***	(11.92)***	(11.56)***
$AdvisorPerformance_{t-1}$	–0.02	–0.00	–0.03	–0.01	0.00	0.00	–0.01
	(–2.02)**	(–0.09)	(–2.01)**	(–0.60)	(0.42)	(0.21)	(–0.49)
$AdvisorManagementFee_{t-1}$	–0.51	–0.52	–0.65	–0.57	–0.53	–0.53	–0.41
	(–7.33)***	(–6.30)***	(–6.96)***	(–6.61)***	(–6.22)***	(–6.29)***	(–4.44)***
Pseudo R^2	0.15	0.28	0.38	0.32	0.28	0.28	0.32
Observations	5,140	5,140	5,140	5,140	5,140	5,140	5,140

Panel B: Each fund can select from 20 advisory firms: the chosen firm and the 19 others with the highest propensity score to be selected based on non-connection measures only							
$AdvisorBoardInfluence_{t-1}$			41.30				
			(5.15)***				
$AdvisorBoardInfluence_{t-3,t-1}$				29.71			
				(2.79)***			
$AdvisorBoardJointDegree_{t-3,t-1}$						0.10	
						(1.28)	
$AdvisorBoardJointDegree_{t-1}$					0.11		
					(2.70)***		
$AdvisorBoardRelationshipLength_{t-1}$							0.86
							(3.45)***
$CandidateAdvisor - PrimaryAdvisorDegree_{t-1}$		0.14	0.08	0.11	0.12	0.13	0.10
		(5.81)***	(2.87)***	(4.24)***	(4.83)***	(5.15)***	(3.51)***
$AdvisorDegree_{t-1}$		0.02	0.02	0.02	0.02	0.02	0.01
		(4.51)***	(4.08)***	(4.04)***	(4.21)***	(4.10)***	(2.71)***
Controls as in Panel A	YES	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.82	0.86	0.88	0.87	0.87	0.86	0.87
Observations	5,140	5,140	5,140	5,140	5,140	5,140	5,140

Panel C: Each fund can select from 20 advisory firms: the chosen firm and the 19 others with the closest propensity score to be selected based on non-connection measures only							
$AdvisorBoardInfluence_{t-1}$			56.58				
			(9.57)***				
$AdvisorBoardInfluence_{t-3,t-1}$				41.97			
				(5.26)***			
$AdvisorBoardJointDegree_{t-3,t-1}$						0.04	
						(1.10)	
$AdvisorBoardJointDegree_{t-1}$					0.06		
					(3.56)***		
$AdvisorBoardRelationshipLength_{t-1}$							0.96
							(7.95)***
$CandidateAdvisor - PrimaryAdvisorDegree_{t-1}$		0.17	0.05	0.10	0.16	0.17	0.09
		(9.01)***	(2.38)**	(4.41)***	(8.15)***	(8.56)***	(5.20)***
$AdvisorDegree_{t-1}$		0.01	0.01	0.01	0.01	0.01	0.01
		(6.31)***	(5.05)***	(5.43)***	(6.00)***	(6.02)***	(2.74)***
Controls as in Panel A	YES	YES	YES	YES	YES	YES	YES
Pseudo R^2	0.00	0.12	0.23	0.16	0.13	0.12	0.16
Observations	5,140	5,140	5,140	5,140	5,140	5,140	5,140

* significant at 10%; ** significant at 5%; *** significant at 1%

Table IA.II
Predictors of Directors Winning Board Seats – Robustness Checks

The table shows the coefficient estimates from the logit model of director selection in section #A.2 in the paper. In Panel A I analyze director choices only in new funds created in new fund companies in 1998. The potential candidate directors the fund advisor can choose from are all the directors actively overseeing funds anytime between 1993 to 1997 who are also active at some time during 1998 to 2002. In Panel B the sample of alternative directors a fund can choose from includes the selected directors, and 20 others picked at random over 100 repetitions (bootstrap method). All new funds created in 1998 are included in the analysis. In Panel C, I analyze director selection in all new funds created in 1998 except those in families with large overlap across directors serving multiple companies in the family. The overlap is given by the standard deviation across directors of the number of companies in the family whose funds they oversee. In this example, funds in families where this standard deviation is below five are excluded. Choosing a different threshold yields similar results. In Panels B and C directors already working for the fund company that the newly born fund is a part of are not included. The dependent variable is equal to one for the fund-director pairs that successfully contracted with each other in 1998, and zero for all the other pairs. Standard errors are adjusted for heteroskedasticity and correlation among observations belonging to the same advisor. t-statistics are in parentheses. All variables are defined in Table I in the paper. * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent variable	Indicator equal to one if the advisor hired the candidate director				
Panel A: Only new funds created by new fund companies are included					
$AdvisorDirector$	0.26				
$JointDegree_{1997}$	$(8.03)^{***}$				
$AdvisorDirector$		0.34			
$JointDegree_{1995-1997}$		$(4.02)^{***}$			
$AdvisorDirector$			6.23		
$Influence_{1997}$			$(19.91)^{***}$		
$AdvisorDirector$				6.40	
$Influence_{1995-1997}$				$(13.63)^{***}$	
$AdvisorDirector$					1.57
$RelationshipLength_{1997}$					$(13.47)^{***}$
$DirectorDegree_{1997} * 10^{-1}$	0.05	0.05	0.07	0.06	0.04
	$(4.75)^{***}$	$(6.58)^{***}$	$(12.95)^{***}$	$(9.72)^{***}$	$(3.75)^{***}$
Pseudo R^2	0.26	0.22	0.36	0.26	0.30
Observations	133,940	133,940	133,940	133,940	133,940
Panel B: Advisors can choose from a set of 20 random candidates aside from those selected (boostrap method, 100 repetitions)					
$AdvisorDirector$	1.10				
$JointDegree_{1997}$	$(4.96)^{***}$				
$AdvisorDirector$		2.01			
$JointDegree_{1995-1997}$		$(4.33)^{***}$			
$AdvisorDirector$			9.55		
$Influence_{1997}$			$(7.14)^{***}$		
$AdvisorDirector$				18.47	
$Influence_{1995-1997}$				$(4.34)^{***}$	
$AdvisorDirector$					3.28
$RelationshipLength_{1997}$					$(13.38)^{***}$
$DirectorDegree_{1997} * 10^{-1}$	0.05	0.05	0.07	0.07	0.06
	$(12.09)^{***}$	$(12.03)^{***}$	$(12.64)^{***}$	$(12.91)^{***}$	$(11.28)^{***}$
Pseudo R^2	0.30	0.27	0.31	0.27	0.32
Observations	5,053	5,053	5,053	5,053	5,053

Panel C: All new funds are included except those in families with large overlap across directors serving multiple companies in the family.					
$AdvisorDirector$	0.17				
$JointDegree_{1997}$	$(2.25)^{**}$				
$AdvisorDirector$		0.22			
$JointDegree_{1995-1997}$		$(3.64)^{***}$			
$AdvisorDirector$			5.89		
$Influence_{1997}$			$(20.03)^{***}$		
$AdvisorDirector$				6.26	
$Influence_{1995-1997}$				$(15.67)^{***}$	
$AdvisorDirector$					1.51
$RelationshipLength_{1997}$					$(15.37)^{***}$
$DirectorDegree_{1997} * 10^{-1}$	0.04	0.04	0.05	0.05	0.03
	$(6.87)^{***}$	$(10.49)^{***}$	$(18.05)^{***}$	$(15.86)^{***}$	$(5.57)^{***}$
Pseudo R^2	0.13	0.12	0.24	0.18	0.19
Observations	270,278	270,278	270,278	270,278	270,278

Table IA.III
Connections and Expense Ratios (Connections Allowed to Capture Between Fund Family Variation)

OLS regressions are estimated to examine the impact of connections between the fund board and the primary advisor on expense ratios, for the entire sample of open-end U.S. mutual funds during 1995 to 2002 matched in the N-SAR B, N-30D, and the CRSP Mutual Funds data sets. The dependent variable, $ExpenseRatio_t$, is the ratio of the fund's expenses divided by the value of the fund's assets in year t (item *expenses* in CRSP Mutual Funds). Year and ICDI investment objective fixed effects are included. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family. t-statistics are in parentheses. All variables are defined in Table I in the paper. * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent variable	$ExpenseRatio_t$					
$AdvisorBoard$		20.64				
$Influence_{t-1}$		(4.47)***				
$AdvisorBoard$			26.41			
$Influence_{t-3,t-1}$			(5.14)***			
$AdvisorBoard$				0.17		
$JointDegree_{t-1}$				(1.83)*		
$AdvisorBoard$					0.26	
$JointDegree_{t-3,t-1}$					(2.53)**	
$AdvisorBoard$						4.39
$RelationshipLength_{t-1}$						(4.40)***
$BoardSize_t$	0.39	0.26	0.23	0.29	0.25	0.32
	(1.44)	(0.96)	(0.87)	(1.01)	(0.90)	(1.23)
$FundAge_t$	0.42	.05	–.26	.38	.20	–.43
	(0.58)	(0.07)	(–0.37)	(0.54)	(0.28)	(–0.60)
$Ln(FundSize_{t-1})$	–7.01	–6.70	–6.63	–6.80	–6.77	–6.79
	(–8.73)***	(–8.59)***	(–8.53)***	(–8.58)***	(–8.50)***	(–8.59)***
$NumberOfFunds$	0.14	0.16	0.14	0.11	0.10	0.12
$InFamily_t$	(2.55)**	(2.87)***	(2.67)***	(1.88)*	(1.63)	(2.12)**
$AdvisorFraction$	1.97	0.48	0.15	2.28	2.32	0.65
$FundsInCategory_{t-1}$	(0.41)	(0.10)	(0.03)	(0.47)	(0.48)	(0.14)
$AdvisorLnAssets$	–0.61	–1.45	–1.59	–1.26	–1.24	–1.21
$UnderManagement_{t-1}$	(–.57)	(–1.39)	(–1.54)	(–1.20)	(–1.20)	(–1.16)
Year FEs	YES	YES	YES	YES	YES	YES
Investment Objective FEs	YES	YES	YES	YES	YES	YES
Adj. R^2	0.35	0.36	0.37	0.36	0.36	0.36
Observations	12,866	12,866	12,866	12,866	12,866	12,866

Table IA.IV
Connections and Management Fees (Connections Allowed to Capture Between Fund Family Variation)

OLS regressions are estimated to examine the impact of connections between the fund board and the primary advisor on advisory fees, for the entire sample of open-end U.S. mutual funds during 1995 to 2002 matched in the N-SAR B, N-30D, and the CRSP Mutual Funds data sets. The dependent variable, $ManagementFee_t$, is the fee paid by the fund in year t to its advisors for managing the fund (item 048 in N-SAR B filings). Year and ICDI investment objective fixed effects are included. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family. t-statistics are in parentheses. All variables are defined in Table I in the paper. * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent variable	$ManagementFee_t$					
$AdvisorBoard$		3.82				
$Influence_{t-1}$		(1.69)*				
$AdvisorBoard$			3.22			
$Influence_{t-3,t-1}$			(1.31)			
$AdvisorBoard$				0.11		
$JointDegree_{t-1}$				(3.27)***		
$AdvisorBoard$					0.10	
$JointDegree_{t-3,t-1}$					(2.81)***	
$AdvisorBoard$						0.27
$RelationshipLength_{t-1}$						(0.66)
$BoardSize_t$	–0.08	–0.10	–0.10	–0.14	–0.13	–0.08
	(–0.87)	(–1.14)	(–1.08)	(–1.51)	(–1.38)	(–0.92)
$FundAge_t$	0.26	0.19	0.18	0.24	0.18	0.21
	(0.95)	(0.73)	(0.67)	(0.88)	(0.65)	(0.78)
$Ln(FundSize_{t-1})$	–1.52	–1.46	–1.47	–1.38	–1.42	–1.51
	(–5.49)***	(–5.42)***	(–5.49)***	(–5.18)***	(–5.34)***	(–5.54)***
$NumberOfFunds$	0.00	0.00	0.00	–0.02	–0.02	–0.00
$InFamily_t$	(0.01)	(0.13)	(0.01)	(–1.07)	(–0.89)	(–0.07)
$AdvisorFraction$	5.07	4.79	4.85	5.27	5.20	4.99
$FundsInCategory_{t-1}$	(1.88)*	(1.81)*	(1.82)*	(1.97)**	(1.94)*	(1.86)*
$AdvisorLnAssets$	–1.69	–1.85	–1.81	–2.12	–1.93	–1.73
$UnderManagement_{t-1}$	(–3.84)***	(–4.20)***	(–4.06)***	(–4.95)***	(–4.51)***	(–3.88)***
Year FEs	YES	YES	YES	YES	YES	YES
Investment Objective FEs	YES	YES	YES	YES	YES	YES
Adj. R^2	0.39	0.40	0.40	0.40	0.40	0.39
Observations	12,866	12,866	12,866	12,866	12,866	12,866

Table IA.V
Connections and Expense Reimbursements (Connections Allowed to Capture Between Fund Family Variation)

OLS regressions are estimated to examine the impact of connections between the fund board and the primary advisor on expense reimbursements, for the entire sample of open-end U.S. mutual funds during 1995 to 2002 matched in the N-SAR B, N-30D, and the CRSP Mutual Funds data sets. The dependent variable, $ExpenseReimbursements_t$, represents the expenses reimbursed back to the fund (item 072y in N-SAR B filings) by the advisor at the end of year t, expressed as a fraction of the fund's total net assets (in basis points). Year and ICDI investment objective fixed effects are included. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family. t-statistics are in parentheses. All variables are defined in Table I in the paper. * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent variable	$ExpenseReimbursements_t$					
$AdvisorBoard$		–3.52				
$Influence_{t-1}$		(–1.74)*				
$AdvisorBoard$			–4.24			
$Influence_{t-3,t-1}$			(–1.93)*			
$AdvisorBoard$				0.01		
$JointDegree_{t-1}$				(0.30)		
$AdvisorBoard$					–0.01	
$JointDegree_{t-3,t-1}$					(–0.37)	
$AdvisorBoard$						–0.65
$RelationshipLength_{t-1}$						(–1.63)
$BoardSize_t$	0.08	0.10	0.10	0.07	0.08	0.09
	(.96)	(1.24)	(1.28)	(0.87)	(1.02)	(1.09)
$FundAge_t$	–1.53	–1.46	–1.42	–1.53	–1.52	–1.40
	(–6.02)***	(–5.74)***	(–5.56)***	(–6.04)***	(–6.05)***	(–5.46)***
$Ln(FundSize_{t-1})$	–4.70	–4.75	–4.76	–4.69	–4.71	–4.73
	(–11.52)***	(–11.49)***	(–11.55)***	(–11.54)***	(–11.56)***	(–11.53)***
$NumberOfFunds$	–0.03	–0.03	–0.03	–0.03	–0.03	–0.02
$InFamily_t$	(–1.98)**	(–2.12)**	(–1.99)**	(–2.01)**	(–1.74)*	(–1.66)*
$AdvisorFraction$	–2.26	–2.01	–1.97	–2.25	–2.28	–2.06
$FundsInCategory_{t-1}$	(–1.07)	(–0.94)	(–0.92)	(–1.06)	(–1.07)	(–0.97)
$AdvisorLnAssets$	–0.29	–0.14	–0.13	–0.31	–0.26	–0.20
$UnderManagement_{t-1}$	(–0.66)	(–0.31)	(–0.28)	(–0.70)	(–0.58)	(–0.44)
$FundReturn_t$	–0.001	–0.001	–0.001	–0.001	–0.001	–0.001
	(–6.68)***	(–6.66)***	(–6.62)***	(–6.66)***	(–6.68)***	(–6.64)***
Year FEs	YES	YES	YES	YES	YES	YES
Investment Objective FEs	YES	YES	YES	YES	YES	YES
Adj. R^2	0.17	0.17	0.17	0.17	0.17	0.17
Observations	12,866	12,866	12,866	12,866	12,866	12,866

Table IA.VI
Connections and Fund Returns (Connections Allowed to Capture Between Fund Family Variation)

OLS regressions are estimated to examine the impact of connections between the fund board and the primary advisor on the fund net returns, for the entire sample of open-end U.S. mutual funds during 1995 to 2002 matched in the N-SAR B, N-30D, and the CRSP Mutual Funds data sets. The dependent variable, $FundReturn_t$, is the annual net return (expressed in basis points) of the fund calculated by aggregating monthly net returns (data item $retm$) in CRSP Mutual Funds. Year and ICDI investment objective fixed effects are included. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family. t-statistics are in parentheses. All variables are defined in Table I in the paper. * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent variable	$FundReturn_t$					
$AdvisorBoard$		19.15				
$Influence_{t-1}$		(0.31)				
$AdvisorBoard$			75.73			
$Influence_{t-3,t-1}$			(1.04)			
$AdvisorBoard$				–4.56		
$JointDegree_{t-1}$				(–3.65)***		
$AdvisorBoard$					–3.76	
$JointDegree_{t-3,t-1}$					(–2.78)***	
$AdvisorBoard$						28.72
$RelationshipLength_{t-1}$						(1.76)*
$BoardSize_t$	1.24	1.12	0.80	3.95	3.19	0.82
	(0.41)	(0.37)	(0.27)	(1.23)	(1.00)	(0.27)
$FundAge_t$	76.40	76.06	74.47	77.32	79.55	70.86
	(6.81)***	(6.80)***	(6.60)***	(6.94)***	(7.08)***	(6.20)***
$Ln(FundSize_{t-1})$	–47.78	–47.50	–46.69	–53.45	–51.25	–46.37
	(–3.93)***	(–3.89)***	(–3.85)***	(–4.55)***	(–4.31)***	(–3.82)***
$NumberOfFunds$	0.05	0.06	0.05	0.96	0.73	–0.12
$InFamily_t$	(0.08)	(0.10)	(0.08)	(1.49)	(1.16)	(–0.19)
$AdvisorFraction$	–155.28	–156.66	–160.50	–163.71	–160.27	–163.89
$FundsInCategory_{t-1}$	(–1.41)	(–1.43)	(–1.46)	(–1.49)	(–1.46)	(–1.49)
$AdvisorLnAssets$	–32.98	–33.75	–35.79	–15.38	–23.92	–36.91
$UnderManagement_{t-1}$	(–2.23)**	(–2.24)**	(–2.37)**	(–1.01)	(–1.59)	(–2.46)**
Year FEs	YES	YES	YES	YES	YES	YES
Investment Objective FEs	YES	YES	YES	YES	YES	YES
Adj. R^2	0.29	0.29	0.29	0.29	0.29	0.29
Observations	12,866	12,866	12,866	12,866	12,866	12,866