

# Supporting Information Online Appendix

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## Policy-Specific Expertise and the Importance of Organizational Leadership in Shared Administrative Governance: Evidence from U.S. Federal Cooperative Agreements (George A. Krause & Matthew Zarit)

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## *0. Volume and Value of Cooperative Agreements Across U.S. Federal Agencies, 1988–2008*

**Table SI-0** lists the total number, total constant dollar value, and median constant dollar value of cooperative agreements broken down by both agency and partner organization type, as well as their numerical and dollar-value proportion to the grand total in this sample of data. **Table SI-0** reveals that U.S. federal agencies vary considerably in both the volume and financial value of cooperative agreements.<sup>1</sup> The agencies that most actively utilize CAs from 1988 through 2008 are the Department of the Interior, the Department of Agriculture, and the National Aeronautics and Space Administration, though the Department of Energy and Department of the Army allotted the most money (\$15.3 and \$12.2 billion respectively). Some agencies, such as the Internal Revenue Service and National Highway Transportation and Safety Administration hardly employ cooperative agreements in this sample.<sup>2</sup> While the minimum values are quite small and the maximum values tend to

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<sup>1</sup> The Social Security Administration, for example, only engaged in 108 cooperative agreements in this sample. By comparison, the Department of Agriculture used 45,824 cooperative agreements during this time period. While the Social Security Administration is largely a transactional agency that has minimal need for developing cooperative agreements, the Department of Agriculture has a wide variety of policy needs that can be met by working cooperatively with nonfederal entities.

<sup>2</sup> It remains a possibility that expert agency administrators are ‘selectively’ appointed to agencies with larger CA portfolios given both the importance and complexity of these agency activities. This possibility, however, is not borne out by these data. The difference involving the mean agency head policy expertise between large CA portfolio agencies (Department of Interior, Department of Agriculture, and National

be in the millions, the median value cooperative agreements across agencies tend to be in the hundreds of thousands of dollars.

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Aeronautics and Space Administration), constituting nearly 56% of sample CA award observations, is + 0.01 and fails to attain statistical significance at conventional levels ( $p = 0.248$ ). Moreover, when broadening this classification to include moderately-sized CA portfolio agencies [Department of Energy, Federal Emergency and Management Agency, Department of Health and Human Services, Department of Commerce, and U.S. Army), constituting an additional 28% of sample CA award observations, this mean difference in agency head policy expertise becomes negative ( $- 0.35$ ) and becomes statistically discernible at zero ( $p < 0.001$ ). In turn, this evidence suggests that a reverse causal selection effect does not exist, or perhaps may exert a downward bias regarding the estimated impact of agency head policy expertise associated with CA award activity covered in the regression models later in this study.

**TABLE SI-0: Cooperative Agreement Award Size Data by U.S. Federal Agency/Subagency**

<b>Agency/Subagency</b>	<b>Total Number</b>	<b>Proportion of Total Number</b>	<b>Total Constant Dollar Value</b>	<b>Interquartile Range</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Median Constant Dollar Value</b>	<b>Proportion of Total Dollar Amount</b>
Department of Agriculture	45,824 (27,715) [3658] {14,451}	19% (11%) [2%] {6%}	\$9,300,000,000 (\$5,234,000,000) [\$3,359,000,000] {\$726,100,000}	\$6100 – \$75,246 (\$16,932 – \$92,991) [\$23,133 – \$538,060] {\$738 – \$15,380}	\$1 (\$1) [\$11] {\$1}	\$1,040,000,000 (\$1,040,000,000) [\$128,000,000] {\$32,800,000}	\$26,040 (\$40,274) [\$102,532] {\$2856}	9.47% (5.33%) [3.42%] {0.74%}
Department of Commerce	12,608 (8411) [1139] {3058}	5% (3%) [0.5%] {1%}	\$8,573,000,000 (\$5,552,000,000) [\$779,300,000] {\$2,242,000,000}	\$39,322 – \$541,158 (\$29,320 – \$586,324) [\$100,358 – \$327,688] {\$75,923 – \$575,242}	\$21 (\$21) [\$869] {\$556}	\$54,100,000 (\$19,200,000) [\$54,100,000] {\$50,300,000}	\$189,742 (\$133,743) [\$229,880] {\$250,604}	8.73% (5.65%) [0.79%] {2.28%}
Department of Defense	897 (561) [127] {209}	0.3% (0.2%) [0.1%] {0.1%}	\$418,500,000 (\$165,000,000) [\$65,004,298] {\$188,500,000}	\$143,158 – \$379,838 (\$139,253 – \$352,183) [\$129,254 – \$379,828] {\$161,012 – \$792,154}	\$26,769 (\$32,248) [\$26,769] {\$49,489}	\$33,100,000 (\$8,328,591) [\$16,600,000] {\$33,100,000}	\$200,904 (\$195,369) [\$206,968] {\$209,980}	0.43% (0.17%) [0.07%] {0.19%}
Department of the Army	11,692 (10,027) [684] {981}	5% (4%) [0.3%] {0.4%}	\$12,150,000,000 (\$10,530,000,000) [\$697,900,000] {\$919,200,000}	\$49,125 – \$1,001,597 (\$46,139 – \$982,290) [\$52,439 – \$1,027,342] {\$117,284 – \$1,117,330}	\$1 (\$1) [\$138] {\$43}	\$60,200,000 (\$60,200,000) [\$26,900,000] {\$60,200,000}	\$222,831 (\$205,630) [\$281,881] {\$347,001}	12.37% (10.72%) [0.71%] {0.94%}
Department of the Air Force	1738 (663) [52] {1023}	0.7% (0.3%) [0.02%] {0.4%}	\$783,800,000 (\$350,200,000) [\$26,827,446] {\$406,700,000}	\$76,043 – \$435,518 (\$71,008 – \$515,211) [\$121,630 – \$690,790] {\$80,476 – \$372,273}	\$69 (\$69) [\$3680] {\$1782}	\$31,400,000 (\$29,000,000) [\$2,680,935] {\$31,400,000}	\$198,142 (\$209,907) [\$243,880] {\$192,510}	0.80% (0.36%) [0.03%] {0.41%}
Department of the Navy	723 (503) [90] {129}	0.3% (0.2%) [0.04%] {0.05%}	\$519,600,000 (\$339,000,000) [\$99,122,933] {\$81,488,089}	\$45,136 – \$468,855 (\$40,946 – \$352,276) [\$52,217 – \$825,237] {\$56,203 – \$710,084}	\$2229 (\$2229) [\$5974] {\$8599}	\$19,700,000 (\$13,200,000) [\$19,700,000] {\$5,909,793}	\$110,032 (\$93,244) [\$195,179] {\$141,669}	0.53% (0.35%) [0.10%] {0.08%}
Department of Education	2448 (1584) [456] {407}	1% (0.6%) [0.2%] {0.2%}	\$2,575,000,000 (\$1,538,000,000) [\$557,500,000] {\$479,500,000}	\$220,685 – \$1,188,784 (\$272,035 – \$1,105,733) [\$132,470 – \$1,212,893] {\$167,997 – \$1,514,793}	\$80 (\$80) [\$122] {\$122}	\$29,800,000 (\$29,500,000) [\$19,900,000] {\$29,800,000}	\$408,177 (\$416,585) [\$357,212] {\$454,144}	2.62% (1.57%) [0.57%] {0.49%}
Department of Energy	17,080 (6930) [2646] {7504}	7% (3%) [1%] {3%}	\$15,320,000,000 (\$4,219,000,000) [\$1,676,000,000] {\$9,429,000,000}	\$84,684 – \$587,006 (\$53,705 – \$395,314) [\$85,122 – \$541,131] {\$124,663 – \$779,568}	\$1 (\$65) [\$1] {\$1}	\$236,000,000 (\$114,000,000) [\$28,100,000] {\$236,000,000}	\$216,436 (\$150,383) [\$215,631] {\$304,499}	15.59% (4.29%) [1.71%] {9.60%}
Department of Health and Human Services	14,009 (9406)	6% (4%)	\$8,221,000,000 (\$6,070,000,000)	\$55,030 – \$408,461 (\$46,308 – \$410,126)	\$1 (\$1)	\$122,000,000 (\$122,000,000)	\$174,079 (\$151,523)	8.37% (6.18%)

	[4282] {320}	[2%] {0.1%}	[\$2,021,000,000] {\$128,000,000}	[\$75,761 – \$404,061] {\$68,598 – \$360,105}	[\$1] {\$9}	[\$119,000,000] {\$12,400,000}	[\$205,774] {\$179,430}	[2.06%] {0.13%}
Department of Homeland Security	779 (752) [4] {23}	0.3% (0.3%) [<0.01%] {0.01%}	\$17,410,000 (\$15,110,000) [\$2,170,003] {\$20,804,696}	\$52,390 – \$181,092 (\$52,390 – \$159,860) [\$416,030 – \$668,971] {\$127,038 – \$577,254}	\$1072 (\$1072) [\$205,063] {\$45,048}	\$29,600,000 (\$29,600,000) [\$706,598] {\$11,800,000}	\$105,366 (\$104,520) [\$629,171] {\$295,022}	0.02% (0.02%) [<0.01%] {0.02%}
Department of Housing & Urban Development	16 (2) [0] {14}	0.01% (<0.01%) [-] {0.01%}	\$4,816,921 (\$580,840) [-] {\$4,236,081}	\$224,370 – \$314,207 (\$265,869 – \$314,971) [-] {\$214,595 – \$313,702}	\$13,726 (\$265,869) [-] {\$13,726}	\$786,782 (\$314,971) [-] {\$786,782}	\$238,002 (\$290,420) [-] {\$236,035}	<0.01% (<0.01%) [-] {<0.01%}
Department of the Interior	61,960 (36,724) [19,312] {5924}	26% (15%) [8%] {2%}	\$8,470,000,000 (\$6,055,000,000) [\$2,025,000,000] {\$390,400,000}	\$9,832 – \$64,290 (\$11,029 – \$76,226) [\$8,988 – \$52,973] {\$5,770 – \$34,969}	\$1 (\$1) [\$1] {\$1}	\$98,700,000 (\$98,700,000) [\$24,300,000] {\$17,400,000}	\$23,817 (\$27,683) [\$21,630] {\$13,390}	8.62% (6.16%) [2.06%] {0.40%}
Department of Justice	7601 (3930) [2538] {1133}	3% (2%) [1%] {0.5%}	\$5,638,000,000 (\$2,323,000,000) [\$2,391,000,000] {\$922,700,000}	\$101,496 – \$597,777 (\$70,224 – \$556,507) [\$135,192 – \$664,184] {\$154,417 – \$595,430}	\$1 (\$65) [\$1] {\$4292}	\$91,900,000 (\$23,400,000) [\$91,900,000] {\$80,200,000}	\$276,621 (\$236,820) [\$311,988] {\$309,466}	5.74% (2.36%) [2.43%] {0.94%}
Department of Labor	3038 (3025) [8] {5}	1% (1%) [<0.01%] {<0.01%}	\$1,869,000,000 (\$1,853,000,000) [\$10,772,564] {\$4,760,884}	\$44,642 – \$866,842 (\$44,512 – \$864,512) [\$245,757 – \$2,382,792] {\$77,047 – \$358,860}	\$4 (\$4) [\$25,709] {\$74,716}	\$9,517,758 (\$9,517,758) [\$4,101,197] {\$4,101,260}	\$119,213 (\$118,758) [\$694,280] {\$149,000}	1.90% (1.89%) [0.01%] {<0.01%}
Department of State	53 (0) [53] {0}	0.02% (-) [0.02%] {-}	\$19,840,000 (-) [19,840,000] {-}	\$369,651 – \$5,210,715 (-) [\$369,651 – \$5,210,715] {-}	\$27,540 (-) [\$27,540] {-}	\$19,900,000 (-) [\$19,900,000] {-}	\$1,472,625 (-) [\$1,472,625] {-}	0.02% (-) [0.02%] {-}
Department of Transportation	7 (2) [5] {-}	<0.01% (<0.01%) [<0.01%] {-}	\$1,093,109 (\$315,333) [\$777,776] {-}	\$141,242 – \$170,241 (\$145,091 – \$170,241) [\$141,243 – \$156,937] {-}	\$138,417 (\$145,091) [\$138,417] {-}	\$199,937 (\$170,241) [\$199,937] {-}	\$145,091 (\$157,666) [\$141,243] {-}	<0.01% (<0.01%) [<0.01%] {-}
Department of the Treasury	69 (0) [69] {0}	0.03% (-) [0.03%] {-}	\$810,155 (-) [\$810,155] {-}	\$4914 – \$14,317 (-) [\$4914 – \$14,317] {-}	\$1387 (-) [\$1387] {-}	\$58,388 (-) [\$58,388] {-}	\$6316 (-) [\$6316] {-}	<0.01% (-) [<0.01%] {-}
Environmental Protection Agency	4543 (3365) [857] {321}	2% (1%) [0.4%] {0.1%}	\$1,586,000,000 (\$1,294,000,000) [\$23,800,000] {\$95,073,209}	\$148,993 – \$272,615 (\$73,200 – \$320,724) [\$51,248 – \$118,660] {\$62,943 – \$223,500}	\$2 (\$2) [\$1029] {\$2}	\$43,600,000 (\$43,600,000) [\$23,800,000] {\$19,500,000}	\$148,993 (\$161,430) [\$99,357] {\$129,096}	1.61% (1.32%) [0.02] {0.10}

Federal Emergency Management Agency	15,399 (14,674) [314] {411}	6% (6%) [0.1%] {0.1%}	\$5,583,000,000 (\$4,994,000,000) [\$134,200,000] {\$154,500,000}	\$18,280 – \$183,281 (\$18,739 – \$185,196) [\$21,655 – \$250,820] {\$13,798 - \$72,175}	\$1 (\$1) [\$1] {\$370}	\$73,200,000 (\$54,900,000) [\$46,000,000] {\$73,200,000}	\$61,576 (\$62,359) [\$60,433] {\$22,350}	5.68% (5.08%) [0.14%] {0.16%}
National Aeronautics & Space Administration	22,575 (11,338) [6130] {5107}	9% (5%) [3%] {2%}	\$7,667,000,000 (\$2,770,000,000) [\$1,808,000,000] {\$3,089,000,000}	\$41,772 – \$234,274 (\$37,416 – \$215,691) [\$43,375 – \$227,533] {\$50,323 – \$286,013}	\$1 (\$1) [\$1] {\$1}	\$245,000,000 (\$16,900,000) [\$19,900,000] {\$245,000,000}	\$96,333 (\$89,810) [\$98,128] {\$112,406}	7.80% (2.82%) [1.84%] {3.14%}
Small Business Administration	1885 (203) [254] {1428}	1% (0.1%) [0.1%] {0.6%}	\$419,300,000 (\$111,700,000) [\$28,094,808] {\$273,500,000}	\$53,371 – \$170,416 (\$96,677 – \$724,323) [\$58,951 – \$142,461] {\$51,005 – \$167,744}	\$25 (\$7153) [\$25] {\$452}	\$5,158,218 (\$5,158,218) [\$448,564] {\$4,717,791}	\$106,238 (\$320,452) [\$110,997] {\$100,761}	0.43% (0.11%) [0.03%] {0.28%}
Social Security Administration	108 (25) [77] {6}	0.04% (0.01%) [0.03%] {<0.01%}	\$27,324,977 (\$7,016,585) [\$16,837,728] {\$3,470,664}	\$107,432 – \$273,109 (\$143,281 – \$271,803) [\$108,422 – \$274,416] {\$101,506 – \$126,116}	\$50,770 (\$101,506) [\$50,770] {81,882}	\$2,948,649 (\$2,103,633) [\$2,452,981] {\$2,948,649}	\$191,373 (\$204,736) [\$193,735] {\$106,255}	0.03% (0.01%) [0.02%] {<0.01%}
Broadcasting Board of Governors	15 (0) [15] {0}	0.01% (-) [0.01%] {-}	\$72,217,262 (-) [72,217,262] {-}	\$647,871 – \$7,388,346 (-) [\$647,871 – \$7,388,346] {-}	\$26,596 (-) [\$26,596] {}	\$18,800,000 (-) [\$18,800,800] {}	\$2,595,476 (-) [\$2,595,476] {}	0.07% (-) [0.07%] {-}
Nuclear Regulatory Commission	946 (907) [16] {23}	0.39% (0.38%) [0.01%] {0.01%}	\$20,972,294 (\$17,019,041) [\$1,675,387] {\$2,277,866}	\$2271 – \$23,427 (\$2261 – \$21,766) [\$16,225 – \$203,731] {\$2137 – \$156,642}	\$43 (\$43) [\$3276] {\$314}	\$410,983 (\$325,614) [\$321,970] {\$410,983}	\$4292 (\$4214) [\$67,739] {\$50,236}	0.02% (0.02%) [<0.01%] {<0.01%}
Internal Revenue Service	1 (0) [1] {0}	<0.01% (-) [<0.01%] {}	\$3118 (-) [\$3118] {-}	\$3118 (-) [\$3118] {-}	\$3118 (-) [\$3118] {-}	\$3118 (-) [\$3118] {-}	\$3118 (-) [\$3118] {-}	<0.01% (-) [<0.01%] {-}
National Highway Transportation & Safety Administration	1 (0) [1] {0}	<0.01% (-) [<0.01%] {-}	\$154,330 (-) [\$154,330] {-}	\$154,330 (-) [\$154,330] {-}	\$154,330 (-) [\$154,330] {-}	\$154,330 (-) [\$154,330] {-}	\$154,330 (-) [\$154,330] {-}	<0.01% (-) [<0.01%] {-}
National Institute of Standards and Technology	3606 (1072) [594] {1940}	2% (0.4%) [0.3%] {0.8%}	\$3,770,000,000 (\$409,800,000) [\$620,500,000] {\$2,740,000,000}	\$83,871 – \$1,132,606 (\$31,610 – \$217,350) [\$109,601 – \$1,068,893] {\$485,023 – \$1,386,483}	\$115 (\$534) [\$115] {\$223}	\$42,100,000 (\$16,700,000) [\$40,600,000] {\$42,100,000}	\$536,784 (\$82,194) [\$335,702] {\$844,084}	3.84% (0.42%) [0.63%] {2.79%}
National Oceanic and Atmospheric Administration	8223 (6145) [949]	3% (2.5%) [0.4%]	\$4,964,000,000 (\$3,909,000,000) [\$447,500,000]	\$64,581 – \$488,421 (\$65,660 – \$522,816) [\$72,021 – \$429,315]	\$35 (\$434) [\$35]	\$117,000,000 (\$117,000,000) [\$14,300,000]	\$139,552 (\$142,704) [\$147,847]	5.05% (3.98%) [0.46%]

	{1129}	{0.5%}	{\$608,000,000}	{\$52,774 – \$366,586}	{\$596}	{\$61,500,000}	{\$116,243}	{0.62%}
Food Safety and Inspection Service	532 (532)	0.22% (0.22%)	\$240,100,000 (\$240,100,000)	\$124,330 – \$585,667 (\$124,330 – \$585,667)	\$420 (\$420)	\$2,649,316 (\$2,649,316)	\$337,243 (\$337,243)	0.24% (0.24%)
	[0]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
	{0}	{-}	{-}	{-}	{-}	{-}	{-}	{-}
Occupational Safety and Health Administration	3354 (3354)	1% (1%)	\$388,800,000 (\$388,800,000)	\$7573 – \$74,468 (\$7573 – \$74,468)	\$2 (\$2)	\$5,301,420 (\$5,301,420)	\$24,353 (\$24,353)	0.40% (0.40%)
	[0]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
	{0}	{-}	{-}	{-}	{-}	{-}	{-}	{-}
<b>Total</b>	<b>241,730</b> (151,851)	<b>100%</b> (63%)	<b>\$98,240,372,166</b> (\$58,530,000,000)	<b>\$17,862 – \$233,762</b> (\$20,697 – \$217,135)	<b>\$1</b> (\$1)	<b>\$1,040,000,000</b> (\$1,040,000,000)	<b>\$63,306</b> (\$63,780)	<b>100%</b> (59.6%)
	[44,333]	[18%]	[\$17,240,000,000]	[\$19,010 – \$246,672]	[\$1]	[\$128,000,000]	[\$65,771]	[17.5%]
	{45,546}	{19%}	{\$22,910,000,000}	{\$6710 - \$271,725}	{\$1}	{\$245,000,000}	{\$58,376}	{23.3%}

Note: The Federal Emergency Management Agency is consolidated into a single entry in this table but appears as two separate entries reflecting its status both prior and following the creation of the Department of Homeland Security. Total Sample entries appear on top, *Government Partner* subsample entries appear inside *(parentheses)*, *Nonprofit Partner* subsample entries appear inside *[brackets]*, and *Private Sector* subsample entries appear inside *{curly brackets}*.

In addition, we evaluate the extent to which the relationship between agency head policy expertise and CA award size (in natural logarithms for comparability purposes, and to also handle skew from analyzing average CA award size patterns) varies across different sized agency CA portfolios based on CA award volume for the lower tercile (*Small CA Portfolios*), intertercile range (*Medium CA Portfolios*), and upper tercile (*Large CA Portfolios*)—see **Figure SI-0**.

The full sample plot (**Figure SI-0.1**) reveals that the weakest relationship (i.e. flattest slope) between agency head policy expertise and CA award size for agencies possessing small volume of CAs while it is marginally steeper for large volume/portfolio CA agencies compared to counterparts with medium volume/portfolios. This bivariate relationship pattern varies when disaggregated by partner recipient organization type. For instance, CA awards involving government partners displayed in **Figure SI-0.2** exhibit a similar pattern as the full sample displayed in **Figure SI-0.1**, except that medium sized agency CA volume/portfolios exhibit the strongest relationship (i.e., steepest slope) between agency head policy expertise and CA award size (**Figure SI-0.2**). What is most striking is that large CA volume/portfolio agencies exhibit the strongest positive relationship between agency head policy expertise and CA award size for non-governmental partners (**Figure SI-0.3**), including both nonprofit partners (**Figure SI-0.4**) and private sector partners (**Figure SI-0.5**). The slope relationships for small and medium CA volume/portfolio agencies are quite similar for non-government partners (**Figure SI-0.3**), mainly attributable to private sector partners (**Figure SI-0.5**). The slope differences between these agencies are most acute for nonprofit partners.

This supplementary analysis by agency CA portfolio size complements **Figure 3** reported in the manuscript by showing that ‘high’ policy expertise agency heads result in



largest differentials for making CA award investment decisions with non-governmental organizations, especially private sector partnerships. However, this does not imply the ‘unconstrained’ potential of agency head policy expertise being associated with an expansion of CA award sizes. First, it is worth noting that the ‘location’ of this relationship for large CA portfolio agencies are well below the logged (level) of CA award size (Y-axis scale) compared to both moderate and small CA portfolio agencies. This implies some limits on how agency head policy expertise may be associated with an “unconstrained” expansion of CA investments based on these sample of data. Moreover, the counterfactual possibility of all agency heads having maximal policy-specific expertise is untenable since (1) presidents choose appointees on other unique latent characteristics (e.g., loyalty and managerial skills) and tradeoffs do exist when making these appointment decisions (e.g., Krause and O’Connell 2016, 2019 cited in the manuscript; see also Ouyang, Haglund, and Waterman 2017; Waterman and Ouyang 2020).<sup>3</sup>

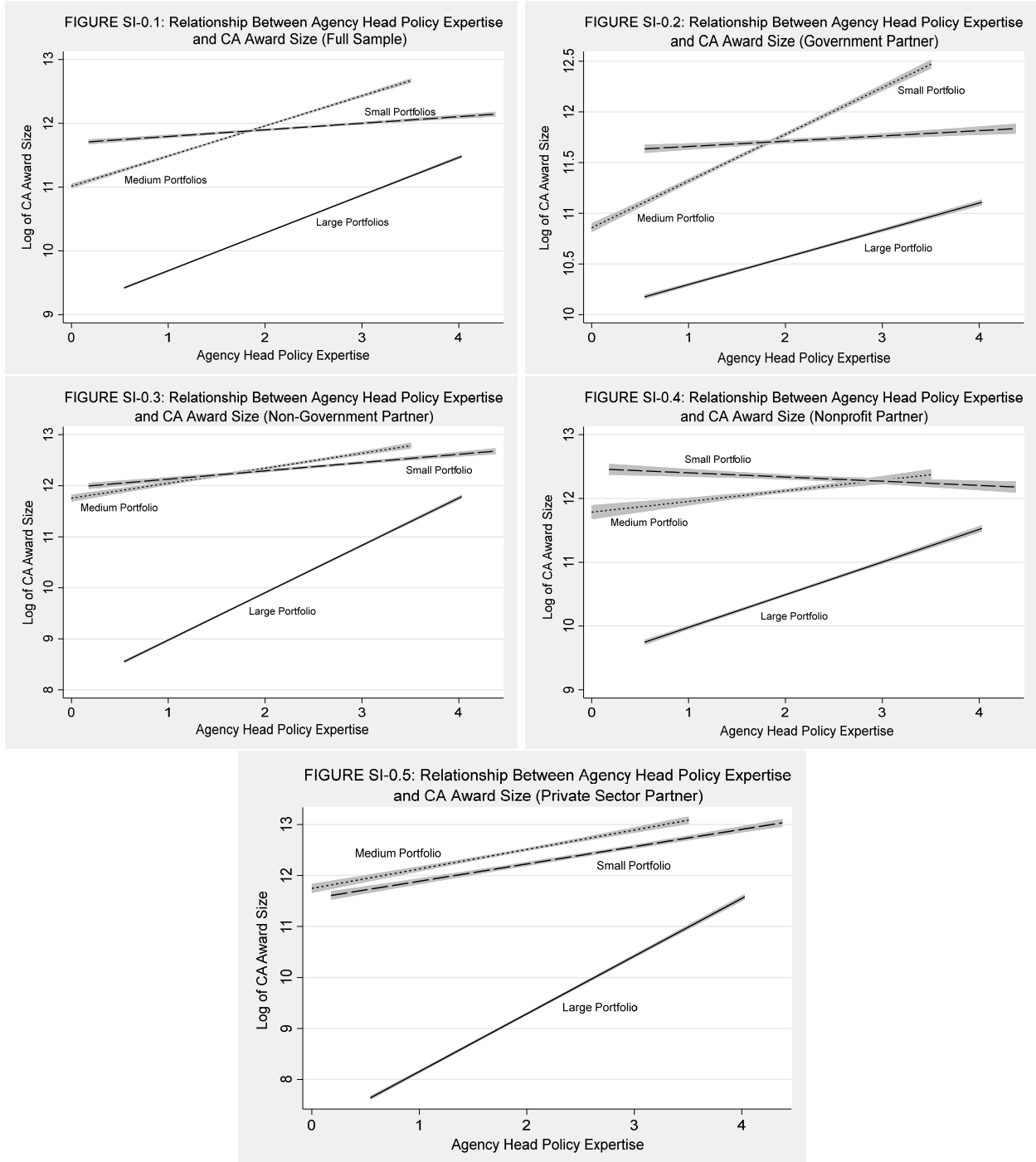
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<sup>3</sup> Yu Ouyang, Evan T. Haglund, and Richard W. Waterman. 2017. "The Missing Element: Examining the Loyalty-Competence Nexus in Presidential Appointments." *Presidential Studies Quarterly* 47(March): 62-91.

Yu Ouyang and Richard W. Waterman. 2020. "Rethinking Loyalty and Competence in Presidential Appointments." *Public Administration Review* 80(September/October): 717-732.

**FIGURE SI-0**

**Comparing Bivariate Linear Relationships Between Agency Head Policy Expertise and Time & CA Award Size and Time (with 95% Confidence Intervals)**



## *1. Supplementary Analysis of Augmented Models 1, 2, & 3 Containing Interactions Between Managerial Skills and Third-Party Partner Type and Agency Staff Technical Expertise and Third-Party Partner Type*

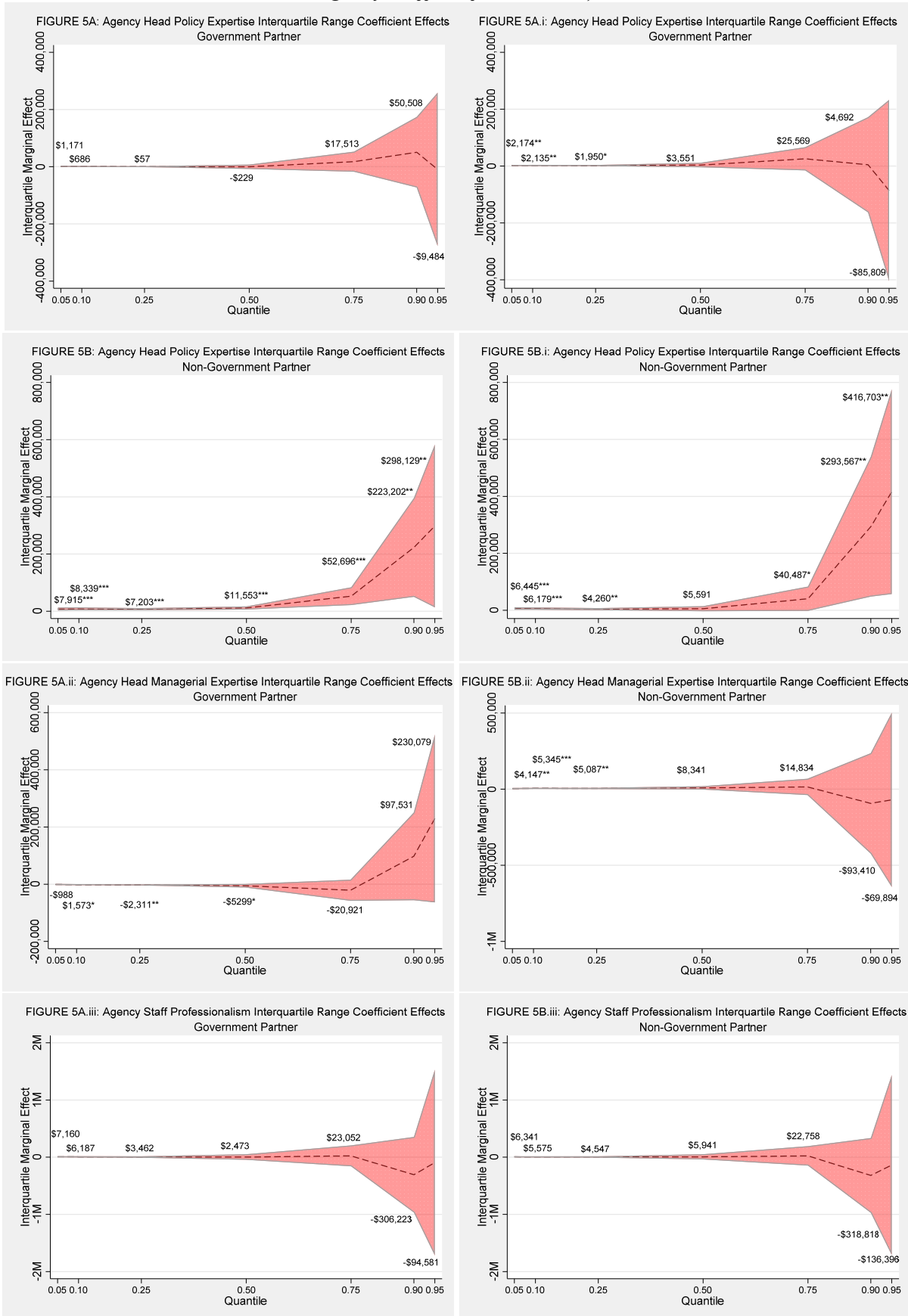
The possibility that managerial-generalist expertise of U.S. federal agency heads, as well as administrative staff professionalism within these federal agencies, may also conditionally impact CA award decisions is considered here. Although agency heads' managerial expertise only exerts statistically discernible impact on CA award sizes for the largest investment quantile ( $\tau = 0.95$ ) regarding these joint ventures (see manuscript **Tables A-1, A-2, & A-3**), it remains possible that agency heads with strong, appropriate managerial backgrounds for leading federal agencies are more equipped to incur the additional risk attributable to joint partnerships with non-governmental organizations (i.e., nonprofit and private sector organizations) compared to governmental organizations (i.e., subnational government agencies). The reported model results (see manuscript **Tables A-1, A-2, & A-3**) indicate that agency staff professionalism fails to meaningfully predict the size of CA awards in every instance when considered as an additive effect. However, this may obscure this statistical relationship between the capacity of the administrative personnel and willingness to invest in joint ventures with third-party organizations. The supplementary analysis therefore considers the alternative explanation that the level of agency staff professionalism is more critical for offsetting risks associated with partnerships with non-government organizations (i.e., nonprofit and private sector organizations) than compared to government organizations (i.e., subnational government agencies).

To address both alternative pathways in which administrative capacity might influence federal agency CA award decisions, augmented variants of **Models 2 & 3** (**Tables A-2, A-3**) are estimated. These models include additional conditional administrative capacity covariates by separately interacting the agency head's managerial expertise and agency staff professionalism covariates with the partner organization type (**Augmented Model 2: Agency Head Managerial Expertise x Non-Government Partner, Agency Staff Professionalism x Non-Government Partner; Augmented Model 3: Agency Head Managerial Expertise x Nonprofit Partner, Managerial Competence x Private Sector Partner, Agency Staff Professionalism x Nonprofit Partner, & Agency Staff Technical Expertise x Private Sector Partner**). The primary results from these pair of alternative model specifications appear in **Figures SI-1A, SI-1B, and SI-1C**.

**Figure SI-1A** lists the relevant graphs associated with **Augmented Model 2** [the full set of corresponding regression results are presented in **Tables SI-1A**]. The agency policy head expertise estimates in relation to government partners reported in the manuscript (**Figure 5A**) tend to be more conservative and estimated with less precision compared to the **Augmented Model 2** results (**Figure 5A.i**) for smaller CA award sizes ( $\tau \leq 0.25$ ) when these additional conditional covariates are incorporated into the model specification. The **Augmented Model 2** estimates (**Figure 5B.i**) reveal that the impact associated with agency head policy expertise on CA award investments for non-government partners are strikingly similar pattern to those from the **Reported Model 2** estimates (**Figure 5B**), except that the reported model estimates tend to be noticeably more conservative (i.e., smaller) than the former model estimates for large CA award sizes ( $\tau \geq 0.90$ ), but slightly less conservative (i.e., larger) for smaller CA award decisions ( $\tau \leq 0.25$ ). The *Agency Staff Professionalism* covariate exhibits a statistically

meaningful positive impact on CA award decisions made by federal agencies at various award sizes. This is borne out regardless whether the partner is a government organization (**Figure 5A.iii**) or a non-governmental organization (**Figure 5B.iii**). *Agency Head Managerial Expertise* only exerts a positive impact on smaller CA award sizes for non-governmental partner organizations ( $\tau \leq 0.25$ ) in **Figure 5B.ii**. Overall, the conclusion drawn from the **Reported Model 2** estimates that these factors have little explanatory power for understanding CA award decisions remain valid when allowing them to have differential effects across partner types.

**FIGURE SI-1A: Comparing Reported Model 2 Estimates to Alternative Model 2 Estimates (Partner Type Effects: Agency Head Policy Expertise, Agency Head Managerial Expertise, and Agency Staff Professionalism)**



**TABLE SI-1A**

**Alternative Model 2 Quantile Regression Estimates: Government/Non-Government Partner Distinctions**

*(Additional Conditional Partner Recipient Effects for Agency Head Managerial Expertise & Agency Staff Professionalism)*

Covariates	Expected Sign	Quantile $\tau = 0.05$	Quantile $\tau = 0.10$	Quantile $\tau = 0.25$	Quantile $\tau = 0.50$	Quantile $\tau = 0.75$	Quantile $\tau = 0.90$	Quantile $\tau = 0.95$	Logged OLS (Mean)
Agency Head Policy Expertise	+	2292.98** (767.9)	2249.51** (961.0)	2000.27* (1095.1)	3381.97 (4371.7)	22,266.86 (20,527.5)	-10,932.96 (84,227.0)	-106,016.80 (162,092.6)	0.12 (0.07)
Agency Head Policy Expertise × Non-Government Partner	+	4512.04** (2174.0)	4293.57** (2173.0)	2528.10 (2307.0)	2439.43 (6529.8)	15,753.68 (36,866.5)	294,545.70 (173,865.4)	510,202.00** (248,163.6)	0.22 (0.15)
Agency Head Managerial Expertise	+	-712.26 (973.9)	-1283.33 (890.9)	-1994.01** (946.5)	-4448.09 (3101.7)	-18,160.90 (17,904.5)	114,878.10 (83,458.5)	253,121.00 (161,627.4)	-0.05 (0.05)
Agency Head Managerial Expertise × Non-Government Partner	+	4126.20** (1918.0)	5543.6** (1925.1)	5911.32** (1987.1)	10,853.02* (5561.5)	27,952.17 (35,108.9)	-154,623.9 (177,246.2)	-242,717.80 (306,563.9)	0.21* (0.12)
Agency Staff Politicization	-	-109.72 (99.8)	-118.28 (135.0)	-7.23 (198.4)	59.13 (425.9)	1556.40 (1489.4)	8471.19 (5848.3)	15,594.92 (19,285.8)	0.0001 (0.01)
Agency Staff Professionalism	+/-	47,426.28* (23,555.3)	43,583.04 (26,302.6)	32,126.70 (26,217.3)	54,435.98 (101,518.3)	316,716.50 (490,857.9)	-892,204 (1924,524)	420,966.80 (4,494,008.0)	1.93 (1.70)
Agency Staff Professionalism × Non-Government Partner	+	-6528.49 (9575.8)	-5151.66 (12,157.2)	6591.34 (13,408.1)	22,269.30 (36,593.1)	-2914.95 (188,612.4)	-78,170.91 (702,673.7)	-266,072.50 (1,152,297.0)	0.04 (0.69)
Prior CEO Experience	+	-18,974.6* (9774.7)	-21,339** (9484)	-20,010** (7497)	-23,838.74 (17,529.3)	-8809.92 (91,621.7)	-131,650.7 (363,471.3)	-150,116.00 (674,313.1)	-0.85** (0.35)
Prior Private Sector Management Experience	+	3647.46** (1356.5)	3680.44** (1412.9)	2765.66 (1632.2)	1889.71 (6856.1)	-31,146.98 (28,336.7)	-205,299.4 (129,483.9)	-312,863.20 (378,157.5)	0.08 (0.10)
Prior Private Sector Management Experience × Non-Government Partner	+	-7082.5** (1905.3)	-7626** (2035.4)	-7673** (2556.9)	-15,657.4** (6215.5)	-23,092.68 (22,362.6)	-6935.27 (108,976.2)	80,245.81 (318,479.7)	-0.38** (0.12)
Presidential Loyalty	+/-	11.34 (748.5)	-81.59 (977.4)	-1248.50 (1744.7)	-6539.43 (6534.2)	-8352.94 (21,567.6)	-28,359.94 (83,569.0)	-144,931.00 (200,173.1)	-0.06 (0.10)
Election Year	+	-38.07 (2456.9)	-1432.82 (2243.5)	-1991.57 (1456.6)	-2108.57 (5593.3)	9184.06 (33,153.6)	-137,039.2 (156,417.4)	-309,862.20 (270,264.4)	0.32 (0.22)
Unified Government	-	894.30 (837.9)	1033.53 (1148.0)	1152.90 (2261.7)	12,633.34** (6456.9)	32,960.79 (35,335.9)	87,512.11 (151,489.8)	60,932.63 (335,957.9)	0.16 (0.11)
Member of the President's Party	+	-57.61 (278.6)	-470.55 (331.7)	-966.63 (695.0)	-2627.59** (1324.2)	-6644.43 (6294.8)	-32,093.00 (37,861.9)	-50,501.36 (92,965.5)	-0.04 (0.03)

Majority Party	+	-471.36 (445.9)	-915.92 (706.0)	-4172.0** (1901.0)	-9530.7*** (2608.2)	-41,640** (10,490.9)	-180,406** (78,401.7)	-346,265.90* (161,607.0)	-0.18** (0.04)
Committee Chair	+	755.58* (419.1)	1245.56** (465.4)	1612.02** (814.8)	5270.80* (2880.4)	27,820.08** (12,537.7)	88,064.77 (59,872.1)	155,347.40 (182,766.7)	0.10** (0.04)
House Appropriations	+	2311.82** (1109.5)	2729.33** (1157.5)	4323.50*** (1027.3)	8675.88** (2725.2)	40,700.57** (16,713.2)	159,326.50 (97,169.8)	237,363.00 (214,590.8)	0.21** (0.06)
House Ways and Means	+	84.19 (254.3)	325.72 (415.7)	1359.34** (643.2)	4444.27 (3905.0)	39,961.96* (22,844.6)	143,216.40 (88,312.9)	339,868.00 (234,415.1)	0.11* (0.06)
ln[County Population]	+	1386.60* (691.0)	2290.3*** (632.1)	3186.79*** (529.2)	7012.95*** (1085.2)	20,409.9*** (5163.2)	50,091.09** (19,237.3)	110,073.80** (47,815.6)	0.14** (0.03)
County Percent in Poverty	-	133.30** (54.5)	248.53** (94.5)	372.05** (153.4)	1023.12** (378.8)	4445.67** (1599.9)	12,872.44*** (4364.3)	29,453.56*** (8026.8)	0.02** (0.01)
County Per Capita Income	+	63.81 (48.2)	81.84 (51.1)	75.21 (53.5)	93.79 (134.8)	702.17 (762.0)	2622.59 (3491.9)	4105.83 (7426.0)	0.004 (0.002)
New Assistance Action	+	5525.48* (2993.4)	7072.57** (3121.7)	6979.85** (3305.9)	15,779.25* (8911.8)	50,858.35 (35,023.3)	228,361.90* (116,219.5)	571,719.90** (225,637.6)	0.41** (0.19)
Continuation Action	-	2017.91 (2199.3)	2135.00 (2549.1)	2094.96 (3560.4)	7230.51 (10,240.1)	17,343.84 (40,428.2)	49,386.48 (104,179.1)	105,603.40 (221,356.5)	0.14 (0.19)
Recipient Grant Amount $T-1$	+	586.70** (282.9)	843.44** (312.8)	1083.02*** (312.2)	2237.44*** (560.9)	8401.69** (2470.1)	42,754.17*** (8970.5)	86,223.77*** (21,075.0)	0.05** (0.01)
Recipient Grant Amount $T-2$	+	144.12 (99.2)	205.85* (118.2)	251.31** (102.2)	375.48** (168.1)	1366.36 (925.0)	7544.20 (7407.1)	22,255.99** (9,745.1)	0.01** (0.005)
Recipient Grant Amount $T-3$	+	133.20 (100.0)	128.71 (112.6)	149.66 (113.4)	-158.92 (275.9)	-3461.44** (1502.1)	-21,890*** (5005.6)	-49,183.10*** (10,366.8)	-0.003 (0.01)
R <sup>2</sup>		0.0847	0.1078	0.1109	0.0663	0.0263	0.0132	0.0114	0.3054
AIC		5,589,483	5,689,682	5,834,666	6,350,248	7,088,523	7,834,362	8,289,487	947,879
BIC		5,589,774	5,689,973	5,834,957	6,350,540	7,088,815	7,834,653	8,289,778	948,170
N		241,730	241,730	241,730	241,730	241,730	241,730	241,730	241,730

**Note:** All models contain both agency/subagency and time-specific unit effects. Robust standard errors clustered by agency/subagency appear inside parentheses. \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .



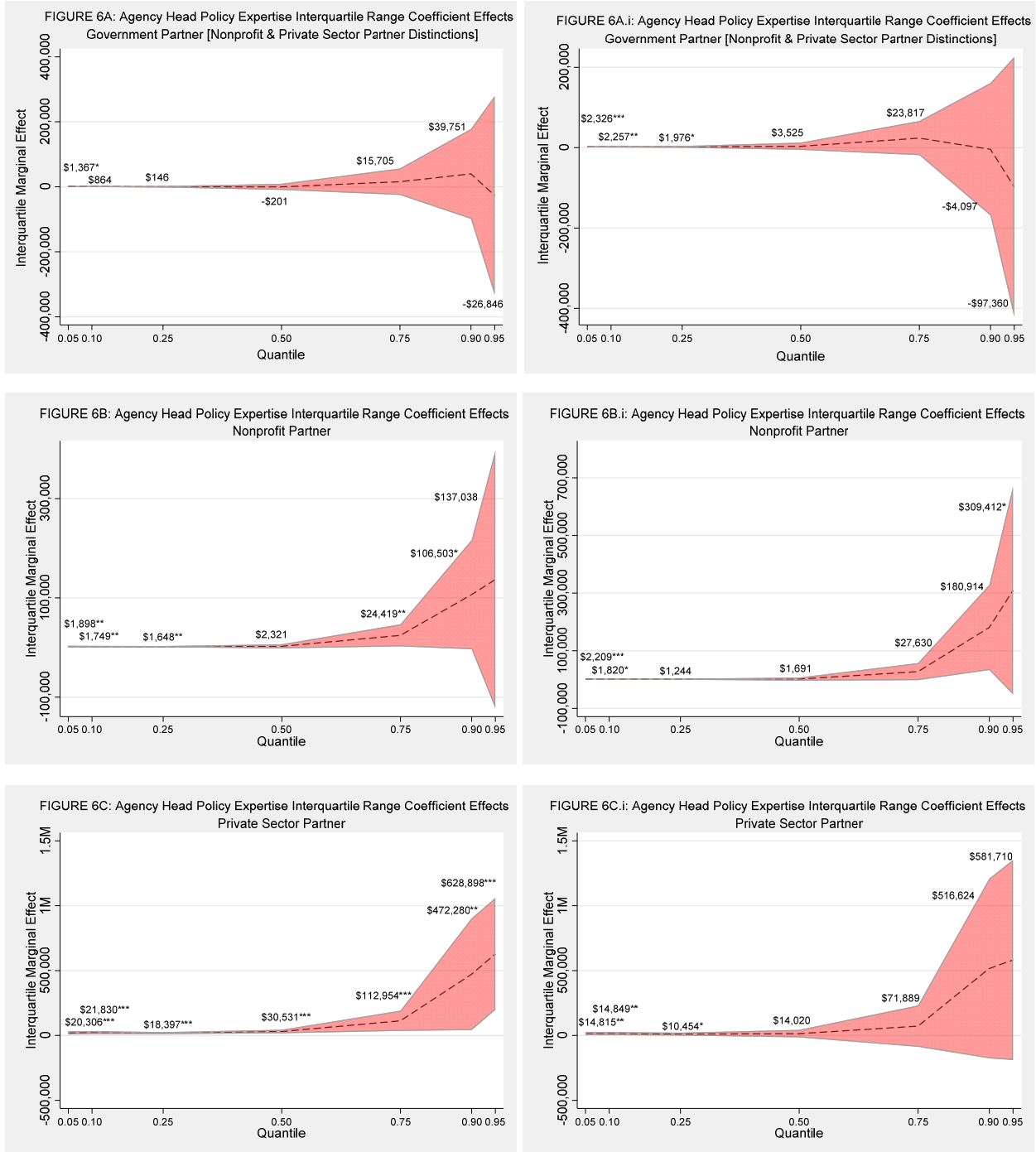
**Figure SI-1B** lists the relevant graphs comparing the statistical relationship between *Agency Head Policy Expertise* and CA award decisions associated with the **Reported Model 3** contained in the manuscript in the left-hand panel compared to the **Augmented Model 3** appearing in the right-hand panel [the full set of corresponding regression results are presented in **Tables SI-1B**]. The agency head policy expertise estimates with respect to government partner organizations reported in the manuscript (**Figure 6A**) reveal a similar pattern between these model specifications (**Figure 6A.i**), but generate larger estimates with more precision for small CA award sizes ( $\tau \leq 0.25$ ) in the alternative model specifications (**Figure 6A.i**). These estimates for nonprofit partner organizations follow a similar pattern, but also tends to be of greater magnitude (i.e., less conservative) for larger CA award sizes ( $\tau \geq 0.90$ ) in **Figure 6B.i** compared to the corresponding set of agency head policy expertise estimates reported in the manuscript (**Figure 6B**). The set of estimates for private sector partner organizations closely mirror those in both model specifications, except they are somewhat less precise in the **Augmented Model 3** specification (**Figure 6C.i**) relative to the reported manuscript estimates (**Figure 6C**).

**Figure SI-1C** lists the relevant graphs comparing the statistical relationship between *Agency Head Managerial Expertise* and *Agency Staff Professionalism* in relation to CA award decisions associated with the **Augmented Model 3** model specifications based on the regression results presented in **Tables SI-1B**. *Agency Head Managerial Expertise* only exhibits a statistically meaningful positive relationship with CA investment decisions made by U.S. federal agencies for smaller CA awards ( $\tau \leq 0.25$ ) partnered with private sector organizations

(Figure 6C.iii). *Agency Staff Professionalism* fails to exhibit a discernible positive statistical association with CA award size at any quantile.

**FIGURE SI-1B**

**Comparing Reported Model 3 Estimates to Alternative Model 3 Estimates  
(Partner Type Effects: Agency Head Policy Expertise)**



**FIGURE SI-1C**

**Comparing Reported Model 3 Estimates to Alternative Model 3 Estimates  
(Partner Type Effects: Agency Head Managerial Expertise & Agency Staff Professionalism)**

FIGURE 6A.ii: Agency Head Managerial Expertise Interquartile Range Coefficient Effects  
Government Partner

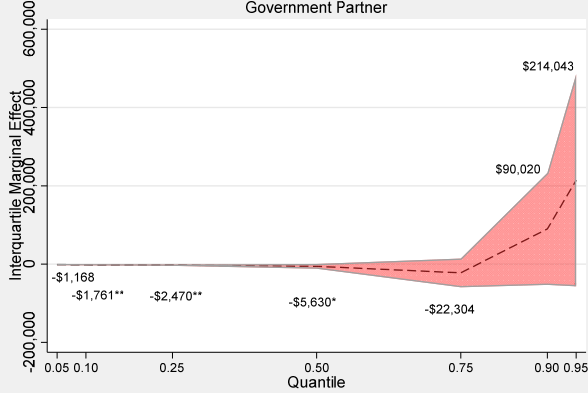


FIGURE 6A.iii: Agency Staff Professionalism Interquartile Range Coefficient Effects  
Government Partner

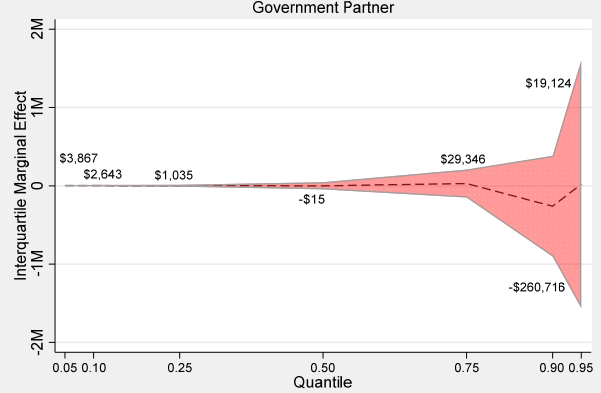


FIGURE 6B.ii: Agency Head Managerial Expertise Interquartile Range Coefficient Effects  
Nonprofit Partner

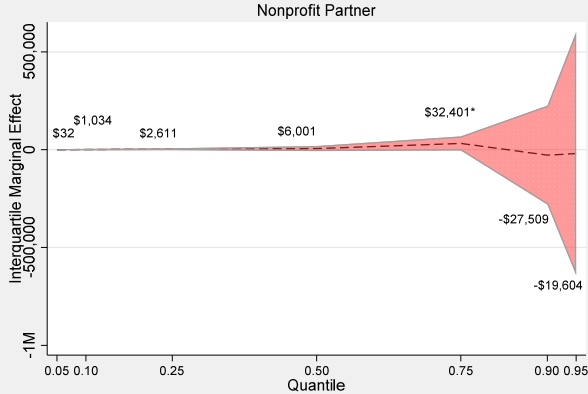


FIGURE 6B.iii: Agency Staff Professionalism Interquartile Range Coefficient Effects  
Nonprofit Partner

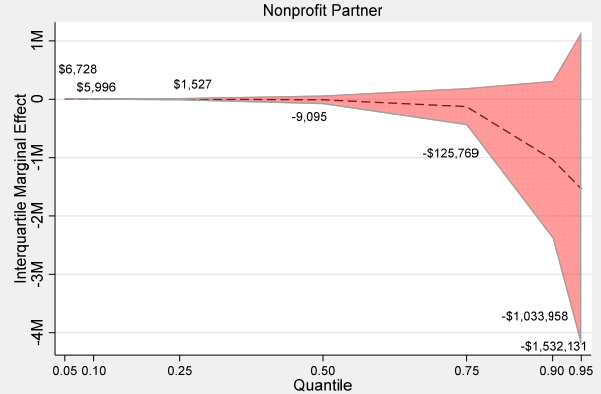


FIGURE 6C.ii: Agency Head Managerial Expertise Interquartile Range Coefficient Effects  
Private Sector Partner

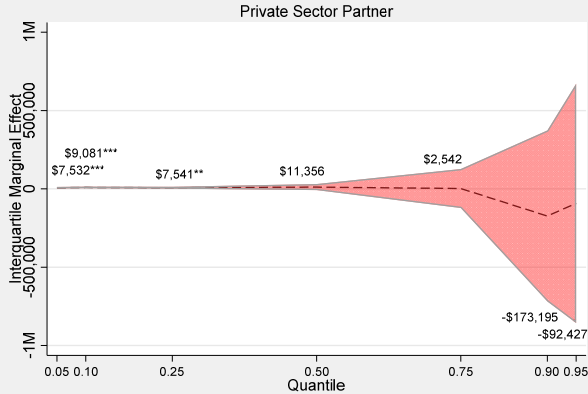
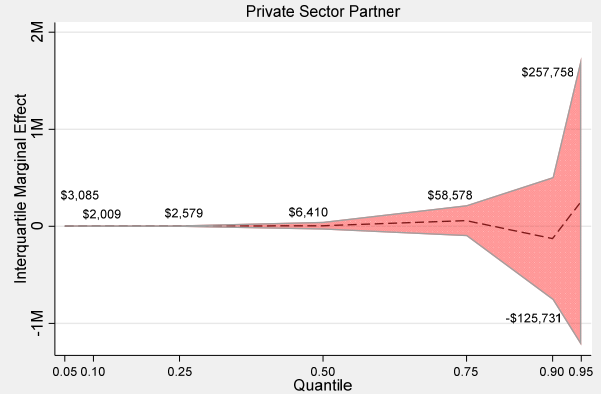


FIGURE 6C.iii: Agency Staff Professionalism Interquartile Range Coefficient Effects  
Private Sector Partner



**TABLE SI-1B**

**Alternative Model 3 Quantile Regression Estimates: Government/Nonprofit/Private Sector Partner Distinctions**  
*(Additional Conditional Partner Recipient Effects for Agency Head Managerial Expertise & Agency Staff Professionalism)*

Covariates	Expected Sign	Quantile $\tau = 0.05$	Quantile $\tau = 0.10$	Quantile $\tau = 0.25$	Quantile $\tau = 0.50$	Quantile $\tau = 0.75$	Quantile $\tau = 0.90$	Quantile $\tau = 0.95$	Logged OLS (Mean)
Agency Head Policy Expertise	+	2268.32*** (738.4)	2201.54** (899.4)	1927.19* (1027.6)	3437.44 (4311.4)	23,225.27 (20,300.8)	-3994.94 (78,797.3)	-94,937.46 (154,423.8)	0.12 (0.07)
Agency Head Policy Expertise × Nonprofit Partner	+	3.24 (651.0)	-538.03 (1146.3)	-1096.60 (1542.1)	-3105.06 (5737.2)	3324.18 (28,243.5)	288,745** (133,613.2)	647,807** (283,339.5)	0.03 (0.08)
Agency Head Policy Expertise × Private Sector Partner	+	7770.14** (3634.4)	7837.96** (3551.7)	5352.06 (3607.3)	6667.56 (9519.3)	26,681.60 (56,107.8)	292,529.90 (235,696.2)	374,959.60 (290,052.5)	0.36 (0.24)
Agency Head Managerial Expertise × Nonprofit Partner	+	-905.50 (758.4)	-1488.46** (673.2)	-2177.05** (833.0)	-4814.95 (2982.0)	-19,772.26 (17,435.8)	106,519.50 (76,838.6)	235,354.50 (148,591.0)	-0.06 (0.05)
Agency Head Managerial Expertise × Private Sector Partner	+	5677.24** (2132.7)	7100.74** (2073.5)	6588.64** (2477.2)	11,334.11 (7787.4)	18,091.79 (53,304.3)	-164,058.1 (224,660.2)	-188,071.00 (339,725.1)	0.24 (0.19)
Agency Staff Politicization	-	-91.46 (83.9)	-99.03 (115.7)	6.27 (180.6)	79.92 (400.7)	1589.34 (1450.9)	8560.31 (5704.7)	15,475.07 (19,217.1)	0.001 (0.01)
Agency Staff Professionalism	+/-	29,510.89* (16,173.3)	24,173.69 (18,759.2)	18,228.87 (22,429.2)	39,122.24 (96,938.6)	337,454.50 (483,213.9)	-687,328.5 (1887,550)	991,262.20 (4,414,235.0)	1.31 (1.58)
Agency Staff Professionalism × Nonprofit Partner	+	2635.88 (4570.1)	4407.80 (6407.1)	7836.63 (8250.9)	9081.92 (34,046.8)	-202,703.2 (156,023.2)	-1,052,445 (695,074.4)	-2284,274 (1519,776)	-0.17 (0.47)
Agency Staff Professionalism × Private Sector Partner	+	-6966.98 (19,393.4)	-5964.45 (23,196.7)	10,144.90 (23,906.4)	44,624.27 (54,903.9)	209,792.00 (296,428.5)	984,469.5 (1238,867)	1766,502 (1770,057)	0.57 (1.31)
Nonprofit Partner	+	-2954.02 (2283.9)	-3853.45 (3511.5)	-4972.73 (5484.7)	-241.94 (26,941.6)	62,360.80 (104,537.0)	99,639.58 (388,398.9)	149,638.70 (866,922.3)	-0.05 (0.39)
Private Sector Partner	+	-34,273** (14,495)	-38,049** (14,320.4)	-34,658*** (11,846.4)	-47,479* (23,756.0)	-86,652 (111,755)	-402,271 (443,550)	-544,581.00 (588,210.8)	-1.64** (0.65)
Prior CEO Experience	+	2968.81*** (961.0)	2936.87*** (1064.2)	2244.42 (1555.2)	1526.89 (7205.2)	-27,938.15 (31,424.5)	-192,209 (138,997.3)	-303,467.70 (395,919.5)	0.06 (0.10)
Prior Private Sector Management Experience	+	-63767*** (1404.8)	-6816*** (1432)	-6948*** (2021.1)	-14,983*** (5276.3)	-23,987.10 (21,767.9)	-14,910.45 (114,099.0)	78,969.72 (320,962.6)	-0.35*** (0.09)
Presidential Loyalty	+/-	506.34 (535.2)	457.15 (685.2)	-828.11 (1474.6)	-6000.75 (6128.1)	-7952.08 (21,221.9)	-28,298.52 (84,256.5)	-145,403.30 (201,424.1)	-0.04 (0.09)

Election Year	+	-292.41 (2138.2)	-1695.37 (1983.2)	-2110.16 (1373.3)	-2162.99 (5467.2)	10,849.31 (30,748.4)	-129,154 (149,828.1)	-291,339.50 (260,240.8)	0.20 (0.17)
Unified Government	-	913.10 (847.6)	1062.00 (1205.4)	1189.86 (2297.8)	12,626.51* (6433.3)	32,632.11 (34,858.1)	85,204.27 (149,116.0)	57,915.37 (330,676.3)	0.16 (0.11)
Member of the President's Party	+	102.72 (322.6)	-285.70 (359.1)	-801.85 (717.9)	-2478.82* (1350.3)	-6855.96 (6125.8)	-34,893.04 (37,166.5)	-55,188.77 (91,722.3)	-0.03 (0.03)
Majority Party	+	-84.68 (562.0)	-484.68 (846.4)	-3786.52* (2039.3)	-9004.6*** (2862.1)	-40,455*** (10,322.7)	-177,587** (78,300.1)	-341,033** (162,519.5)	-0.16*** (0.05)
Committee Chair	+	666.90 (426.9)	1153.08* (601.6)	1541.67 (911.8)	5133.55 (3101.7)	27,320.38** (12,072.5)	85,807.72 (58,270.9)	152,252.60 (179,636.0)	0.10** (0.04)
House Appropriations	+	2012.40** (860.4)	2402.86** (887.1)	4034.57*** (829.6)	8196.20*** (2413.4)	39,022.42** (15,842.3)	153,071.50 (94,715.7)	227,376.10 (211,354.6)	0.20*** (0.05)
House Ways and Means	+	-153.39 (251.5)	74.72 (360.4)	1137.77* (635.2)	3980.07 (3815.3)	37,793.32* (21,911.3)	133,055.00 (86,458.6)	321,814.50 (231,800.3)	0.10 (0.06)
ln[County Population]	+	1343.99** (598.7)	2249.28*** (529.3)	3167.79*** (458.1)	6960.99*** (1055.0)	20,252.4*** (5244.5)	49,259.28** (19,569.3)	110,106.90** (48,639.9)	0.13*** (0.03)
County Percent in Poverty	-	90.74 (54.9)	201.06* (102.4)	330.41* (166.8)	968.07** (406.9)	4337.59*** (1587.4)	12,751.13*** (4,189.4)	29,487.87** (7824.6)	0.02** (0.01)
County Per Capita Income	+	44.06 (31.1)	59.16* (33.0)	53.93 (38.8)	69.74 (110.0)	675.37 (720.9)	2689.18 (3468.5)	4110.83 (7476.7)	0.003* (0.002)
New Assistance Action	+	5434.26** (2623.8)	6960.92** (2727.9)	6863.34** (2901.0)	15,689.92* (8425.5)	51,007.62 (34,376.9)	230,704* (115,851.7)	574,871.30** (223,445.4)	0.41** (0.17)
Continuation Action	-	1683.59 (1894.5)	1742.04 (2225.1)	1730.63 (3243.8)	6945.07 (9795.0)	18,118.73 (39,636.2)	57,052.10 (102,346.2)	116,344.90 (219,802.6)	0.13 (0.17)
Recipient Grant Amount $T-1$	+	478.19** (212.7)	723.70*** (230.6)	981.63*** (246.9)	2101.61*** (488.2)	8164.54*** (2478.3)	42,274.75*** (9113.5)	85,466.48*** (21,146.2)	0.05*** (0.01)
Recipient Grant Amount $T-2$	+	112.17 (70.2)	170.99* (87.9)	222.26** (84.8)	333.14* (143.3)	1270.97 (876.9)	7232.39 (7210.5)	21,731.72** (9440.0)	0.01*** (0.004)
Recipient Grant Amount $T-3$	+	127.38 (88.5)	120.82 (96.0)	141.93 (97.3)	-154.25 (256.4)	-3348.34** (1476.6)	-21,166*** (5106.3)	-47,973.40*** (10,643.0)	-0.003 (0.01)
R <sup>2</sup>		0.1356	0.1436	0.1109	0.0619	0.0237	0.0168	0.0121	0.3135
AIC		5,582,531	5,684,024	5,832,429	6,349,805	7,088,279	7,834,094	8,289,367	945,041
BIC		5,582,822	5,684,315	5,832,720	6,350,096	7,088,570	7,834,385	8,289,658	945,442
N		241,730	241,730	241,730	241,730	241,730	241,730	241,730	241,730

**Note:** All models contain both agency/subagency and time-specific unit effects. Robust standard errors clustered by agency/subagency appear inside parentheses.

\*  $p < 0.10$       \*\*  $p < 0.05$       \*\*\*  $p < 0.01$ .

## ***2. Evaluating Secular Time Trends in Average Agency Head Policy Expertise and CA Award Size, 1988–2008***

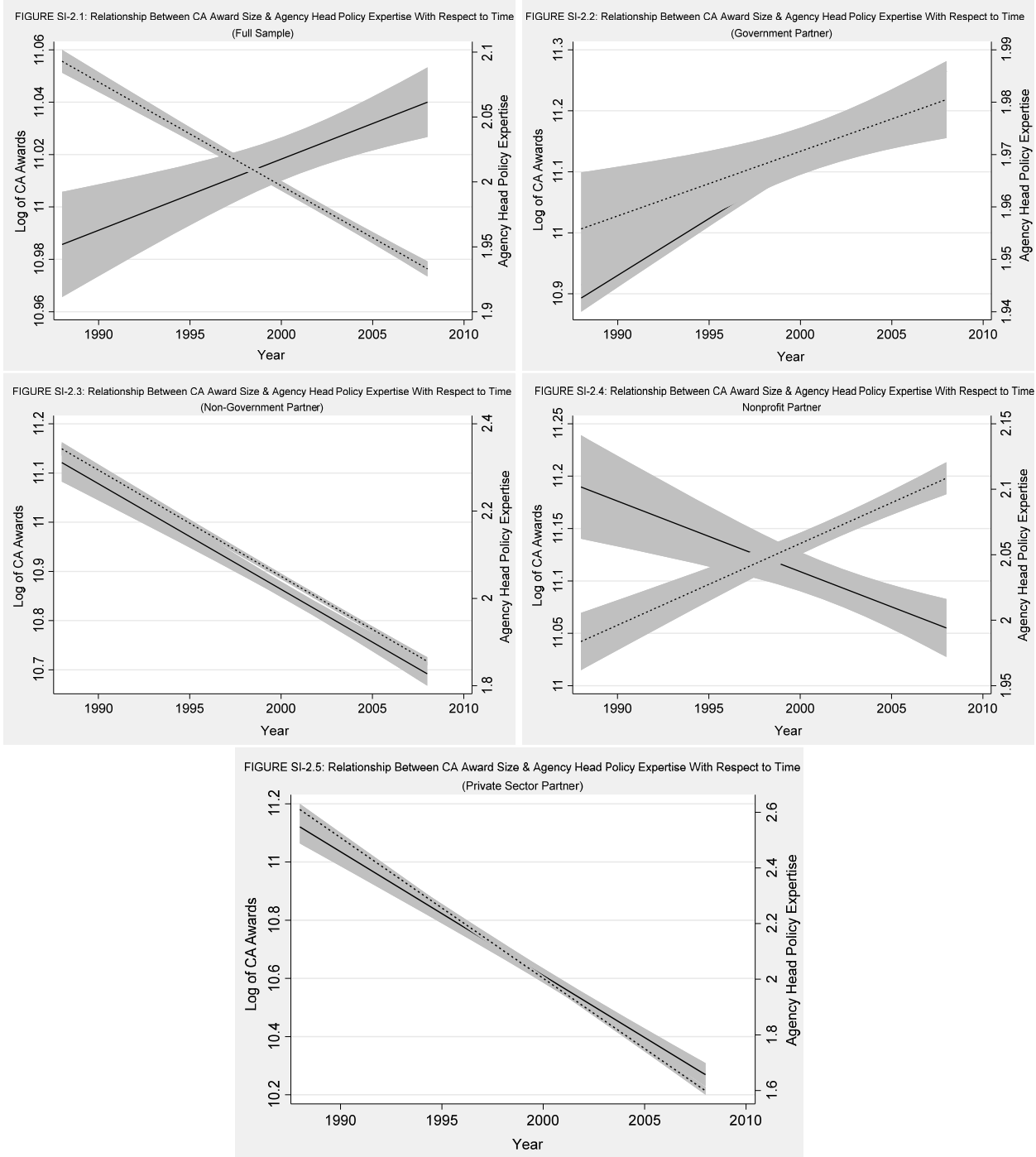
In addition, we evaluate the extent to which the average annual values of both agency head policy expertise and CA award size varies through time in our sample of observations (see **Figure SI-2**). It is worth reminding the reader that the regression models reported in both the manuscript and *Supporting Information* online appendix account for yearly unit time trend effects, to account for this potential threat to making valid inferences, by including year unit effects to capture time trends that do not impose functional form assumptions on these temporal pattern. These year unit effects parcel out the confounding effects of time with respect to the various covariates shared covariation in relation to CA Award size.

Typically, average logged annual CA award sizes across all agencies (*denoted by solid line estimates*) appear to grow through time in an overall sense (**Figure SI-2.1**), mostly driven by the fact that most of the CA awards in our full sample pertain to government partnerships with subgovernmental entities (**Figure SI-2.2**). CA award size tends to decline, on average, through time for non-governmental partners (**Figure SI-2.3**), including both nonprofit (**Figure SI-2.4**) and private sector partner organizations (**Figure SI-2.5**). Average annual agency head policy expertise for these sample of CA award observations (*denoted by dashed line estimates*) exhibits a modest decline of 0.15 units from the beginning year (1988) to the end (2008) of the sample period (**Figure SI-2.1**). Most of this modest decline can be attributed to the comparatively sharp average temporal decline in agency head policy expertise for private sector partnerships which reflect a range decline of approximately 0.55 units (**Figure SI-2.5**) compared to the analogous

rise of 0.025 units for government partners (Figure SI-2.2) and 0.12 units for nonprofit partners (Figure SI-2.4), respectively.

### FIGURE SI-2

#### Comparing Bivariate Linear Relationships Between Agency Head Policy Expertise and Time & CA Award Size and Time (with 95% Confidence Intervals)



### *3. Supplementary Analysis of Reduced Model Specifications Omitting All Non-Agency Related Control Covariates (Except for (Sub)Agency & Year Fixed Effects) to Assess Sensitivity of Core Estimates and Null Findings on Alternative Agency-Centered Explanations*

The evidence presented in this study claims to generally find null effects for other alternative agency-centered explanations of CA award size, independent of an agency head's policy expertise. These include the following covariates included in the regression model specifications reported elsewhere in both the manuscript and *Supporting Information* online appendix. These covariates include (1) *agency head managerial expertise*, (2) *agency staff professionalism*, (3) *agency staff politicization*, (4) *agency head loyalty to the appointing president [presidential loyalty]*, (5) *prior private sector management experience*, and (6) *prior CEO experience* (the latter pair of covariates are new measures introduced in the updated model specifications to account for an agency head's private sector background shaping their willingness to invest in cooperative agreements).

A potential concern is that the reported tests suffer from low statistical power (i.e., biased towards committing Type II inferential errors – i.e., false rejection of relationships given the numerous covariates included in the model specifications). While it is true that numerous covariates are specified in these regression estimating equations, it is also worth noting that the sample sizes are incredibly large (total N = 241,730; the upper quartile of observations where the largest effect sizes observed for the main covariates constitute over 60,000 CA award cases!), thus boosting statistical power in the presence of a large number of covariates. Nonetheless, this issue is addressed by re-estimating the regression models appearing in the manuscript while removing all non-agency centered control covariates, and only keeping agency-centered



covariates and both agency and year unit effects. This sensitivity analysis led to the removal of 15 control covariates (approximately 2/3rds of all non-unit effect control covariates specified in the regression models reported elsewhere).

The findings from these ‘reduced’ model specifications appear below in **Table SI-3A** through **Table SI-3C**. As with the reported manuscript findings, a paucity of consistent evidence exists showing that these alternative agency-centered explanations explain sizable variation in CA award decisions made within U.S. federal agencies. One minor, albeit somewhat tenuous exception is the *Agency Head Managerial Expertise* covariate whose coefficient increases by approximately between 15% and 25% in the upper decile of CA awards ( $\tau \geq 0.90$ ), and becomes estimates with somewhat more precision to attain marginal statistical significance at the  $p \leq 0.10$  level. The other exceptional instances where null findings become statistically discernible when eliminating non-agency related covariates is the following: (1) *Agency Staff Professionalism* switches from a positive nonsignificant coefficient in the logged-OLS model to a negative and significant coefficient [cf. **Table A-1** in the manuscript; **Table SI-3A** below]; (2) *Prior Private Sector Managerial Experience* goes from negative coefficient that is not discernible from zero to a negative coefficient that is significant in the logged OLS model, thus signifying enhanced precision of this particular estimate [cf. **Table A-2** in the manuscript; **Table SI-3B** below]; and (3) the coefficients for *Prior Private Sector Managerial Experience* and *Prior CEO Experience* in the logged-OLS model become attenuated in magnitude (albeit remain statistically significant at conventional levels) compared to those reported in the manuscript [cf. **Table SI-3C** below, **Table A-3** in the manuscript]. The fact remains that these other agency considerations do not impact CA award size akin to what is

observed from agency had policy expertise consistent with **H1** and **H2** advanced in the manuscript. These results are not an artifact of model specification choices which could adversely impact the statistical power of the hypotheses tests for these other agency-centered covariates. In addition, the main findings relating to *Agency Head Policy Expertise* from the manuscript are substantively the same, though the models omitting this large subset of control covariates tends to be less conservative in magnitude than those reported in the manuscript based on a richer set of model specifications (see **Figures SI-3A & SI-3B** where the reported manuscript quantile estimates of interest in the left-hand column can be directly compared with those generated from these ‘reduced’ model specifications in the right-hand column).

**TABLE SI-3A**

**Evaluating the Influence of Agency Head Policy-Specific Expertise on U.S. Federal Cooperative Agreement Decisions:  
Alternative Model 4 Quantile Regression Estimates without Additional Covariates**

Covariates	Expected Sign	Quantile $\tau = 0.05$	Quantile $\tau = 0.10$	Quantile $\tau = 0.25$	Quantile $\tau = 0.50$	Quantile $\tau = 0.75$	Quantile $\tau = 0.90$	Quantile $\tau = 0.95$	Logged OLS (Mean)
<b>Agency Head Policy Expertise</b>	+	4405.4*** (1357.6)	4388.1*** (1448.7)	3602.3*** (1247.8)	4799.7 (3046.7)	26,674.6** (12,709.9)	96,147.8* (53,595.0)	72,827.2 (134,962.8)	0.22*** (0.07)
<b>Agency Head Managerial Expertise</b>	+	1761.1 (1146.0)	1997.9 (1278.8)	1561.0 (1466.1)	1705.2 (3395.0)	-2625.8 (8626.6)	70,081.0* (38,384.7)	192,649.8* (102,125.0)	0.08 (0.07)
<b>Agency Staff Politicization</b>	-	-66.4 (122.3)	-76.6 (168.4)	7.8 (247.7)	57.4 (505.8)	1485.1 (1593.4)	8771.7 (6736.4)	16,682.6 (20,724.3)	0.06 (0.12)
<b>Agency Staff Professionalism</b>	+/-	22,388.9 (31,564.2)	12,277.7 (40,243.7)	3516.7 (45,256.4)	8380.1 (128,996.4)	184,240.5 (509,613.9)	-1,341,736.0 (1,922,353.0)	-824,553.3 (4,481,146.0)	-0.42** (0.19)
Prior CEO Experience	+	3219.1 (1955.3)	3247.9 (2102.9)	2573.2 (2102.2)	1855.2 (6564.3)	-31,302.4 (27,691.5)	-207,009.6 (140,175.1)	-320,686.1 (393,744.7)	0.00 (0.01)
Prior Private Sector Management Experience	+	-7636.2** (3099.0)	-8523.7** (3617.8)	-9008.7** (4226.3)	-17,646.7** (8116.7)	-26,764.5 (25,077.3)	-18,627.3 (114,189.9)	50,253.0 (325,833.3)	0.49 (2.41)
Presidential Loyalty	+/-	-90.3 (956.6)	-257.5 (1250.3)	-1416.6 (1984.1)	-7168.8 (6816.9)	-11,699.5 (22,389.5)	-43,985.0 (83,368.3)	-184,113.3 (203,522.8)	-0.07 (0.11)
R <sup>2</sup>		0.0348	0.0349	0.0144	0.0051	0.0015	0.0006	0.0032	0.2492
AIC		5,610,109	5,712,399	5,851,424	6,356,413	7,091,668	7,836,543	8,290,958	966,700
BIC		5,610,379	5,712,669	5,851,704	6,356,693	7,091,948	7,836,824	8,291,239	966,980
N		241,730	241,730	241,730	241,730	241,730	241,730	241,730	241,730

*Note:* All models contain both agency/subagency and time-specific unit effects. Robust standard errors clustered by agency/subagency appear inside parentheses.

\* p < 0.10      \*\* p < 0.05      \*\*\* p < 0.01.

**TABLE SI-3B**

**Evaluating the Influence of Agency Head Policy-Specific Expertise on U.S. Federal Cooperative Agreement Decisions:  
Without Additional Covariates; Distinction Between Government Partner versus Non-Government Partner Organizations**

Covariates	Expected Sign	Quantile $\tau = 0.05$	Quantile $\tau = 0.10$	Quantile $\tau = 0.25$	Quantile $\tau = 0.50$	Quantile $\tau = 0.75$	Quantile $\tau = 0.90$	Quantile $\tau = 0.95$	Logged OLS (Mean)
Agency Head Policy Expertise	+	952.8 (1225.5)	320.9 (1230.0)	-461.8 (1159.3)	-1562.2 (4182.5)	10,641.9 (18,587.1)	19,710.0 (64,729.5)	-65,340.8 (147,047.9)	0.03 (0.39)
Agency Head Policy Expertise × Non-Government Partner	+	8415.4* (4381.2)	9937.4** (4418.9)	10,025.5*** (3666.0)	16,663.8*** (6015.3)	47,085.6* (25,161.4)	216,591.2** (87,831.7)	394,345.9*** (99,416.5)	0.48 (2.69)
Agency Head Managerial Expertise	+	1351.6 (828.5)	1520.9 (919.6)	1105.9 (1176.3)	1211.2 (2958.3)	-2724.6 (8012.2)	67,832.7* (37,861.3)	189,224.8* (98,189.2)	0.06 (1.20)
Agency Staff Politicization	-	-126.7 (117.1)	-147.2 (161.5)	-61.0 (239.9)	-33.1 (486.2)	1347.6 (1581.7)	7975.8 (6711.1)	15,294.4 (20,632.7)	0.00 (-0.18)
Agency Staff Professionalism	+/-	26,260.5 (27,625.4)	16,652.9 (35,677.3)	7152.1 (41,658.1)	6586.0 (128,408.2)	140,449.2 (513,899.9)	-1489,618.0 (1960,962.0)	-1,113,758.0 (4,483,191.0)	0.56 (0.25)
Non-Government Partner		-26,134.6* (14,881.0)	-30,572.0* (15,227.9)	-29,697.9** (12,954.9)	-37,835.6* (19,737.8)	-49,955.6 (59,917.6)	-308,565.3* (172,534.6)	-532,448.4* (303,482.9)	-1.28 (-2.20)
Prior CEO Experience	+	3716.0** (1619.0)	3833.0** (1744.3)	3156.8* (1727.0)	2757.8 (5797.8)	-29,084.9 (25,360.0)	-196,348.8 (132,003.0)	-301,447.6 (377,261.5)	0.09 (1.04)
Prior Private Sector Management Experience	+	-7866.4*** (2776.2)	-8802.3** (3244.7)	-9316.7** (3902.2)	-18,429.0** (7840.1)	-30,311.4 (24,870.8)	-33,094.8 (105,918.2)	23,223.4 (309,791.8)	-0.44 (-2.57)
Presidential Loyalty	+/-	-189.6 (934.0)	-374.3 (1236.1)	-1531.9 (1978.4)	-7336.3 (6878.3)	-12,053.1 (22,382.9)	-45,777.3 (81,782.6)	-187,314.7 (198,501.8)	-0.08 (-0.71)
R <sup>2</sup>		0.0696	0.0677	0.0335	0.0095	0.0040	0.0016	0.0040	0.2631
AIC		5,599,908	5,703,395	5,846,910	6,355,607	7,091,058	7,836,143	8,290,738	962,175
BIC		5,600,189	5,703,686	5,847,191	6,355,888	7,091,350	7,836,434	8,291,019	962,175
N		241,730	241,730	241,730	241,730	241,730	241,730	241,730	241,730

*Note:* All models contain both agency/subagency and time-specific unit effects. Robust standard errors clustered by agency/subagency appear inside parentheses.

\*  $p < 0.10$       \*\*  $p < 0.05$       \*\*\*  $p < 0.01$ .

TABLE SI-3C

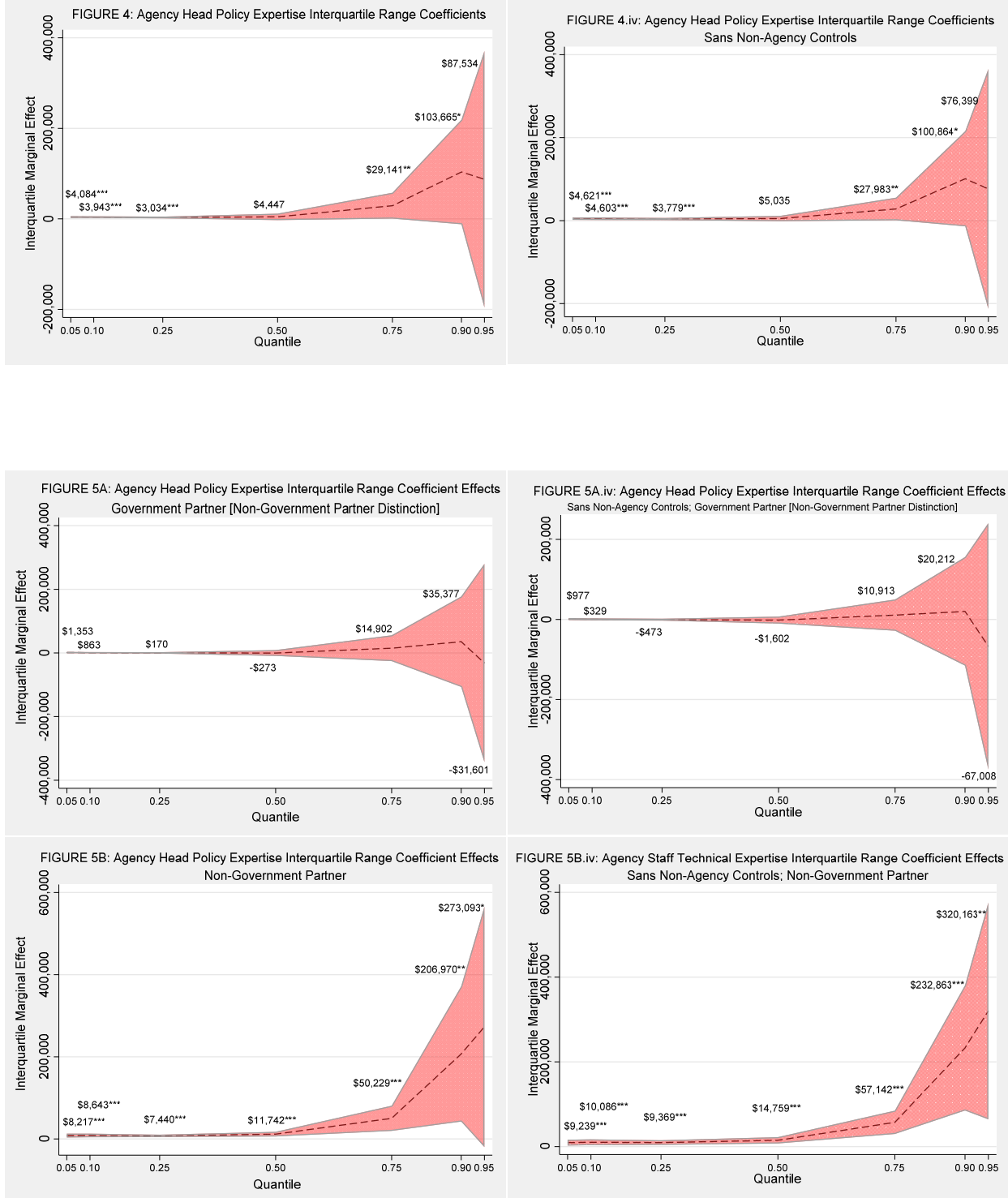
Evaluating the Influence of Agency Head Policy-Specific Expertise on U.S. Federal Cooperative Agreement Decisions:  
*Without Additional Covariates; Distinctions Among Government, Nonprofit, and Private Sector Organizations*

Covariates	Expected Sign	Quantile $\tau = 0.05$	Quantile $\tau = 0.10$	Quantile $\tau = 0.25$	Quantile $\tau = 0.50$	Quantile $\tau = 0.75$	Quantile $\tau = 0.90$	Quantile $\tau = 0.95$	Logged OLS (Mean)
Agency Head Policy Expertise	+	995.5 (833.6)	358.8 (864.1)	-447.2 (1050.9)	-1430.2 (4227.8)	11,589.3 (18,694.7)	24,422.9 (63,090.8)	-59,800.8 (144,998.0)	0.03 (0.49)
Agency Head Policy Expertise × Nonprofit Partner	+	1477.1*** (426.6)	2127.0*** (732.2)	3117.9** (1426.8)	4532.8 (6126.3)	8864.2 (27,591.2)	81,557.5 (65,258.0)	222,842.4 (145,130.3)	0.11 (1.34)
Agency Head Policy Expertise × Private Partner	+	13,317.1** (5058.1)	15,429.9*** (4945.1)	14,836.6*** (3788.2)	25,375.4*** (6022.7)	75,844.7*** (25,989.6)	321,564.5** (122,972.0)	526,570.5*** (97,353.6)	0.75*** (3.95)
Agency Head Managerial Expertise	+	853.6 (696.7)	955.3 (733.6)	596.8 (995.8)	367.8 (2741.1)	-5128.4 (7198.6)	59,991.7 (36,716.6)	179,053.4* (97,384.4)	0.04 (0.84)
Agency Staff Politicization	-	-101.5 (93.0)	-118.7 (132.6)	-35.5 (212.4)	9.9 (442.4)	1473.9 (1546.6)	8398.2 (6565.1)	15,838.5 (20,543.2)	0.00 (-0.04)
Agency Staff Professionalism	+/-	10,224.5 (20,474.1)	-1729.8 (27,845.8)	-9711.1 (36,328.3)	-19,604.8 (124,414.9)	75,050.4 (519,946.4)	-1676,674 (2013,559)	-1365,694.0 (4569,254.0)	-0.26 (-0.12)
Nonprofit Partner	+	-5137.0*** (1651.2)	-6520.2** (2760.6)	-7667.5 (5023.2)	-3437.7 (22,498.8)	36,964.1 (80,931.2)	-56,622.9 (254,551.5)	-194,461.9 (584,221.3)	-0.21 (-0.73)
Private Sector Partner	+	-43,011.3** (19,099.3)	-49,960.1** (19,472.0)	-47,558.0*** (16,604.3)	-65,168.2** (27,503.3)	-115,907.6 (75,772.1)	-489,752.5** (193,701.4)	-779,485.6*** (260,547.3)	-2.14** (-2.63)
Prior CEO Experience	+	3322.4** (1336.3)	3351.3** (1470.2)	2660.3 (1691.0)	2284.6 (6238.8)	-28,582.4 (25,954.7)	-189,450.9 (131,877.4)	-294,358.9 (373,242.8)	0.07 (0.86)
Prior Private Sector Management Experience	+	-7115.2*** (1969.0)	-7892.5*** (2274.9)	-8394.8*** (2937.8)	-17,473.2*** (6186.5)	-30,615.9 (21,627.8)	-42,691.3 (100,146.6)	13,816.5 (295,232.3)	-0.41*** (-3.41)
Presidential Loyalty	+/-	264.1 (625.1)	147.7 (838.3)	-1049.7 (1579.8)	-6605.7 (6289.1)	-10,332.3 (21,566.2)	-41,190.7 (81,730.4)	-181,002.0 (198,929.8)	-0.05 (-0.60)
R <sup>2</sup>		0.1212	0.0951	0.0264	0.0035	0.0034	0.0016	0.0039	0.2771
AIC		5,590,909	5,695,473	5,843,033	6,354,671	7,090,806	7,835,989	8,290,703	957,527
BIC		5,591,200	5,695,754	5,843,314	6,354,952	7,091,097	7,836,270	8,290,984	957,819
N		241,730	241,730	241,730	241,730	241,730	241,730	241,730	241,730

**Note:** All models contain both agency/subagency and time-specific unit effects. Robust standard errors clustered by agency/subagency appear inside parentheses. \* p < 0.10 \*\* p < 0.05 \*\*\* p < 0.01.

**FIGURE SI-3A:**

**Comparing Reported Model 2 Estimates to Alternative Model 2 Estimates  
(Omitting Non-Agency Related Control Covariates)**



**FIGURE SI-3B:**

**Comparing Reported Model 3 Estimates to Alternative Model 3 Estimates  
(Omitting Non-Agency Related Control Covariates)**

