

5 Appendix (for online publication)

Table A1: IAS Promotion Guidelines - Seniority based progression

Level	Years	Description	Grade	Basic pay (Rs.)	Grade pay (Rs.)
Junior time scale	0	Entry level	Jr. Time Scale	15,600-39,100	5,400
Senior time scale	4	Committee of Chief Secretary and two supertime scale officers to evaluate and decide suitability of promotion - subject to vacancies	Sr. Time Scale	15,600-39,100	6,600
Jr. Admin. Grade	9	Non-functional, admissible without any screening except when disciplinary proceedings are pending against the officer	Under Secy, Dy Secy Level/JAG, Dy Secy Equiv, Dy Secy, Under Secy Equiv, Under Secy Level	15,600-39,100	7,600
Selection Grade	13	Committee of Chief Secretary and two supertime scale officers (or above) to screen - subject to vacancies	Dir Level/SLJAG, Directory Equiv, Director	37,400-67,000	8,700
Supertime scale	16	Committee of Chief Secretary and two principal secretaries (if unavailable, seniormost supertime scale officer) to screen - subject to vacancies	JS Level/Level-I, Joint Secy, Joint Secy (Ex-Off), Joint Secy Equiv, Addl Secy Level, Addl Secy, Addl Secy (Ex-Off)	37,400-67,000	10,000
Principal secretary	25	Committee of Chief Secretary and one senior most officer on the Chief Secretary level to screen. Subject to vacancies.	Secretary, Secy (Ex-Off), Secy Equiv	37,400-67,000	12,000
Chief Secretary	30	Committee of Chief Secretary, one officer in same grade within state, one officer serving at Centre	Above Secy Level, Cab Secy	80,000	0

IAS Promotion Guidelines (2000): No. 20011/4/92/AIS-II. IAS payscale in 2012 according to the 6th Pay Commission (See also document No 14021/1/2008-AIS-II). The salary is adjusted for a dearness allowance (DA) which accounts for inflation. At time of survey (January 2013) this was 80% of the combined basic pay and grade pay.

Table A2: Difference in characteristics by non-response, pre/post reform

	(1)	(2)	(3)	(4)
	Mean	Diff. for officer with missing vs. non-missing score		DiD
	var.	Pre-reform	Post-reform	(3)-(2)
Age at entry	25.681	0.204*** (0.061)	0.421** (0.161)	0.217 (0.173)
Female	0.155	0.004 (0.012)	0.018 (0.025)	0.014 (0.027)
Caste: OBC	0.083	0.002 (0.006)	-0.018 (0.025)	-0.019 (0.026)
Caste: SC	0.139	0.005 (0.009)	0.015 (0.021)	0.010 (0.021)
Caste: ST	0.053	0.012** (0.005)	-0.002 (0.013)	-0.014 (0.013)
Entry score	0.071	-0.041 (0.026)	-0.096 (0.082)	-0.054 (0.083)
Training score	0.051	-0.093*** (0.027)	-0.096 (0.069)	-0.002 (0.075)
Improved	0.328	-0.004 (0.013)	-0.013 (0.041)	-0.008 (0.044)
Urban background	0.742	0.020 (0.013)	-0.018 (0.026)	-0.038 (0.028)
Academic distinction	0.321	-0.016 (0.014)	-0.022 (0.032)	-0.006 (0.035)
STEM or Economics	0.592	0.001 (0.015)	-0.009 (0.026)	-0.010 (0.031)
Previous: Education/research	0.168	-0.018 (0.011)	-0.027*** (0.009)	-0.009 (0.014)
Previous: Finance/banking	0.058	0.004 (0.007)	0.015** (0.004)	0.011 (0.010)
Previous: Private/SOE	0.120	-0.008 (0.010)	0.024 (0.027)	0.032 (0.028)
Previous: Public sector	0.321	-0.002 (0.013)	-0.041 (0.038)	-0.040 (0.039)
Previous: Public AIS	0.033	0.005 (0.005)	0.003 (0.005)	-0.002 (0.007)
Joint significance test (<i>p</i> -value)		0.000	0.811	0.641
- without new covariates		0.000	0.393	0.536
Observations	112,541			
(Minimum obs.)	(89,892)			

Unit of observation is the 360 score provided by a respondent about the perceived performance of an IAS officer. Comparing means of non-missing vs. missing observations. Column 3 shows the raw difference and Column 4 shows the difference within a respondent. Sample covers the cross-section of centrally recruited IAS officers in 2012-13 with performance ratings. Urban background denotes officers from urban areas, Academic distinction is a dummy for having received an academic distinction. STEM is a dummy for graduates of Science, Technology, Engineering and Mathematics and Economics degrees. Previous job denotes the sector of employment previous to entry into IAS (Education/research, Finance/banking, Private sector/State-owned-enterprise, Public sector-Non All India Service, Public sector-All India Service). UPSC score is the (intake year) standardized score in the competitive entry examination. Training score is the (intake year) standardized score in the training period. $\mathbf{1}[\text{Training} > \text{UPSC score}]$ is a dummy that is 1 if the officer improved the relative rating between training and competitive exam. Standard errors clustered at the IAS officer level.

Table A3: 360 degree measures of effectiveness, by stakeholder group

		(1)	(2)	(3)	(4)	(5)
		Subjective ratings				
		Effective	Probity	Pressure	Pro-Poor	Overall
IAS	Mean	3.921	3.918	3.835	3.882	3.879
	SD	0.990	1.072	0.985	0.992	0.996
	N	4,932	4,217	4,767	4,752	4,955
State Civil Service	Mean	3.943	3.810	3.532	3.802	3.839
	SD	0.988	1.116	1.108	1.089	1.061
	N	2,571	2,041	2,422	2,468	2,611
Large firms	Mean	3.748	3.704	3.553	3.530	3.724
	SD	1.057	0.983	1.040	0.977	0.982
	N	2,708	2,402	2,541	2,575	2,661
MLAs	Mean	3.642	3.518	3.258	3.302	3.512
	SD	1.138	1.185	1.183	1.313	1.036
	N	2,595	2,164	2,367	2,473	2,580
NGOs	Mean	3.535	3.528	3.307	3.283	3.455
	SD	1.125	1.141	1.172	1.162	1.076
	N	1,927	1,694	1,816	1,856	1,930
Media (Print & TV)	Mean	3.421	3.350	3.322	3.060	3.258
	SD	1.116	1.047	1.039	1.124	1.075
	N	3,020	2,635	2,815	2,923	2,961
Pooled	Mean	3.730	3.670	3.523	3.527	3.646
	SD	1.077	1.105	1.094	1.141	1.057
	N	17,753	15,153	16,728	17,047	17,698

Descriptive statistics (mean, standard deviation (SD) and sample size) of 360 degree measures of effectiveness, broken down by the assessing stakeholder group. The abbreviation MLAs stands for members of the legislative assembly. NGOs stands for non-governmental organization.

Table A4: 360 degree measures of effectiveness, by source of information

		(1)	(2)	(3)	(4)	(5)
		Subjective ratings				
		Effective	Probity	Pressure	Pro-Poor	Overall
Personal interaction	Mean	3.928	3.772	3.665	3.671	3.786
	SD	0.979	1.069	1.056	1.118	1.038
	N	9,751	8,325	9,407	9,492	9,724
Friends & Networks	Mean	3.179	3.546	3.328	3.306	3.461
	SD	1.239	1.152	1.108	1.107	1.062
	N	3,149	2,673	2,770	2,884	3,143
Media	Mean	3.689	3.545	3.347	3.371	3.486
	SD	1.022	1.124	1.119	1.165	1.052
	N	4,853	4,155	4,551	4,671	4,831
Pooled	Mean	3.730	3.670	3.523	3.527	3.646
	SD	1.077	1.105	1.094	1.141	1.057
	N	17,753	15,153	16,728	17,047	17,698

Descriptive statistics (mean, standard deviation (SD) and sample size) of 360 degree measures of effectiveness, broken down by source of information. Personal interaction are assessments provided by respondents who know the rated officer personally. Friends & networks are those known through friends or social (work) networks, and media are those known through television, radio or newspaper.

Table A5: Subjective performance measures and present/past suspensions

Panel A	(1)	(2)	(3)	(4)	(5)
	Effective	Probity	Pressure	Pro-Poor	Overall
Mean of dep. var	3.730	3.671	3.524	3.528	3.647
Suspended	-0.388** (0.152)	-0.506*** (0.183)	-0.558*** (0.156)	-0.386** (0.159)	-0.571*** (0.185)
State × Intake year FEs	Y	Y	Y	Y	Y
Respondent FEs	Y	Y	Y	Y	Y
Observations	17,749	15,133	16,717	17,042	17,694
Panel B	(1)	(2)	(3)	(4)	(5)
	Effective	Probity	Pressure	Pro-Poor	Overall
Mean of dep. var	3.730	3.671	3.524	3.528	3.647
Mean past suspensions	-0.842** (0.418)	-1.195** (0.589)	-0.849*** (0.326)	-0.213 (0.337)	-0.768* (0.413)
Respondent FEs	Y	Y	Y	Y	Y
State × Intake year FEs	Y	Y	Y	Y	Y
Observations	17,750	15,138	16,719	17,043	17,695

Unit of observation is the score for a given IAS officer in 2012-13 with at least 8 years of tenure. Suspended is a dummy that is 1 if the IAS officer is suspended in 2012-13. Mean past suspension is the cumulative number of suspensions up to the year before the survey (2011) divided by the total years in service. Respondent FEs are fixed effects for each survey respondent. State × Intake year FEs are dummies for the state-specific cadre the IAS officer entered with. Standard errors in parentheses, clustered at the respondent level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A6: Individual characteristics, by age at entry

	Age at entry		Diff (1)-(2)
	(1) Below median (22-25)	(2) Above median (> 25)	
Female	0.159	0.120	-0.038** (0.018)
Other backward caste (OBC)	0.043	0.128	0.084*** (0.014)
Scheduled caste (SC)	0.091	0.205	0.114*** (0.018)
Scheduled tribe (ST)	0.032	0.076	0.044*** (0.011)
Urban background	0.832	0.619	-0.213*** (0.022)
Academic distinction	0.347	0.294	-0.053** (0.024)
STEM or Economics degree	0.619	0.294	-0.037 (0.145)
Previous job: Education/research	0.165	0.171	0.006 (0.756)
Previous job: Finance/banking	0.039	0.075	0.035*** (0.012)
Previous job: Private/SOE	0.113	0.132	0.019 (0.263)
Previous job: Public sector	0.271	0.390	0.118*** (0.024)
Previous job: Public AIS	0.036	0.031	-0.004 (0.638)
UPSC score (standardized)	0.249	-0.148	-0.397*** (0.046)
Training score (standardized)	0.100	-0.021	-0.121** (0.049)
1[Training > UPSC score]	0.250	0.420	0.170*** (0.024)
Observations	802	663	

Reporting means for entrants below median age (22-25) and those above (> 25). Sample covers the cross-section of centrally recruited IAS officers in 2012-13 with performance ratings. Urban background denotes officers from urban areas, Academic distinction is a dummy for having received an academic distinction. STEM is a dummy for graduates of Science, Technology, Engineering and Mathematics and Economics degrees. Previous job denotes the sector of employment previous to entry into IAS (Education/research, Finance/banking, Private sector/State-owned-enterprise, Public sector-Non All India Service, Public sector-All India Service). UPSC score is the (intake year) standardized score in the competitive entry examination. Training score is the (intake year) standardized score in the training period. 1[Training>UPSC score] is a dummy that is 1 if the officer improved the relative rating between training and competitive exam. Cohort size is the overall number of officers that entered the IAS in the same year and were allocated to the same state. Younger peers is the number of those who are younger than the officer.

Table A7: 360 measures and age at entry - Full controls

	(1)	(2)	(3)	(4)	(5)
	Effective	Probity	Pressure	Pro-poor	Overall
Mean of dep. var	3.734	3.677	3.526	3.533	3.646
Age at entry	-0.013** (0.006)	-0.008 (0.007)	-0.014** (0.005)	-0.004 (0.005)	-0.011* (0.006)
Entry score	0.046*** (0.017)	0.039** (0.019)	0.019 (0.017)	0.033 (0.023)	0.039** (0.019)
Training score	0.020* (0.012)	0.025* (0.014)	0.030** (0.012)	-0.001 (0.016)	0.015 (0.013)
Improved (Entry > Training score)	0.095*** (0.028)	0.034 (0.033)	0.043 (0.027)	0.046 (0.031)	0.043 (0.030)
Female	0.005 (0.029)	-0.006 (0.036)	-0.012 (0.029)	0.048 (0.033)	0.004 (0.036)
Caste: OBC	-0.119 (0.080)	-0.152* (0.090)	-0.152** (0.074)	-0.061 (0.082)	-0.082 (0.088)
Caste: SC	0.035 (0.034)	0.035 (0.041)	0.072** (0.035)	0.044 (0.036)	0.077* (0.040)
Caste: ST	-0.099* (0.051)	-0.093 (0.066)	-0.055 (0.050)	-0.082 (0.054)	-0.103* (0.058)
Urban background	-0.022 (0.022)	0.011 (0.026)	0.027 (0.020)	0.006 (0.024)	-0.009 (0.023)
Academic distinction	0.020 (0.021)	0.024 (0.024)	0.022 (0.018)	0.006 (0.021)	0.013 (0.023)
STEM or Economics	0.014 (0.021)	-0.022 (0.026)	0.012 (0.021)	0.009 (0.022)	0.013 (0.023)
Previous: Education/Research	0.053* (0.030)	0.005 (0.035)	0.044 (0.029)	0.023 (0.032)	0.010 (0.033)
Previous: Finance/Banking	0.026 (0.046)	-0.038 (0.049)	0.024 (0.040)	0.059 (0.044)	0.022 (0.049)
Previous: Private/SOE	0.057* (0.035)	0.026 (0.041)	0.044 (0.032)	0.041 (0.038)	0.043 (0.036)
Previous: Public	0.033 (0.028)	-0.009 (0.033)	0.024 (0.027)	-0.014 (0.032)	-0.024 (0.032)
Previous: AIS	-0.050 (0.050)	-0.009 (0.064)	0.018 (0.049)	-0.089* (0.053)	-0.087 (0.055)
Respondent FEs	Y	Y	Y	Y	Y
State × Intake year FEs	Y	Y	Y	Y	Y
Sample		Pre-reform cohorts			
Observations	15,396	13,129	14,512	14,782	15,340

Unit of observation is the score for a given IAS officer in 2012-13 with at least 8 years of tenure. Relating the cross-section of perceived effectiveness (Panel A), probity, ability to withstand illegitimate political pressure, pro-poor orientedness and overall scores (Panel B) to age at entry and the probability of reaching the top. Age at entry is the age the IAS officer entered the service. Reaching top is the share of officers retiring pre-reform (1998) who reached the top payscale (Chief Secretary level, requiring at least 30 years of tenure) for a given age at entry. Respondent FEs are fixed effects for each survey respondent. State × Intake year FEs are fixed effects for the state-specific cohort the officer entered in. Individual controls are: female dummy, caste dummies (OBC, SC, ST), a dummy for coming from an urban area, having received an academic distinction, a STEM or Economics degree, having worked in education/research, private sector/SOEs, public sector, public AIS, standardized scores for the (UPSC) entry and training scores, as well as a dummy that is 1 if the officer improved the ranking in the training relative to the entry exam. The sample comprises all IAS officers in 2012-13 who entered before the pension reform of 1998. Standard errors are clustered at the individual-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A8: Probability of reaching top and age at entry

	(1)	(2)	(3)
Age at entry	Pooled all cohorts	Pre-reform cohorts	Post-reform cohorts
22	0.792	0.737	0.827
23	0.754	0.672	0.798
24	0.626	0.532	0.673
25	0.522	0.363	0.585
26	0.310	0.111	0.351
27	0.092	0.041	0.109
28	0.073	0.035	0.089
29	0.028	0	0.040
30	0	0	0
> 30	0	0	0
Observations	2,159	706	1,453

Share of retired officers who reached the top payscale by age at entry. Column 1 shows the average for all cohorts. Column 2 shows the average for those who retired before the 1998 pension reform. Column 3 shows the average for those who retired after the pension reform.

Table A9: Performance and pension reform, by age at entry bins

	(1)	(2)	(3)	(4)	(5)
	Effective	Probity	Pressure	Pro-poor	Overall
Mean of dep. var	3.730	3.671	3.524	3.528	3.647
Marginal	-0.201**	-0.199*	-0.173*	-0.211**	-0.214**
	(0.083)	(0.113)	(0.091)	(0.086)	(0.100)
Too old	-0.193	-0.404**	-0.273*	0.018	-0.065
	(0.142)	(0.193)	(0.157)	(0.125)	(0.154)
Marginal \times After 1998	0.318***	0.319**	0.176	0.222*	0.387***
	(0.123)	(0.160)	(0.129)	(0.128)	(0.140)
Too old \times After 1998	0.253	0.547**	0.302	0.030	0.087
	(0.194)	(0.263)	(0.213)	(0.173)	(0.209)
State \times Intake year FEs	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y
Marginal/too old \times Intake year	Y	Y	Y	Y	Y
Controls \times After 1998	Y	Y	Y	Y	Y
Sample	Pre & post-reform cohorts				
Observations	17,749	15,133	16,717	17,042	17,694

Unit of observation is the score for a given IAS officer in 2012-13 with at least 8 years of tenure. Relating the cross-section of perceived effectiveness (Panel A), probity, ability to withstand illegitimate political pressure, pro-poor orientedness and overall scores (Panel B) to age at entry bins (marginal/too old) and cohorts entering before/after the pension reform. Post reform cohort is a dummy that is 1 if the IAS officer entered in the year of the pension reform 1998 or after. Marginal is a dummy that is 1 for officers entering aged between [28,29]. The dummy too old is a dummy that is 1 if officers entered with at least 30 years of age. The omitted category are IAS officers who are aged 22-27 at entry and hence too young to be affected by the reform. Respondent FEs are fixed effects for each survey respondent. State \times Intake year FEs are fixed effects for the state-specific cohort the officer entered in. Individual controls are: female dummy, caste dummies (OBC, SC, ST), a dummy for coming from an urban area, having received an academic distinction, a STEM or Economics degree, having worked in education/research, private sector/SOEs, public sector, public AIS, standardized scores for the (UPSC) entry and training scores, as well as a dummy that is 1 if the officer improved the ranking in the training relative to the entry exam. Marginal/too old \times Intake year are the interactions between the marginal and old dummies and the (linear) intake year, with the officer's year of intake centered around the pension reform of 1998. Controls \times Post reform cohort interacts all individual background controls with the reform dummy. Standard errors are clustered at the individual-level. Standard errors are clustered at the individual-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A10: Individual characteristics, age at entry and reform

	(1)	(2)	(3)	(4)
	Mean	Estimated coefficients		
	var.	Age at entry	Age at entry × Post-reform	Marginal
Female	0.141	-0.019*** (0.005)	-0.005 (0.012)	0.080 (0.084)
Caste: OBC	0.081	0.011*** (0.004)	0.032** (0.014)	0.069 (0.066)
Caste: SC	0.141	0.042*** (0.006)	-0.019 (0.014)	-0.124 (0.096)
Caste: ST	0.052	0.014*** (0.004)	-0.001 (0.010)	-0.009 (0.041)
Entry score	0.070	-0.132*** (0.012)	0.018 (0.028)	0.317 (0.221)
Training score	0.048	-0.057*** (0.013)	-0.011 (0.029)	-0.080 (0.139)
Improved	0.328	0.039*** (0.006)	-0.008 (0.016)	-0.157* (0.088)
Urban background	0.737	-0.062*** (0.006)	0.017 (0.015)	0.223*** (0.069)
Academic Distinction	0.324	-0.013** (0.006)	0.012 (0.015)	0.021 (0.085)
STEM or Economics	0.602	-0.001 (0.006)	0.044*** (0.014)	0.155** (0.066)
Previous: Education/Research	0.168	0.012*** (0.005)	-0.010 (0.008)	-0.097* (0.056)
Previous: Finance/Banking	0.056	0.015*** (0.004)	-0.012** (0.006)	-0.020 (0.038)
Previous: Private/SOE	0.121	0.006 (0.004)	0.022* (0.013)	0.091 (0.080)
Previous: Public	0.324	0.036*** (0.006)	0.008 (0.016)	0.118** (0.054)
Previous: AIS	0.033	0.001 (0.002)	0.001 (0.003)	0.006 (0.036)
Joint significance test (p -value)		0.000	0.168	0.453
Intake year FEs		Y	Y	Y
Observations	1,472			

Reporting coefficients of regressions of individual background characteristics (rows) on age at entry and intake year FEs (Column 1). Columns 2-3 report coefficients from a regression of individual background characteristics (row) on age at entry, and its interaction with a dummy that is 1 if the individual entered in 1998 or after. The interaction of age at entry \times post1998 is reported in Column 2 and the interaction of being in the marginal age group (28-29) marginal \times post1998 is reported in Column 3. Reporting the p -value of a joint significance test for all covariates. The sample comprises all IAS officers who entered between 1975-2005 and for which we collected 360 background characteristics. Standard errors are clustered at the individual-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A11: Test for (quasi-)random allocation across states

p -value for H_0 : Random allocation across	(1) State groups	(2) 14 main states
Age at entry	0.799	0.418
Female	0.903	0.974
Other backward caste (OBC)	0.345	0.865
Scheduled caste (SC)	0.175	0.117
Scheduled tribe (ST)	0.093*	0.105
Urban background	0.992	0.710
Academic distinction	0.921	0.305
STEM and Economics degree	0.031**	0.370
Previous job: Education/research	0.576	0.355
Previous job: Finance/banking	0.723	0.247
Previous job: Private/SOE	0.332	0.411
Previous job: Public sector	0.831	0.466
Previous job: Public AIS	0.790	0.530
Ranking in year of intake	0.195	0.157
UPSC score	0.545	0.176
Training score	0.485	0.237
Improved	0.669	0.643
Observations	2,130	1,730

Test for random allocation across states for each year of intake between 1972-2005. The test is implemented by regressing the individual characteristics of the IAS officers on a set of state fixed effects and cadre fixed effects, and then testing the equality of the estimated state fixed effects. State groups are dummies for the grouping used to allocate officers in the assignment process (See Appendix Section C1). Robust standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A12: Effectiveness, entry age and pension reform by caste bins and selection regime

Panel A: By caste bins	(1)	(2)	(3)	(4)
			Effectiveness	
Sample restriction	All	GEN	OBC	SC/ST
Mean of dep. var	3.730	3.741	3.737	3.686
Age at entry	-0.040*** (0.013)	-0.006 (0.017)	-0.228** (0.108)	-0.246*** (0.062)
× Post reform cohort	0.066*** (0.018)	-0.002 (0.033)	0.534** (0.224)	0.391*** (0.118)
Age at entry 90-10 percentiles	23-28	23-27	24-30	23-30
Respondent FEs	Y	Y	Y	Y
State × Intake year FEs	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Observations	17,749	13,245	1,100	3,022
Panel B: By selection regime	(5)	(6)	(7)	(8)
			Effectiveness	
Sample restriction	≤ 30	No quota	No quota, ≤ 30	All
Mean of dep. var	3.732	3.737	3.738	3.730
Age at entry	-0.039*** (0.014)	-0.022 (0.017)	-0.021 (0.017)	-0.041*** (0.012)
× Post reform cohort	0.079*** (0.022)	0.042 (0.027)	0.053* (0.030)	0.068*** (0.021)
Entered without quota & below 30				-0.025 (0.041)
× Post reform cohort				0.062 (0.052)
Age at entry 90-10 percentiles	23-28	23-28	23-28	23-28
Respondent FEs	Y	Y	Y	Y
State × Intake year FEs	Y	Y	Y	Y
Controls	Y	Y	Y	Y
Observations	17,331	14,595	14,433	17,749

Notes: Unit of observation is the score for a given IAS officer in 2012-13 with at least 8 years of tenure. **Panel A** breaks down the sample by caste-specific bins. **Column 1** is the full sample. **Column 2** restricts the sample to unreserved (general caste) officers. **Column 3** restricts the sample to Other Backward Castes (OBC). **Column 4** restricts the sample to SC/ST officers. **Panel B** provides sample restrictions along different selection regimes. **Column 5** restricts the sample to only officers who entered in the regular entry age window. **Column 6** restricts the sample to candidates who entered in the absence of a quota. **Column 7** restricts the sample to candidates who entered both without a quota and within the regular entry age window (below 30). **Column 8** is the full sample, controlling for the interaction between the post reform cohort dummy and a dummy that is 1 if the candidate entered both without a quota and in the regular entry age window. Standard errors are clustered at the individual-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A13: Pension reform effects vs. placebo reforms

Panel A:	(1)	(2)	(3)
	Effectiveness		
Mean of dep. var	3.730	3.730	3.730
Age at entry	-0.040*** (0.013)	-0.004 (0.016)	-0.032** (0.015)
Age at entry × Post 1998 cohort	0.066*** (0.018)		0.055*** (0.020)
Age at entry × Post 1986 cohort		-0.003 (0.014)	
Age at entry × 1996-1997 cohorts			-0.022 (0.026)
Respondent FEs	Y	Y	Y
State × Intake year FEs	Y	Y	Y
Controls	Y	Y	Y
Observations	17,749	17,749	17,749
Panel B:	(1)	(2)	(3)
	Suspended (× 100)		
Mean of dep. var	0.954	0.954	0.954
Age at entry × Post-reform 1998	-0.184** (0.093)		
Age at entry × 1998-2007			-0.218** (0.093)
Age at entry × Post 2008		-0.140 (0.109)	-0.181* (0.109)
Year FEs	Y	Y	Y
Individual FEs	Y	Y	Y
Tenure FEs	Y	Y	Y
Controls	Y	Y	Y
Observations	86,017	86,017	86,017

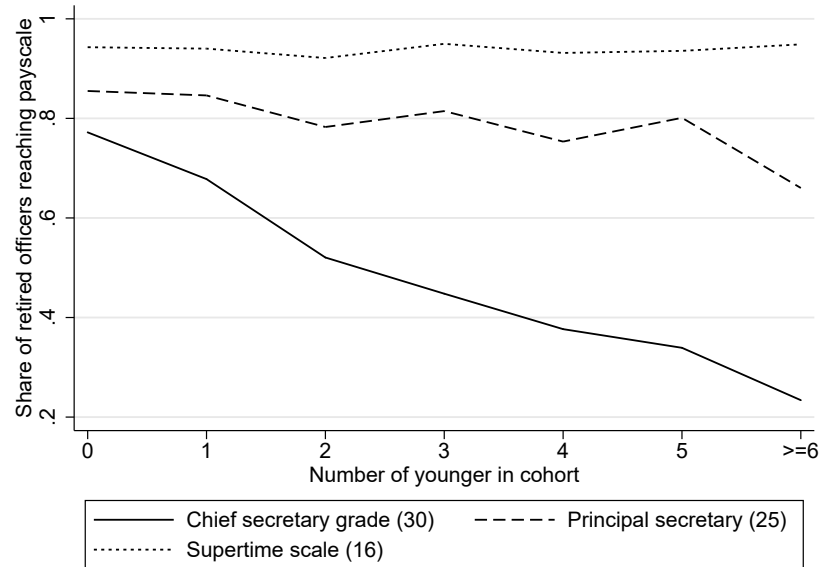
Notes: In **Panel A** the unit of observation is the score for a given IAS officer in 2012-13 with at least 8 years of tenure. Controls are: a female dummy, caste dummies (OBC, SC, ST), a dummy for coming from an urban area, having received an academic distinction, a STEM or Economics degree, having worked in education/research, private sector/SOEs, public sector, public AIS, standardized scores for the (UPSC) entry and training scores, a dummy that is 1 if the officer improved the ranking in the training relative to the entry exam, and the interaction between (linear) age at entry and the (linear) intake year, with the officer's year of intake centered around the pension reform of 1998. In **Panel B** the unit of observation is the officer-year. The sample is between 1980-2012. Controls comprise the interaction between (linear) age at entry and the (linear) intake year, with the officer's year of intake centered around the pension reform of 1998. Standard errors are clustered at the individual-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A14: Reform effects (age at entry \times post reform) by state-level corruption

	(1)	(2)	(3)	(4)	(5)	(6)
			Effectiveness			
Mean of dep. var	3.730	3.730	3.730	3.702	3.730	3.730
Age at entry	-0.043*** (0.013)	-0.047*** (0.013)	-0.040** (0.017)	-0.033** (0.014)	-0.048*** (0.013)	-0.033** (0.016)
Age at entry \times Post reform cohort	0.068*** (0.018)	0.076*** (0.020)	0.067*** (0.024)	0.060** (0.030)	0.071*** (0.019)	0.064** (0.031)
<u>Dimension of heterogeneity</u>		<u>Home state</u>	<u>Improved</u>	<u>Caste</u>	<u>Corrupt state</u>	<u>Non-elite</u>
Variable		-0.337 (0.250)	0.231 (0.298)	0.352 (0.292)	-	0.737 (0.492)
Variable \times Age at entry		0.013 (0.010)	-0.005 (0.012)	-0.014 (0.011)	-0.018*** (0.005)	-0.023 (0.018)
Variable \times Post reform cohort		0.778 (0.786)	-0.131 (0.672)	-0.374 (0.744)	-	-0.338 (1.184)
Variable \times Post reform cohort \times Age at entry		-0.033 (0.030)	0.002 (0.026)	0.012 (0.028)	0.027** (0.013)	0.013 (0.045)
Channel of interest		Family / Corruption Intrinsic	Intrinsic	Mobility	Corruption	Financial/ Mobility
Respondent FEs	Y	Y	Y	Y	Y	Y
State \times Intake year FEs	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Age at entry \times Intake year	Y	Y	Y	Y	Y	Y
Controls \times Post reform cohort	Y	Y	Y	Y	Y	Y
Observations	17,749	17,749	17,749	17,749	17,749	17,749

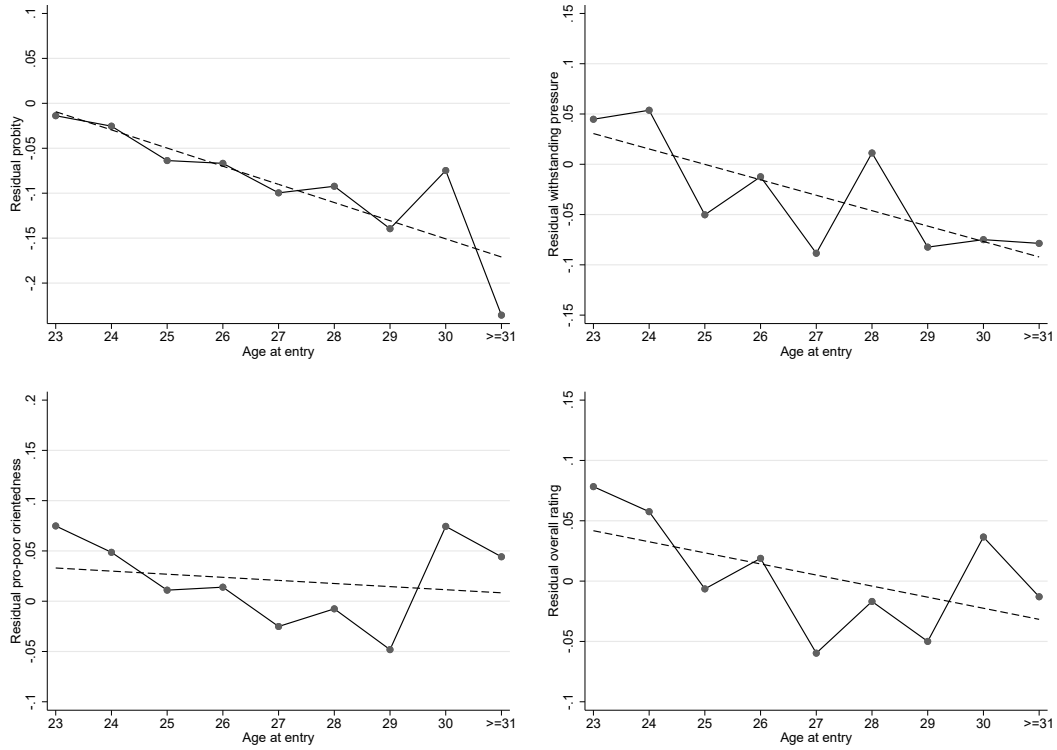
Notes: Unit of observation is the score for a given IAS officer in 2012-13 with at least 8 years of tenure. Relating the cross-section of perceived effectiveness to age at entry and cohorts entering before/after the pension reform. Age at entry is the age the IAS officer entered the service and one dimension of heterogeneity. Post reform cohort is a dummy that is 1 if the IAS officer entered in the year of the pension reform 1998 or after. Variable denotes the dimension of heterogeneity of interest. Respondent FEs are fixed effects for each survey respondent. State \times Intake year FEs are fixed effects for the state-specific cohort the officer entered in. Individual controls are: female dummy, caste dummies (OBC, SC, ST), a dummy for coming from an urban area, having received an academic distinction, a STEM or Economics degree, having worked in education/research, private sector/SOEs, public sector, public AIS, standardized scores for the (UPSC) entry and training scores, as well as a dummy that is 1 if the officer improved the ranking in the training relative to the entry exam. Age at entry \times Intake year is the interaction between (linear) age at entry and the (linear) intake year, with the officer's year of intake centered around the pension reform of 1998. Standard errors are clustered at the individual-level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure B1: Share of retired officers reaching top and number of younger peers



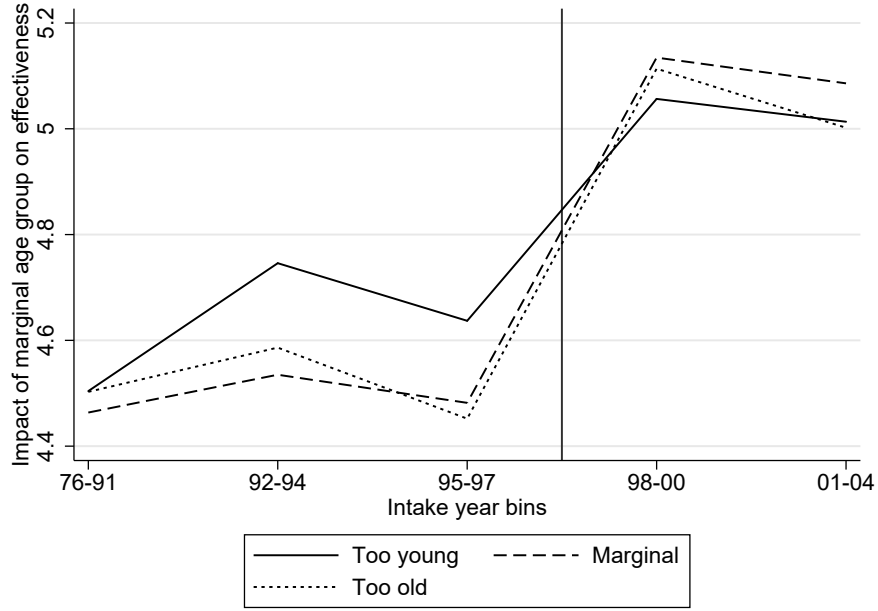
Share of retired officers in 2012 reaching senior pay scales as a function of the number of younger peers allocated to the same state and year of intake. Number in parentheses indicates the minimum number of years to qualify for promotion to the position.

Figure B2: 360 performance measures and age at entry, pre-reform



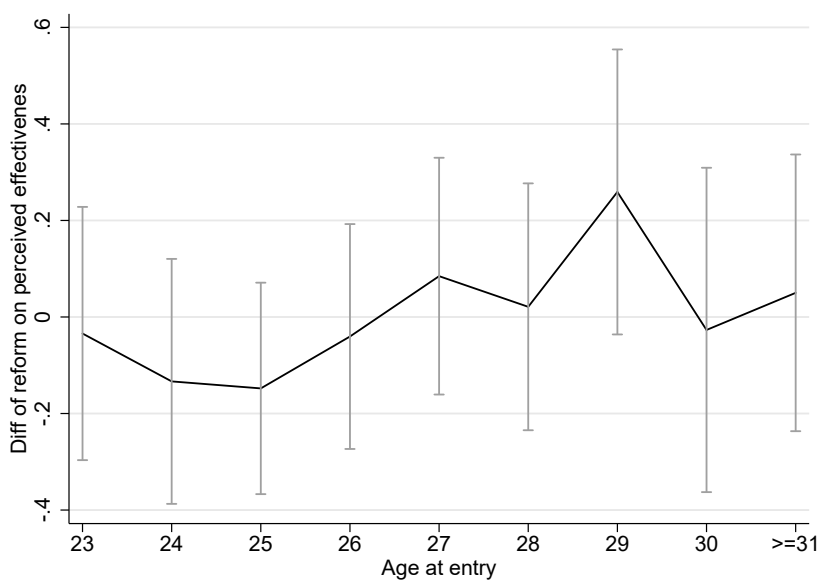
Relationship between probity score (left, top), ability to withstand illegitimate political pressure score (right, top), pro-poor orientations core (left, bottom), and overall rating (right, bottom) and age at entry for IAS officers who entered before the 1998 reform. The coefficients are based on partialling out respondent fixed effects.

Figure B3: Effectiveness levels by age at entry group and intake years



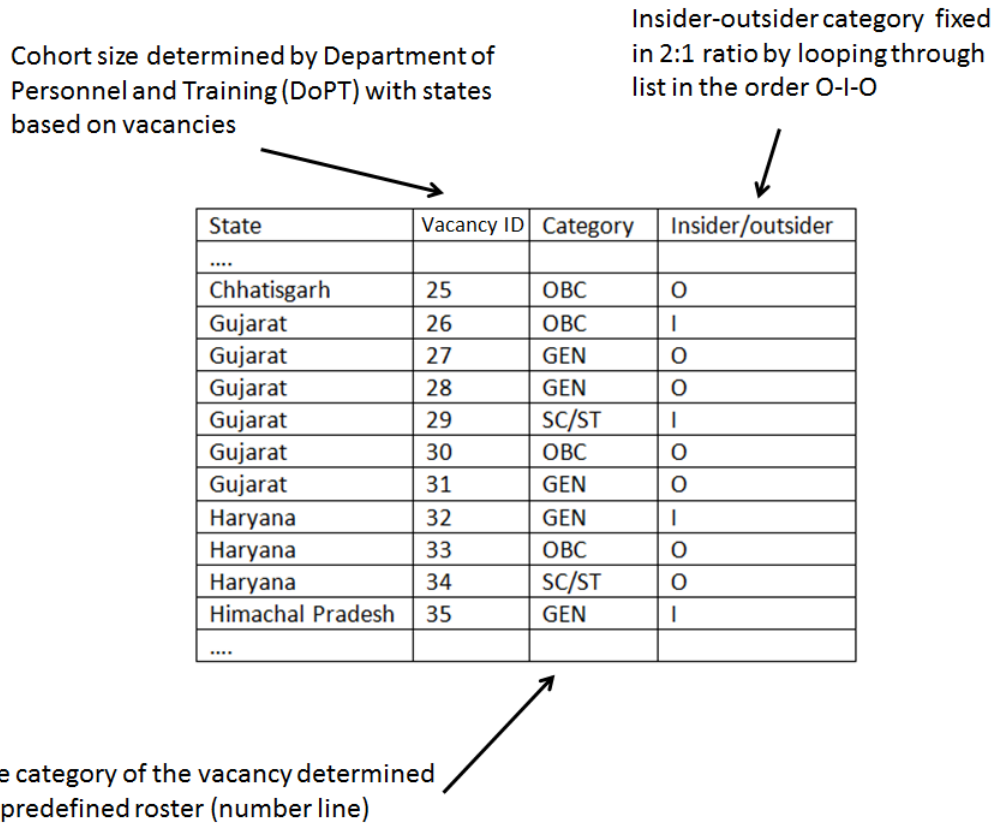
Relating effectiveness to age at entry groups (too young, marginal, too old) and binned intake years. Specification partials out respondent fixed effects, state \times intake year fixed effects and background characteristics interacted with a dummy that is 1 for post 1998 cohorts (see specification of Table 5). Too young are defined as officers entering between 22-27. Marginal are those who enter between 28-29 and too old are officers entering with at least 30 years of age. Solid vertical line marks the year of the pension reform.

Figure B4: Pension reform effects by age at entry - Effectiveness



Notes: Figure reports the pension reform effects for effectiveness by each age at entry bin (age at entry FEs \times post reform cohorts). The baseline coefficients are estimated by partialling out respondent FEs, state-specific tenure FEs and the individual background characteristics.

Figure B5: Determination of vacancies: Example 2006



Illustrating the assignment of categories (caste and home preference) to vacancies through the roster randomization for the year 2006. Vacancies are earmarked by caste status (O.B.C. denotes other backward castes, S.C./S.T. scheduled castes/tribes and unreserved the general castes) and home state (“I” denotes insider vacancies reserved for applicants from the same state; “O” denotes outsider vacancies reserved for applicants from other states). The assignment occurs through a number line.

Figure B6: Assignment of categories (caste and home preference) to vacancies through roster randomization

Cadre Allocation - 2006

Distribution of vacancies to be filled in various cadres/joint cadres of Indian Administrative Service (IAS) on the basis of Civil Services Examination 2006, among Insider and Outsider Vacancies and between categories.

Sl. No.	Name of the State Cadre / Joint Cadre	Unreserved Insider	Unreserved Outsider	OBC Insider	OBC Outsider	SC/ST Insider	SC/ST Outsider	Total
1	A G M U T	1	2	1	0	0	1	5
2	Andhra Pradesh	1	1	0	0	0	0	2
3	Assam Meghalaya	1	2	0	1	1	0	5
4	Bihar	2	1	0	2	1	1	7
5	Chhatisgarh	0	3	1	1	1	0	6
6	Gujarat	0	3	1	1	1	0	6
7	Haryana	1	0	0	1	0	1	3
8	Himachal Pradesh	1	0	0	0	0	0	1
9	Jammu & Kashmir	0	1	0	0	0	0	1
10	Jharkhand	0	1	0	0	0	0	1
11	Karnataka	0	1	1	0	0	1	3
12	Kerala	1	0	0	1	0	0	2
13	Madhya Pradesh	2	1	0	1	0	1	5
14	Maharashtra	1	2	0	1	1	0	5
15	Manipur Tripura	0	3	0	1	1	0	5
16	Nagaland	0	1	0	1	1	0	3
17	Orissa	1	1	0	1	0	1	4
18	Punjab	0	1	1	0	0	1	3
19	Rajasthan	0	1	1	0	0	1	3
20	Sikkim	0	0	1	0	0	1	2
21	Tamil Nadu	0	1	1	0	0	0	2
22	Uttar Pradesh	1	2	0	2	1	1	7
23	Uttaranchal	1	0	0	1	0	1	3
24	West Bengal	0	3	1	0	0	1	5
		14	31	9	15	8	12	89

The final distribution of vacancies by state and caste/home quota for the year 2006. Vacancies are earmarked by caste status (O.B.C. denotes other backward castes, S.C./S.T. scheduled castes/tribes and unreserved the general castes) and home state (insider vacancies are reserved for applicants from the same state; outsider vacancies are reserved for applicants from other states).

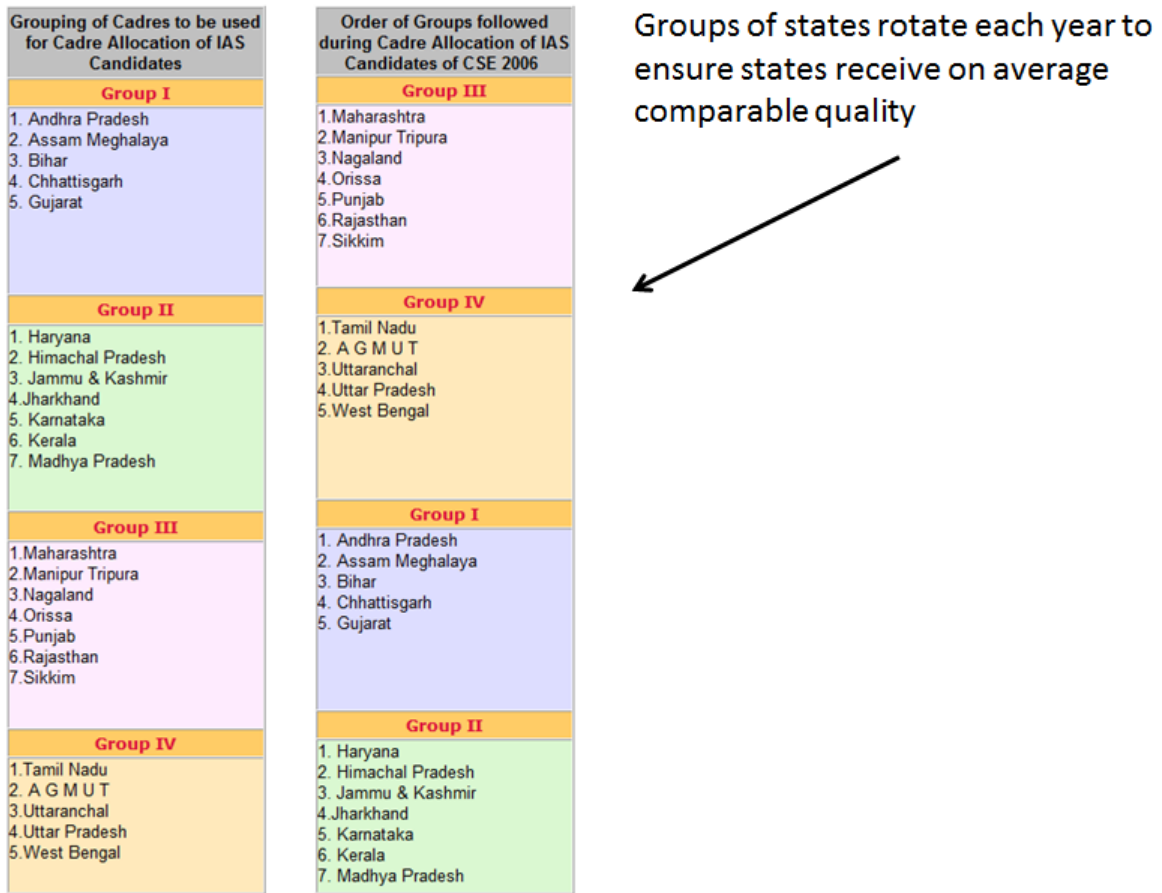
Figure B7: Merit-based (UPSC rank) allocation based on caste and home preference match

**Master Statement in respect of candidates allotted to
Indian Administrative Service on the basis of
Civil Services (Main) Examination, 2006 for purpose of their Cadre Allocation**

Sl. No.	Rank	Name of the Candidate	Home State	Category	Whether Home State Opted?
1	1	MUTYALARAJU REVU	Andhra Pradesh	O.B.C*	Yes
2	2	AMIT SAINI	Punjab	General	Yes
3	3	ALOK TIWARI	Uttar Pradesh	General	Yes
4	4	PRASANTH N	Kerala	General	Yes
5	5	SHASHANK MISRA	Uttar Pradesh	General	Yes
6	6	VYASAN R	Kerala	General	No
7	8	ANINDITA MITRA	Chhatisgarh	General	No
8	9	ARAVIND AGRAWAL	Orissa	General	Yes
9	10	JUHI MUKHERJEE	Chandigarh	General	Yes
10	11	BISHNU CHARAN MALLICK	Orissa	S.C.	Yes
11	12	DEEPAK RAWAT	Uttaranchal	General	Yes
12	13	NILA MOHANAN	Kerala	General	Yes
13	14	JAI SINGH	Uttar Pradesh	General	Yes
14	15	MOUMITA BASU	West Bengal	General	Yes
15	16	SHAMMI ABIDI	Uttar Pradesh	General	Yes
16	17	REMYA MOHAN MOOTHADATH	Kerala	General	Yes
17	18	SHRIMAN SHUKLA	Madhya Pradesh	General	Yes
18	19	SHEETAL VERMA	Uttar Pradesh	S.C.*	Yes
19	20	SHAINAMOL A	Kerala	O.B.C*	Yes
20	21	YASHA MUDGAL	Rajasthan	General	Yes
21	22	ATUL KUMAR	Haryana	General	Yes
22	23	SHUCHI TYAGI	Uttar Pradesh	General	Yes
23	24	ANURAG TEWARI	Uttar Pradesh	General	Yes
24	25	UDIT PRAKASH	Uttar Pradesh	General	Yes
25	26	SACHINDRA PRATAP SINGH	Uttar Pradesh	O.B.C	Yes

Illustrating the ranking of candidates using the intake year of 2006. Candidates in a given year of intake are ranked in descending order based on the UPSC entry exam score. Home state denotes the state from which the candidate applied from. Category denotes the caste of the candidate, where O.B.C. denotes other backward castes, S.C. scheduled castes, S.T. scheduled tribes and General the unreserved castes. Whether home state opted denotes if the applicant indicated a preference to be allocated to the home state.

Figure B8: Rotation of state groups over years



Division of state cadres into four groups and the rotation of groups in the order of IAS officer allocation over time, as illustrated by the group order in 2006. The groups of states rotate each year. In 2007, for example, the order changes to Group II, Group III, Group IV, Group I.

C1 Allocation rule

Key to our empirical analysis is the rigid rule that determines the allocation of IAS officers and the cohort sizes of each state’s intake. Here, we briefly summarize the allocation rule. A detailed documentation can be found in the IAS guidelines.³⁵ Coinciding with our sample period, we focus on the pre-2008 allocation rule, paying particular attention to the sources of variation that give rise to the observed quasi-random allocation of IAS officers across cadres.

After entering the IAS following the UPSC exams, centrally recruited IAS officers are allocated to 24 cadres. These cadres typically map directly into the Indian states. Smaller states, however, are grouped into three joint cadres, which are Assam-Meghalaya, Manipur-Tripura and AGMUT (Arunachal Pradesh, Goa, Mizoram and Union Territories (Delhi)). We did not survey states with pooled cadres due to logistical constraints. The cadres we study therefore map directly onto the 14 major states which contain the majority of India’s population.

The allocation process can be broadly divided into three steps: In the first step, IAS applicants are asked to declare their preference to remain in their home state (referred to as “insider” preference). In the second step, the overall number of vacancies and the corresponding quotas for castes and “insiders” are determined. In the final step, vacancies and officers are matched in the actual allocation process where merit (as defined by the ranking in the UPSC entry exam), caste status and locational preferences are all taken into account. The interplay of idiosyncrasies in each of these steps gives rise to the observed quasi-random allocation of IAS officers across cadres.

Step 1. IAS officers can declare their cadre preferences by first stating their preference to remain in their state of residence. Nearly all IAS officers exercise this option. The declared preferences however do not guarantee the actual allocation. The actual allocation depends on the availability of vacancies.

Step 2. The total number of vacancies is determined by the state government with the Department of Personnel and Training. Typically, the overall number of vacancies in a given year depends on the shortfall from the total number of IAS officers designated to a state (the cadre strength). This cadre strength is defined by the “cadre strength fixation rules”, whereby larger states are assigned more IAS officers. These rules are seldom revised so the designated state cadre strength is fixed over longer periods. The vacancies are then broken down by quotas on two dimensions: caste and home preference. There are three categories for castes: General (unreserved) caste, Scheduled Caste/Tribes (SC/ST) and Other Backward Castes (OBC). The designation of vacancies to these caste categories are made based on predefined national quotas. The actual assignment of each vacancy to a caste is randomized using a rotating roster. In terms of preferences, vacancies are broken down into “insider” and “outsider” vacancies. Insider vacancies are to be filled by IAS officers from

³⁵For full details, refer to the original official notifications 13013/2/2010-AIS-I, 29062/1/2011-AIS-I and 13011/22/2005-AIS-I published by the Department of Personnel and Training, Ministry of Personnel, Public Grievances and Pensions, Government of India.

the same state who declared their home state preference at time of application. The ratio of insider to outsider vacancies is 1:2, with the assignment of vacancies to “insider” or “outsider” category following the repeating sequence O-I-O. The determination of vacancies is illustrated in Appendix Figure B5. The result of this procedure is a list denoting the number of vacancies for each state and the corresponding quotas by caste status (SC/ST/OBC) and home state (insider/outsider) as shown in Appendix Figure B6.

Step 3. The final allocation process is based on merit as determined by the ranking in the UPSC entry exam, the vacancies available and the preference stated.

Before the officers are allocated, the candidates are ranked and assigned a serial number in the order of merit, as determined by the UPSC exam. Appendix Figure B7 shows this ranking along with the officers’ caste and home preference. The highest scoring candidate for the 2006 intake, for example, was Mutyalaraju Revu who belongs to the OBC category and indicated his preference to be assigned to Andhra Pradesh.

The allocation proceeds sequentially. First, the insider vacancies are allocated as far as exact matches along caste and home state preference permit. If the number of matches exceed the vacancies, the higher ranking IAS officer is given preference. Given the exact match along caste and home state required for slotting, however, many insider vacancies typically remain unfilled. In this case, the caste requirement is successively relaxed. In presence of open unreserved insider vacancies, the unreserved insider vacancy can be allocated to insider IAS officers from SC/ST and OBC (following the exact order) if there is an SC/ST (or OBC) outsider vacancy to allow for the exchange: For example, if Gujarat has received two unreserved insider vacancies but only one Gujarati general caste to fill the first slot, the second slot is opened to Gujarati SC/ST insiders, and if those are not available, to OBC insiders. The reallocation, however, is only permitted when there is a corresponding outsider vacancy that can be converted to an unreserved outsider vacancy to maintain the quota among the caste vacancies. A Gujarati insider SC/ST then can only fill the unreserved insider vacancy if a SC/ST outsider vacancy is available for exchange. Similar rules apply for unfilled SC/ST or OBC insider vacancies. Open SC/ST insider vacancies that could not be filled are first relaxed to allow for OBC insider candidates and then to general candidates. Open OBC vacancies, similarly, can first be filled by SC/ST insider candidates and then by general candidates (in both cases provided there is a corresponding outsider slot for exchange). Any remaining open insider vacancies that could not be filled despite the relaxation of the quotas are converted to outsider vacancies to ensure all vacancies are filled.

The allocation of the outsiders and those who failed to be allocated to their preferred home state (and are consequently converted to outsiders) is done according to a rotating roster system. The roster is created by arranging all 24 cadres in alphabetical order and dividing them into four groups. These groups are devised on the basis of an average intake by each group, which over a period of time is roughly equal:

1. Group I: Andhra Pradesh, Assam-Meghalaya, Bihar, Chhattisgarh and Gujarat
2. Group II: Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka,

Kerala and Madhya Pradesh

3. Group III: Maharashtra, Manipur-Tripura, Nagaland, Orissa, Punjab, Rajasthan and Sikkim
4. Group IV: Tamil Nadu, AGMUT (UT Cadre), Uttaranchal, Uttar Pradesh and West Bengal

The outsider candidates are allocated in the order of merit across the four groups for the outsider available vacancies (including those that have been converted from insider vacancies). In the first cycle, all candidates are allocated to their matching caste vacancy in the four states of Group I, starting with Andhra Pradesh. In the second cycle, the remaining candidates are allocated to their matching caste vacancies in Group II and so on. Since states that receive officers earlier in the allocation process will receive higher ranked recruits, the order of the groups shuffles each year to ensure that all states receive officers of comparable quality. In Appendix Figure B8, for example, Group III is the first group in 2006, followed by Group IV, Group I and Group II. In the subsequent year, the groups will rotate and the allocation of outsiders will commence with Group II first, followed by Group III, Group IV and Group I.

C2 Bounding selection on unobservables

To assess whether our results are driven by correlated unobservables, Table A15 follows the referee’s suggestion by providing bounds along the lines of Altonji et al. (2005). The results are reported in Table A15 and suggest that the amount of selection on unobservables needs to be (implausibly) large in order to explain away our results.

The implementation of the test requires the researcher to make two assumptions: (i) the amount of selection on unobservables relative to selection on observables (the parameter δ) and (ii) the relative difference in the R^2 between the full model based on both observable and unobservables and the partial model based on observables only (the parameter Π). We follow the suggested approach in Oster (2017) by assuming equal selection on observables and unobservables ($\delta = 1$) and a $\Pi = 1.3$. Using this parametrization, the adjusted estimate (Column 3) is virtually identical to our controlled estimate (Column 2). Indeed, one would require that the amount of selection on unobservables is up to seven times as high (for effectiveness and ability to withstand illegitimate political pressure) in order to explain away the negative coefficient (Column 4). In Columns 5-6, we move beyond the standard test and repeat the exercise using a more conservative approach by assuming $\Pi = 2$. As Oster (2017) shows, only 37% of the results published in the top journals survive this demanding assumption. In our setting, the bias-corrected coefficients remain comparable, still requiring the amount of selection on unobservables relative to observables to be at least twice as large. The combined results from the bounding exercise thus suggest that selection on unobservables might be less of a concern in this setting.

Table A15: Robustness: Assessing selection on unobservables following Altonji et al. (2005)

	(1)	(2)	(3) $\Pi = 1.3$ (Oster 2017)		(5)	(6) $\Pi = 2$	
	Uncontrolled	Controlled	$\delta = 1$	δ for $\beta = 0$	$\delta = 1$	δ for $\beta = 0$	
Effective	-0.0132	-0.0127	-0.01258	7.88	-0.01190	2.75	
Probity	-0.0148	-0.0082	-0.00507	2.21	0.00423	0.72	
Pressure	-0.0140	-0.0135	-0.01346	7.10	-0.01284	2.61	
Pro-poor	-0.0062	-0.0043	-0.00285	3.00	0.00039	0.93	
Overall	-0.0118	-0.0110	-0.00895	4.88	-0.00587	1.67	

Reporting coefficients of the impact of age at entry on performance. Column 1 reports the coefficients of the uncontrolled regression (specification of Table 3, Panel A, Column 2) for each of the 360 outcomes. Column 2 reports the coefficients of the regression controlling for the rich set of individual background characteristics (Table 3, Panel B). Individual controls are: female dummy, caste dummies (OBC, SC, ST), a dummy for coming from an urban area, having received an academic distinction, a STEM or Economics degree, having worked in education/research, private sector/SOEs, public sector, public AIS, standardized scores for the (UPSC) entry and training scores, as well as a dummy that is 1 if the officer improved the ranking in the training relative to the entry exam. Column 3 provides the bound for the coefficient when assuming that the amount of selection on observables (based on the individual background characteristics) is the same as selection on unobservables ($\delta = 1$) and a ratio of the fully controlled R^2 to the partially controlled R^2 of $\Pi = 1.3$. Column 4 reports the amount of selection on unobservables relative to observables (δ) required to shrink the estimated coefficient to $\beta = 0$. Columns 5-6 repeat the exercise using a more stringent assumption of $\Pi = 2$.

C3 Model appendix

In this section, we provide the proofs of Propositions 1 and 2 of Section 3.1.

Proof 1 *Proposition 1:*

We proceed by backward induction. At the senior-level, the entrant will maximize:

$$\max_{e_{a2}} w_2 - \frac{c}{2} e_{a2}^2 \quad (7)$$

subject to $e_{a2} \geq 0$. This problem is trivial and has solution $e_{a2}^* = 0$. At period 1, the bureaucrat will choose e_{a1} to maximize V in equation (1). Since $\frac{\partial \Pi}{\partial e_{a1}} = \pi(a)$, we obtain the following first order condition (FOC):

$$c e_{a1}^* = \pi(a) (w_2 - \frac{c}{2} e_{a2}^{*2})$$

which implies:

$$e_{a1}^* = \pi(a) \frac{w_2}{c}$$

Now using the definition of $y_1(e_{a1}^*, a)$ and the fact that $\pi^{Pre}(0) > 0$ and $\pi^{Pre}(1) = 0$, we obtain equation (2):

$$\Delta y_1^{Pre} \equiv y_1(e_{a1}^*, 1) - y_1(e_{a1}^*, 0) = -\frac{w_2}{c} \pi(0)^{Pre} + (\mu_1^{Pre} - \mu_0^{Pre})$$

Proof 2 *Proposition 2:*

This follows immediately from the result in Proposition 1. Indeed, we have:

$$\Delta y_1^{Pre} = -\frac{w_2}{c} \pi(0)^{Pre} + (\mu_1^{Pre} - \mu_0^{Pre})$$

and

$$\Delta y_1^{Post} = \frac{w_2}{c} \pi(1)^{Post} - \frac{w_2}{c} \pi(0)^{Post} + (\mu_1^{Post} - \mu_0^{Post})$$

Subtracting the first equation from the second equation and using the assumption that $\pi(0)^{Post} = \pi(0)^{Pre}$, we obtain equation (3):

$$\Delta y_1^{Post} - \Delta y_1^{Pre} = \frac{w_2}{c} \pi(1)^{Post} + (\Delta \mu^{Post} - \Delta \mu^{Pre})$$