Bureaucracy

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14.770

Overview

- The main focus of political economy has been on politicians
- But there is an increasing realization the the people who actually *implement* the policies may be as important – or more – than the politicians
  - (Anyone seen Yes, Minister?)
- This is a very active area of research and the field is rapidly changing
- We will examine four main issues
  1. Do bureaucrats matter?
  2. Moral hazard: incentivizing bureaucrats and the particular problems therein
  3. Selection: How are bureaucrats assigned to tasks, and the challenges this creates
  4. Should we allow bureaucrats to have discretion?

Do Bureaucrats Matter?

Best, Hjort, and Szakonyi 2017: "Individuals and Organizations as Sources of State Effectiveness, and Consequences for Policy Design."

- General question: how much variation in government effectiveness is due to the particular bureaucrat in charge of an activity?
- To answer this we need a very specific context where we can measure bureaucratic performance.
- They study procurement. Other contexts you could look at? I've been trying to do this in tax for a while...
- Key finding: 60% of the variation in prices paid is due to the bureaucratic identity of the producer

Empirical approach

- Empirical approach is a variance decomposition.
- That is, how much of the variance in outcomes is due to individual bureaucrats?
- Basic idea follows Abowd, Kramarz, and Margolis (AKM 1999), which shows how to use movers across firms to decompose outcomes into individual effects and firm effects
- Key empirical model is just

$$p_i = X_i\beta + \tilde{\alpha}_{b(i,j)} + \tilde{\psi}_j + \epsilon_i$$

- Intuitively, this is identified via movers - that is, the fact that bureaucrats b move among different organizations j

A number of econometric issues

- *Connected sets*. You can only identify the *relative* values of b within a set of organizations connected via movers.
  - This is a big deal: they have 28,147 different connected sets in their data, and largest set is only 10 percent of the sample.
  - Restrict to all sets containing at least 3 organizations and bureaucrats where each person and organization purchases at least 5 items (more on this in a sec)
- *Estimation.* Estimating large two-way FE models is hard. Luckily, AKM work this out. Details in the paper.

A number of econometric issues

- *Shrinkage.* Variance of b is too big and needs to be shrunk. Why?
  - Imagine you have a simpler model, given by

$$y_{ib} = \alpha_b + \epsilon_{ib}$$

  - What is the best estimate of b_i? It is

$$\hat{b} = E(y_{iq} \mid q = b) = \alpha_b + \frac{1}{N_b} \sum \epsilon_{ib}$$

    where N_b is the number of observations for individual b
  - What is $Var(\hat{b})$? It is

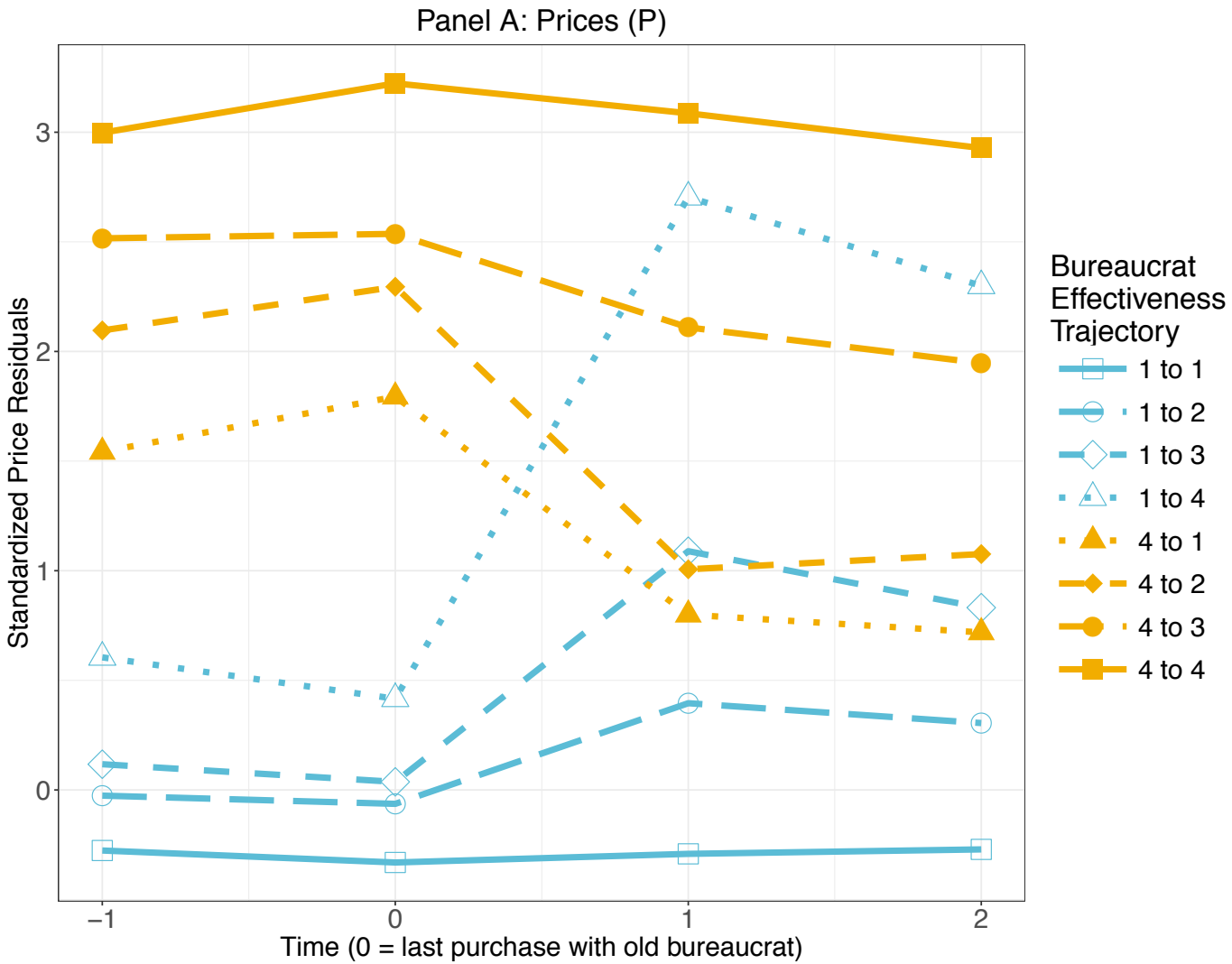
$$Var(\hat{b}) = Var(\alpha_b) + \frac{1}{N_b} Var(\epsilon_{ib})$$

  - That is, the estimated variance of bureaucrats is too large, because it includes some of the noise
  - So, you need to subtract $\frac{1}{N_b} Var(\epsilon_{ib})$ from $Var(\hat{b})$ to get what you want, which is $Var(\alpha_b)$
  - Slightly more complicated if different N_b for each b, but that's the idea

A number of econometric issues

- *Causality.* Is this a causal effect? What would you need for this to be true?
  - If you have random matching of bureaucrats to organizations, and constant treatment effects, you're fine.
  - If you have constrant treatment effects, and movements are correlated with organization fixed effects (better people in better places), that's still fine.
  - If you have movements that are correlated with the *error term*, then you have a problem.. What might that mean?
  - Likewise, if you have match-specific effects (certain bureaucrats work better in certain places), that's also a problem. Examples?

Event study to test for endogenous matching



Courtesy of Michael Carlos Best, Jonas Hjort, and David Szakonyi. Used with permission.

Studying procurement per se

- All the above issues would be true in any study of bureaucrat fixed effects
- But procurement has some special challenges. Such as?
- The key issue is that when you buy something, you are buying a pair (price, quality).
- So you need to control carefully for quality to estimate and effect of price.
- This is hard when quality is endogenous.
- They use detailed text analysis and try to focus on homogenous goods. For example, amount of active ingredients in drugs.
- But this is still hard

Results

Table 2: Share of Variance of Procurement Prices and Participation explained by Bureaucrats and Organizations: Full Analysis Sample

	Prices (P) (1)	(s.e.) (2)	Participation (N) (3)	(s.e.) (4)
(1) s.d. of Bureaucrat Effects	1.570	(0.0381)	1.257	(0.0244)
(2) s.d. of Organization Effects	1.372	(0.039)	0.979	(0.0257)
(3) s.d. of Connected Set Effects	1.000	(0.0115)	0.523	(0.0108)
(4) s.d. of Bur + Org Effects Within CS (across pairs)	1.258	(0.00519)	0.895	(0.00315)
(5) s.d. of Total Bur + Org Effects (across pairs)	1.364	(0.00247)	0.913	(0.00295)
(6) s.d. of Bureaucrat Effects (across items)	1.031	(0.0462)	0.919	(0.0418)
(7) s.d. of Organization Effects (across items)	1.068	(0.0496)	0.888	(0.0468)
(8) s.d. of Connected Set Effects (across items)	0.555	(0.035)	0.302	(0.0147)
(9) s.d. of Bur + Org Effects Within CS (across items)	0.876	(0.0154)	0.642	(0.00654)
(10) s.d. of Total Bur + Org Effects (across items)	1.036	(0.00126)	0.710	(0.00358)
(11) s.d. of Y	2.417		1.355	
(12) s.d. of Y | good, month	1.646		1.241	
(13) Adjusted R-squared	0.955		0.837	
(14) Sample Size	11,228,122		11,228,122	

Looking for bureaucrat effects directly

Do, Nguyen, and Tran (2017): One Mandarin Benefits the Whole Clan: Hometown Favoritism in an Authoritarian Regime

- The previous approach was almost hypothesis free - looking for 'bureaucrat fixed effects'
- An alternative approach is to posit a particular channel and test for it directly
- This paper does this as follows:
  - Hypothesis: bureaucrats will favor their home region when they become powerful.
  - Therefore, they test if when a bureaucrat is promoted, his home region does better
- Key variable is 'Power capital' defined as number of ranking officials from a given commune as of time t
- Threats to identification?

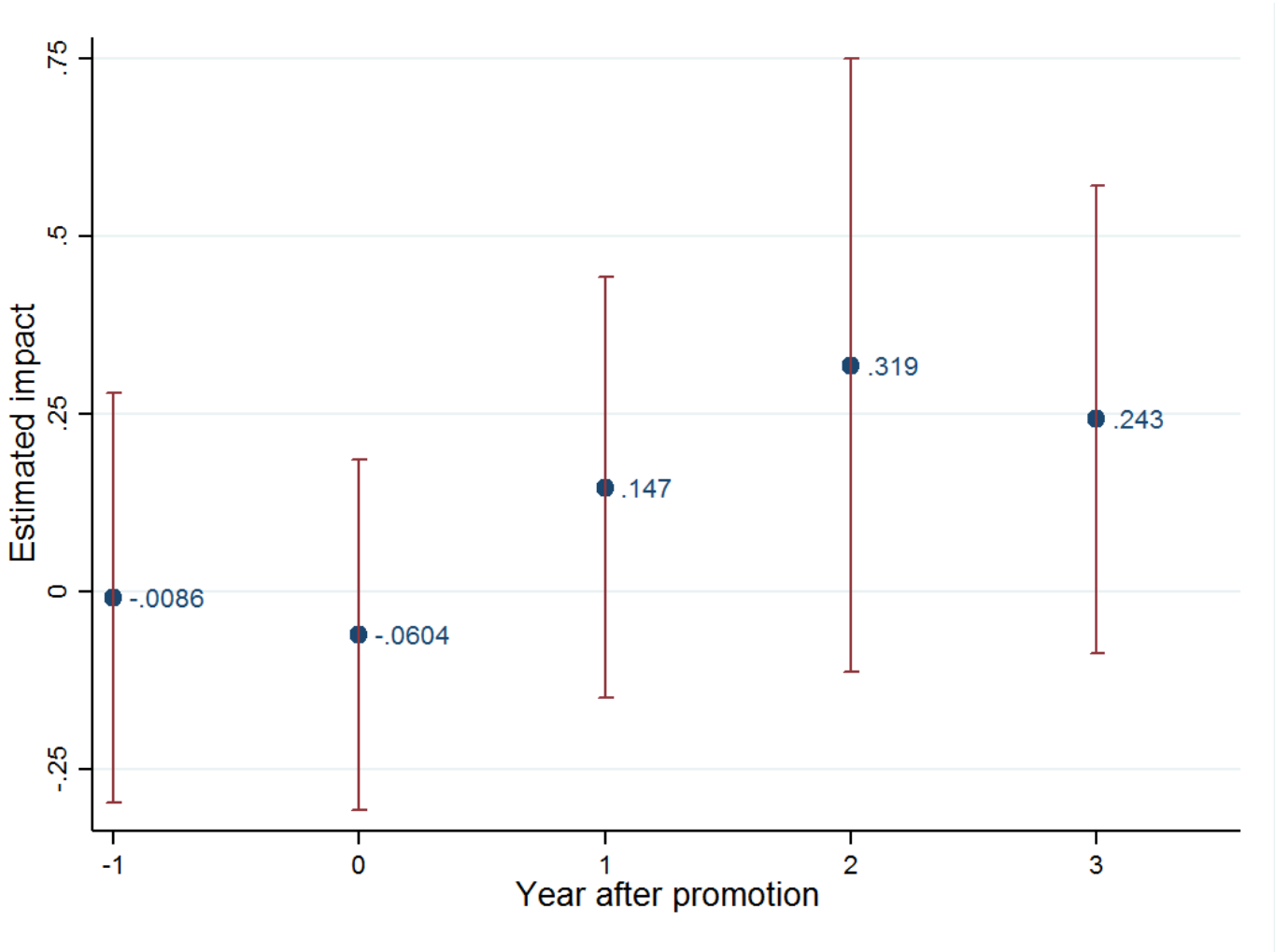
Results

Table 2. Main results: Increased commune's power capital improves infrastructures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Specification	OLS in level equation			OLS in level equation	OLS in difference equation	Poisson model	Cox model
Dependent variable	Total infrastructures within 3 years	Total infrastructures within 1 year	Total infrastructures within 3 years	Total infrastructure within 3 years	Change in total infrastructures	Total new infrastructures within 3 years	Infrastructure improvement
Power capital	**0.227**	**0.224**		**0.164**			
	[0.0746]* **	**[0.126]***		**[0.0632]*** **			
Current power level			**0.137**				
			[0.0796]*				
Change in power capital					**0.187**	**0.200**	**0.224**
					[0.0667]* **	**[0.0641]*** **	**[0.102]** **
Effect on incidence rate						**1.22**	**1.25**
Commune controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Commune & Year	Commune & Year	Commune & Year	Commune pair x Year	Province & Year	Province & Year	Province & Year
Cluster	Commune	Commune	Commune	Commune	Commune	Commune	Commune
Observations	1,237	941	1,237	2,437	898	730	326
R-squared	0.760	0.756	0.757	0.778	0.136		

Event study

Figure 1. Impact of native officials' promotions on total infrastructures in home communes over time



Results

Panel B: Comparison between different types of positions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: Infrastructures within 3 years	Total	Productive	Information	Education & health	Total	Productive	Information	Education & health
Power capital from								
CPV's Central Committee	0.154	0.124	0.00621	0.0236				
	[0.150]	[0.108]	[0.0696]	[0.0458]				
National Assembly	0.0636	-0.00554	0.0755	-0.00638				
	[0.128]	[0.0919]	[0.0899]	[0.0452]				
Executive branch	**0.471**	**0.269**	**0.175**	0.0297				
	[0.135]* **	**[0.0886]*** **	**[0.0830]** **	[0.0357]				
Top-ranking positions					-0.0887	0.00207	-0.116	0.0249
					[0.322]	[0.256]	[0.136]	[0.104]
Executive branch & CPV middle-ranking positions					**0.352**	**0.215**	**0.109**	0.0282
					[0.0943]* **	**[0.0670]*** **	**[0.0531]** **	[0.0259]
National Assembly middle-ranking positions					0.0770	0.00287	0.0844	-0.0103
					[0.131]	[0.0931]	[0.0920]	[0.0443]
Commune controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Commune & Year	Commune & Year
Cluster	Commune	Commune	Commune	Commune	Commune	Commune	Commune	Commune
Observations	1,237	1,237	1,237	1,237	1,237	1,237	1,237	1,237
R-squared	0.762	0.697	0.738	0.812	0.762	0.697	0.738	0.812

Incentives for Bureaucrats

- So bureaucrats matter.
- This implies we need to get them to work hard.
- But what happens when you try to incentivize them? What are the particular issues involved?

Incentives for tax officials

Khan, Khwaja, and Olken (2016): "Tax Farming Redux: Experimental Evidence on Performance Pay for Tax Collectors"

- Giving high powered incentives to tax collectors is one of the oldest ideas of how to improve tax collections.
  - For example, Roman empire, French ancient regime appointed "'tax farmers"' who paid a fix fee to the king and kept the remainder for themselves
  - But this was very unpopular (tax farmers were beheaded during the French Revolution).
  - Can this work in modern contexts?
- Randomized experiment on incentives for property tax collectors in Pakistan
  - Tax officers in treatment group (team of three staff) receive 20-40% of all revenue collected above a historical benchmark (On average each person faces a 10% incentive on the margin)
  - Many staff get close to doubling their base wages
- What do you expect will happen?

Model

- Nash bargaining (assume equal weights) between Taxpayer (P) and Tax Collector (C) to collude and reduce official tax liability
- τ^*: true amount of tax, same for everyone. Can instead negotiate to pay bribe (b) and report less tax τ ($\leq \tau^*$).
- Taxpayer's utility:

$$u_p(\tau, b) = -\tau - \alpha(\tau^* - \tau) - b$$

  where $\alpha(\tau^* - \tau)$ is cost of under-paying: α is heterogeneous among taxpayers
- Tax collector's utility:

$$r\tau - \beta(\tau^* - \tau) + b$$

  r: proportional incentive,$\beta(\tau^* - \tau)$ is cost of under-taxing
- Possibility of getting caught/penalty embedded in $\alpha(\tau^* - \tau)$ and $\beta(\tau^* - \tau)$.

Model

- Nash bargaining: Maximize (net of outside options) joint surplus from agreement

$$[-\tau - \alpha(\tau^* - \tau) - b + \tau^*] + [r\tau - \beta(\tau^* - \tau) + b - r\tau^*]$$

Rewrite as:

$$-\tau(1 - r - \alpha - \beta) + (1 - r - \alpha - \beta)\tau^*$$

- Solving yields (corner solutions; γ is bargaining weight of taxpayer):

$$(\tau, b) = \begin{cases} (0, [(1-\gamma)(\beta + r) + \gamma(1-\alpha)]\tau^* & \text{if } r + \alpha + \beta < 1 \\ (\tau^*, 0) & o/w \end{cases}$$

Model

- Comparative statics: As r increases (performance pay introduced) - two effects:
  - Equilibrium Selection: LESS likely to get collusive equilibrium
    - Recall Need: $r + \alpha + \beta < 1$ for collusion
    - Intuition: "Outside" option (fully collect taxes) of collector has gone up
  - Equilibrium Bribe Amount:
    - Recall (conditional on collusion) bribe $= [(1 - \gamma)(\beta + r) + \gamma(1 - \alpha)]\tau^*$
    - Intuition: Increased outside option of collector means he requires larger bribe
- Overall:
  - total amount of tax collected increases.
  - total amount of bribe can either increase or decrease (depends on distribution of α).
  - total amount of money paid by the taxpayers (tax + bribe) increases.

TABLE III

IMPACTS ON REVENUE COLLECTED

	(1)	(2)	(3)	(4)	(5)	(6)
	Year 1			Year 2		
	Total	Current	Arrears	Total	Current	Arrears
Panel A: Main treatment						
Any treatment	0.091***	0.073***	0.152**	0.094***	0.091***	0.113
	(0.028)	(0.027)	(0.069)	(0.031)	(0.032)	(0.083)

Results

Bribes

TABLE VI

IMPACTS ON TAX PAYMENTS AND CORRUPTION, BY REASSESSED STATUS

	(1) Self-reported tax payment	(2) Bribe payment	(3) Frequency of bribe payment	(4) Perception of corruption
Panel A: General population sample only				
Treatment	−62.81	594.1*	0.2021**	0.0113
	(264.7)	(341.7)	(0.0951)	(0.0254)
N	11,586	5,993	4,802	6,050
Mean of control group	4,069.425	1,874.542	0.683	0.644
Panel B: Reassessed and general population sample				
Reassessed * treatment	1,884*	−557.4	−0.1592*	−0.0031
	(1,083)	(380.1)	(0.0942)	(0.0221)
Reassessed	2,763***	−66.38	0.0137	−0.0191*
	(572.9)	(177.5)	(0.0403)	(0.0107)
N	16,353	8,207	6,993	8,268
Sample	Full	Phase 1	Phase 1	Phase 1
Mean of control group in gen. pop. sample	3928.252	1874.542	0.683	0.644

Results

Tax Gap

TABLE VII

IMPACTS ON SATISFACTION AND ACCURACY, BY REASSESSED STATUS

	(1) Quality	(2) Satisfaction	(3) Inaccuracy	(4) Tax gap
Reassessed * treatment	0.009	0.005	0.001	−0.005
	(0.024)	(0.024)	(0.017)	(0.028)
Reassessed	0.049***	0.044***	−0.061***	0.122***
	(0.013)	(0.013)	(0.009)	(0.015)
N	8,268	8,268	14,173	14,173
Sample	Phase 1	Phase 1	Full	Full
Mean of control group in gen. pop. sample	0.538	0.555	0.339	−0.103

Postings and Incentives

Khan, Khwaja, Olken 2017: Making Moves Matter

- We've seen thus far that bureuacrats get moves around a lot
- E.g. in the Russia procurement paper, these frequent rotations were used for identification
- KKO 2017 asks: can we use this to create incentives?
- In particular, suppose that individuals i have preferences over postings j. Can we use where people are assigned to provide incentives?
- Issues?
  - How to get truthful revelation of preferences?
  - Can you provide incentives to everyone?

Experiment

- KKO work with the same tax property tax inspectors.
- Provide incentives as follows, though a *Performance-Ranked Serial Dictatorship*:
  - Rank inspectors based on performance (growth in tax revenue)
  - Inspectors then take turn, in performance-rank order, picking their slots
  - Incentives arise from desire to get higher rank
- Note though that government loses control over *allocation* of inspectors. Good or bad?
- Implement this as a randomized trial.
  - Randomize entire groups of inspectors into scheme or not
  - Repeat for two years, rerandomizing after year 1. Why?

Design

Table 1: Treatment assignment of circles in year 2

	Year 2 Control	Year 2 Treatment	Total
Year 1 Control	210	56	266
Year 1 Treatment	69	75	144
(Not included in Year 1 lottery)	96	19	115
Total	375	150	525

Results

Table 2: Treatment Effect on Tax Revenue

	Year 1 (Y1 Q4)			Year 2 (Y2 Q4)			Pooled		
	(1) Total	(2) Current	(3) Arrears	(4) Total	(5) Current	(6) Arrears	(7) Total	(8) Current	(9) Arrears
Treatment	0.048	0.044	0.067	0.082	0.074	-0.115	0.058	0.053	0.013
	(0.023)	(0.024)	(0.058)	(0.041)	(0.038)	(0.118)	(0.020)	(0.021)	(0.054)
	[0.012]	[0.037]	[0.269]	[0.084]	[0.124]	[0.413]	[0.002]	[0.008]	[0.838]
N (Total)	405	405	396	259	259	251	664	664	647
Mean growth rate in control group (Total)	0.120	0.158	-0.041	0.310	0.408	-0.339	0.204	0.269	-0.173

Model

- Preferences
  - Inspector i obtains utility u_{ij} from being assigned to circle j.
  - This defines an ordering over all circles for inspector i
  - Denote full matrix of preferences $\mathbf{P}$
  - Cost of effort e is $c_i(e)$, convex
- Performance
  - Suppose the outcome (in our case, growth in tax revenue) for inspector i is given by

$$y_i = y_{i0} + e_i + \epsilon_i$$

    - e_i is the effort from inspector i
    - y_{i0} is the growth rate that would be observed in the absence of effort (which may differ across inspectors)
    - ϵ_i is an iid error term, standard deviation σ_ϵ
- PRSD
  - Given $\mathbf{P}$ and $\mathbf{y}$, PRSD yields an allocation $r_i(\mathbf{y}, \mathbf{P})$, defined s.t. inspector i is assigned to j if $j = r_i(\mathbf{y}, \mathbf{P})$

Inspector's Problem

- Inspector i maximizes

$$\max_{e_i} \sum_{\mathbf{j=1}}^{\mathbf{J}} u_{ij} Pr(j = r_i(\mathbf{y}, \mathbf{P})) - c_i(e_i)$$

  taking other inspectors' effort as given.

- FOC:

$$\sum_{\mathbf{j=1}}^{\mathbf{J}} u_{ij} \frac{\partial Pr(j = r_i(y_i, \mathbf{y_{-i}}, \mathbf{P}))}{\partial y_i} = c_i'(e_i)$$

Estimating the model

- Solve numerically for a Nash equilibrium in efforts
  - Paramaterize the cost function as a quadratic $c_i(e) = \frac{1}{2}\alpha e_i^2$
  - Characterize u as linear where 1 is top rank and 0 bottom rank.
  - Estimate y_0 from baseline distribution
  - Use GMM to estimate α such such that the *average* effort from the model matches the actual experimental increase in efforts
- Can then test the model by estimating

$$\begin{aligned} \log y_{ct} &= \alpha_t + \alpha_g + \gamma_t \log y_{c0} + \\ &\quad \beta_1 TREAT_c \times \frac{dEu_c}{de_c} + \beta_2 \frac{dEu_c}{de_c} + \epsilon_{ct} \end{aligned}$$

Results

	Y1 Q4			Y2 Q4			Pooled		
	(1) Total	(2) Current	(3) Arrears	(4) Total	(5) Current	(6) Arrears	(7) Total	(8) Current	(9) Arrears
Panel A: Full knowledge of P, y									
Treatment * dEu1dy	0.351	0.291	0.284	0.166	0.148	0.164	0.250	0.211	0.359
	(0.160)	(0.154)	(0.229)	(0.068)	(0.078)	(0.433)	(0.093)	(0.074)	(0.230)
	[0.001]	[0.001]	[0.044]	[0.221]	[0.256]	[0.578]	[0.001]	[0.002]	[0.012]
dEu1dy	0.025	0.133	-0.145	-0.077	0.005	-0.274	-0.016	0.084	-0.227
	(0.066)	(0.075)	(0.105)	(0.061)	(0.071)	(0.127)	(0.047)	(0.050)	(0.076)
	[0.335]	[0.013]	[0.484]	[0.381]	[0.994]	[0.041]	[0.546]	[0.425]	[0.063]
N	403	403	394	257	257	249	660	660	643
Mean growth rate in control group (Total)	0.120	0.159	-0.043	0.311	0.408	-0.337	0.205	0.269	-0.173
Panel B: Full knowledge of P, no knowledge of y									
Treatment * dEu1dy	0.062	0.001	0.005	0.008	-0.046	0.610	0.050	-0.006	0.289
	(0.069)	(0.066)	(0.235)	(0.110)	(0.074)	(0.525)	(0.055)	(0.045)	(0.177)
	[0.258]	[0.976]	[0.977]	[0.943]	[0.714]	[0.069]	[0.373]	[0.921]	[0.045]
dEu1dy	-0.025	0.055	-0.051	-0.052	0.063	-0.438	-0.040	0.055	-0.236
	(0.042)	(0.051)	(0.114)	(0.042)	(0.046)	(0.128)	(0.029)	(0.031)	(0.077)
	[0.252]	[0.281]	[0.707]	[0.300]	[0.780]	[0.039]	[0.069]	[0.290]	[0.003]
N	403	403	394	257	257	249	660	660	643
Mean growth rate in control group (Total)	0.120	0.159	-0.043	0.311	0.408	-0.337	0.205	0.269	-0.173
Panel C: Assume identical P, full knowledge of y									
Treatment * dEu1dy	0.192	0.099	0.378	0.113	0.211	-0.209	0.177	0.162	0.375
	(0.081)	(0.098)	(0.178)	(0.142)	(0.166)	(0.435)	(0.066)	(0.080)	(0.185)
	[0.002]	[0.232]	[0.014]	[0.358]	[0.161]	[0.544]	[0.003]	[0.030]	[0.015]
dEu1dy	0.097	0.268	-0.205	0.076	0.042	0.109	0.082	0.179	-0.161
	(0.089)	(0.111)	(0.126)	(0.128)	(0.158)	(0.201)	(0.073)	(0.095)	(0.117)
	[0.008]	[0.001]	[0.021]	[0.633]	[0.873]	[0.657]	[0.038]	[0.003]	[0.105]
N	403	403	394	257	257	249	660	660	643
Mean growth rate in control group (Total)	0.120	0.159	-0.043	0.311	0.408	-0.337	0.205	0.269	-0.173
Panel D: Assume random P, full knowledge of y									
Treatment * dEu1dy	0.764	0.694	0.820	0.469	0.504	-0.186	0.582	0.562	0.799
	(0.244)	(0.267)	(0.561)	(0.157)	(0.184)	(0.825)	(0.150)	(0.145)	(0.425)
	[0.001]	[0.001]	[0.003]	[0.055]	[0.047]	[0.760]	[0.001]	[0.001]	[0.004]
dEu1dy	0.141	0.395	-0.321	-0.065	-0.037	-0.115	0.084	0.266	-0.306
	(0.161)	(0.192)	(0.247)	(0.185)	(0.209)	(0.250)	(0.136)	(0.160)	(0.181)
	[0.002]	[0.001]	[0.205]	[0.739]	[0.903]	[0.702]	[0.061]	[0.003]	[0.244]
N	403	403	394	257	257	249	660	660	643
Mean growth rate in control group (Total)	0.120	0.159	-0.043	0.311	0.408	-0.337	0.205	0.269	-0.173

What about allocation

Look at second year results

	(1) Total	(2) Current	(3) Arrears
Y2 Treatment	0.069	0.058	-0.117
	(0.041)	(0.040)	(0.119)
	[0.138]	[0.228]	[0.400]
Y1 Treatment	0.108	0.088	0.143
	(0.040)	(0.042)	(0.102)
	[0.003]	[0.022]	[0.147]
Y1 AND Y2 Treatment	-0.133	-0.093	0.001
	(0.068)	(0.069)	(0.179)
	[0.045]	[0.175]	[0.992]
N (Total)	403	403	392
Y1 Treatment = Y2 Treatment (p-value)	0.418	0.566	0.069
Mean growth rate in control group (Total)	0.310	0.408	-0.339

Allocation

Estimate it directly

- Effects thus far have been about incentive effects
- But PRSD also imposes a particular allocation of slots.
  - Higher performing staff to more desirable locations.
- Questions:
  - What attributes make a circle popular?
    - Compute how top-ranked circles compare to average circles. Answer: large circles. Also circles with opportunities for bribes.
  - Does the PRSD increase the link between performance and getting your preferences met?
    - Define y_{top} as the value of y for circles where top-ranked inspectors are allocated
    - Compute $E(y_{top} - \bar{y} \mid TREAT = 1)$. This says how characteristics where top allocated people go compare to average. Should look similar to preferences.
    - To estimate treatment effects on allocations, compute $E(y_{top} - \bar{y} \mid TREAT = 1) - E(y_{top} - \bar{y} \mid TREAT = 0)$.
- Results: treatment effect moves top inspectors to larger circles.

Patronage and Selection of Bureaucrats

- If bureaucrat quality matters, then if you can select better bureaucrats you can improve performance
- However, politicians often control hiring of bureaucrats – and do it more for political reasons than to maximize quality. This is called patronage.
- The reasons this is bad are obvious. But why might it be good?

> *"Patronage serves the public interest by facilitating the implementing of policies endorsed by the electorate." - Supreme Court Justice Stewart, 1980.*

- How to investigate this?

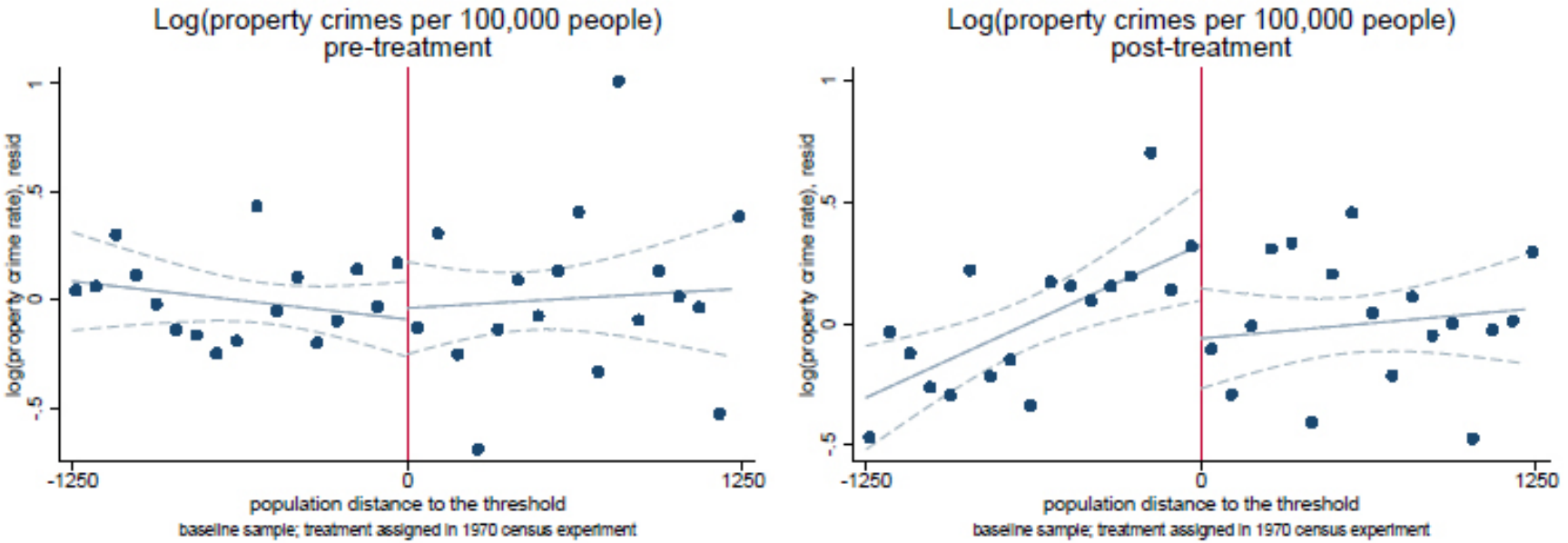
Ornaghi 2016: Civil Service Reforms: Evidence from U.S. Police Departments

- Empirical idea: for some states, state law requires all employees be hired through an exam-based civil service system
- Interpretation: Is this selection or incentives or both?
- Takes effect after population counts published in each new census.

Results in graphs

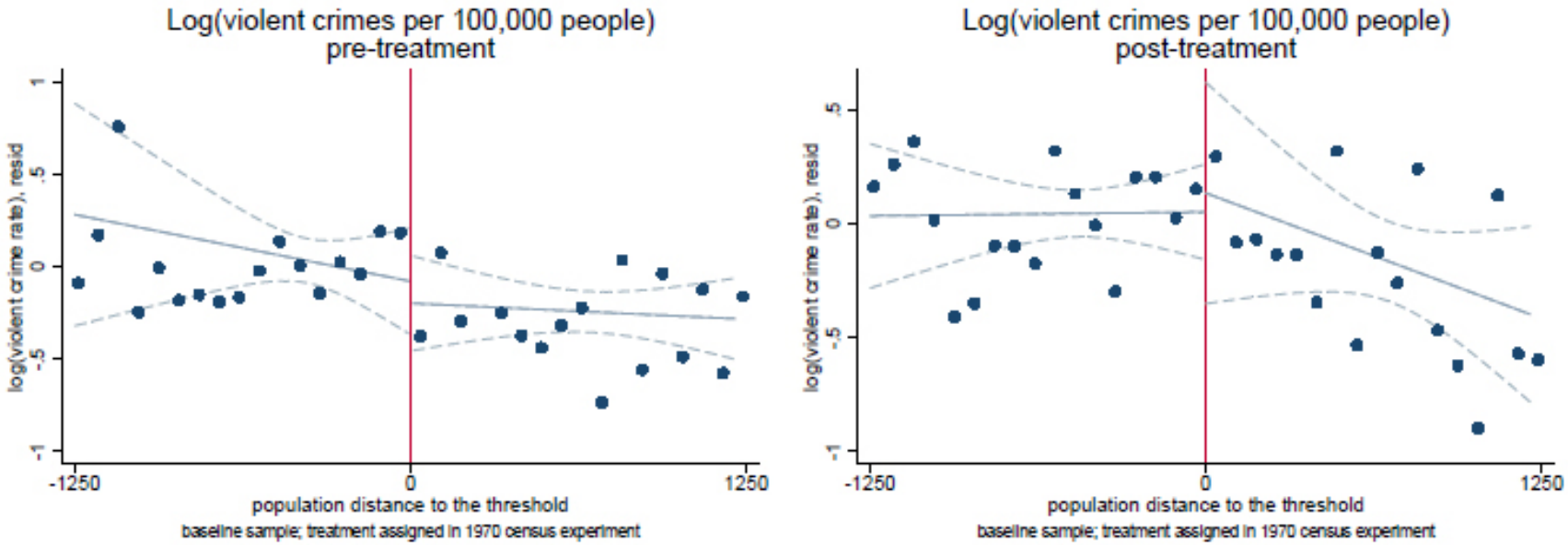
Property crime

Figure 3a: Merit systems lower property crime rates, RD graphs



Results in graphs

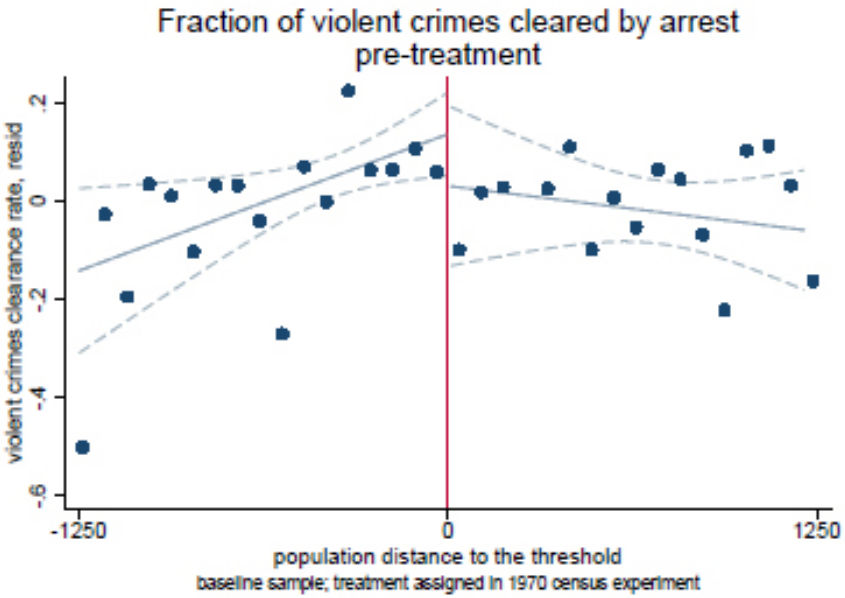
Violent crime

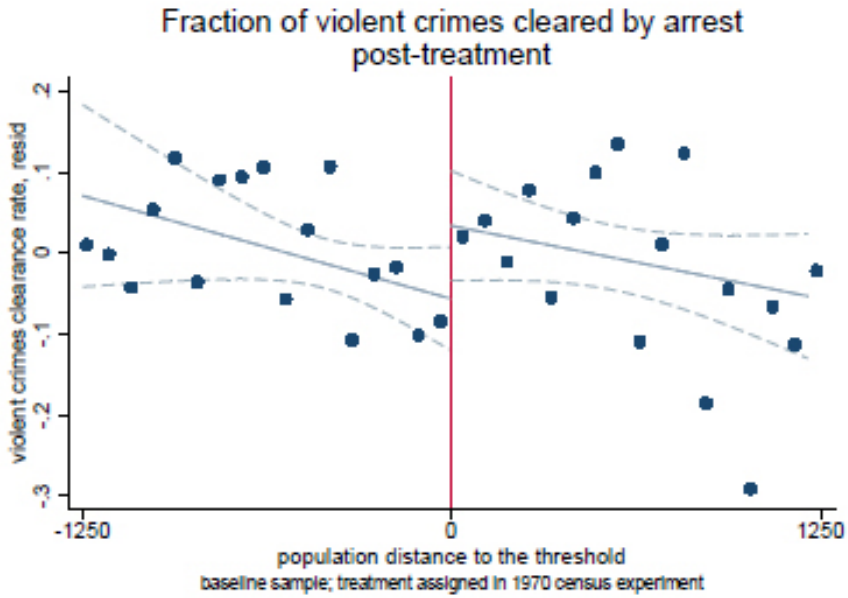


Courtesy of Arianna Ornaghi. Used with permission.

Results in graphs

Violent crime clearance rates





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Patronage in the Colonial Era

Xu 2017: Costs of Patronage: Evidence from the British Empire

- Compares colonial outcomes for colonies whose governors were connected (via club, college, etc) to (Secretary of State for Colonies) vs. those who were not

Panel A: Revenue	(1)	(2)	(3)	(4)
	Colony-level Public Finance			
	Public revenue			
	Overall		Trade	Internal
Mean of dep. var	12.31	12.31	11.47	11.58
Connected	-0.040**	-0.055***	-0.053**	-0.043
	(0.017)	(0.021)	(0.026)	(0.032)
Connected ×		0.061*		
Reform dummy		(0.033)		
Connected + Connected ×	-	0.005	-	-
Reform dummy		(0.026)		
Year FEs	Yes	Yes	Yes	Yes
Governor-Colony FEs	Yes	Yes	Yes	Yes
Spell length FEs	Yes	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes	Yes
Observations	3,510	3,510	2,670	2,652

Courtesy of Guo Xu. Used with permission.

How to recruit?

Ashraf, Bandeira, and Lee (2016): Dogooders and Gogetters: Selection and Performance in Public Service Delivery

- If you think that selection of bureaucrats is important - once you eliminate patronage, what should you do?
- In general this is an area that is not fully explored
- But there are two papers of note:
- ABL 2016: Should you recruit people based on financial rewards, or public-spiritedness?
- DFR 2013: How does the quality of bureaucrats depend on the wage?

The Treatment

Version 1 - Community-minded

Figures removed due to copyright restrictions. See Fig. 1.A, Tables 1, 3, 5, 6 in Ashraf, Nava, Oriana Bandiera, and Scott S. Lee. "Do-gooders and Go-getters: Career Incentives, Selection, and Performance in Public Service Delivery." Working Paper, March 2015. https://www.hbs.edu/faculty/Pages/item.aspx?num=46043.

The Treatment

Version 2 - Career-minded

Figures removed due to copyright restrictions. See Fig. 1.A, Tables 1, 3, 5, 6 in Ashraf, Nava, Oriana Bandiera, and Scott S. Lee. "Do-gooders and Go-getters: Career Incentives, Selection, and Performance in Public Service Delivery." Working Paper, March 2015. https://www.hbs.edu/faculty/Pages/item.aspx?num=46043.

Leads to more qualified applicants

Figures removed due to copyright restrictions. See Fig. 1.A, Tables 1, 3, 5, 6 in Ashraf, Nava, Oriana Bandiera, and Scott S. Lee. "Do-gooders and Go-getters: Career Incentives, Selection, and Performance in Public Service Delivery." Working Paper, March 2015. https://www.hbs.edu/faculty/Pages/item.aspx?num=46043.

Greater performance

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And better outcomes

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And better outcomes

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What about paying more?

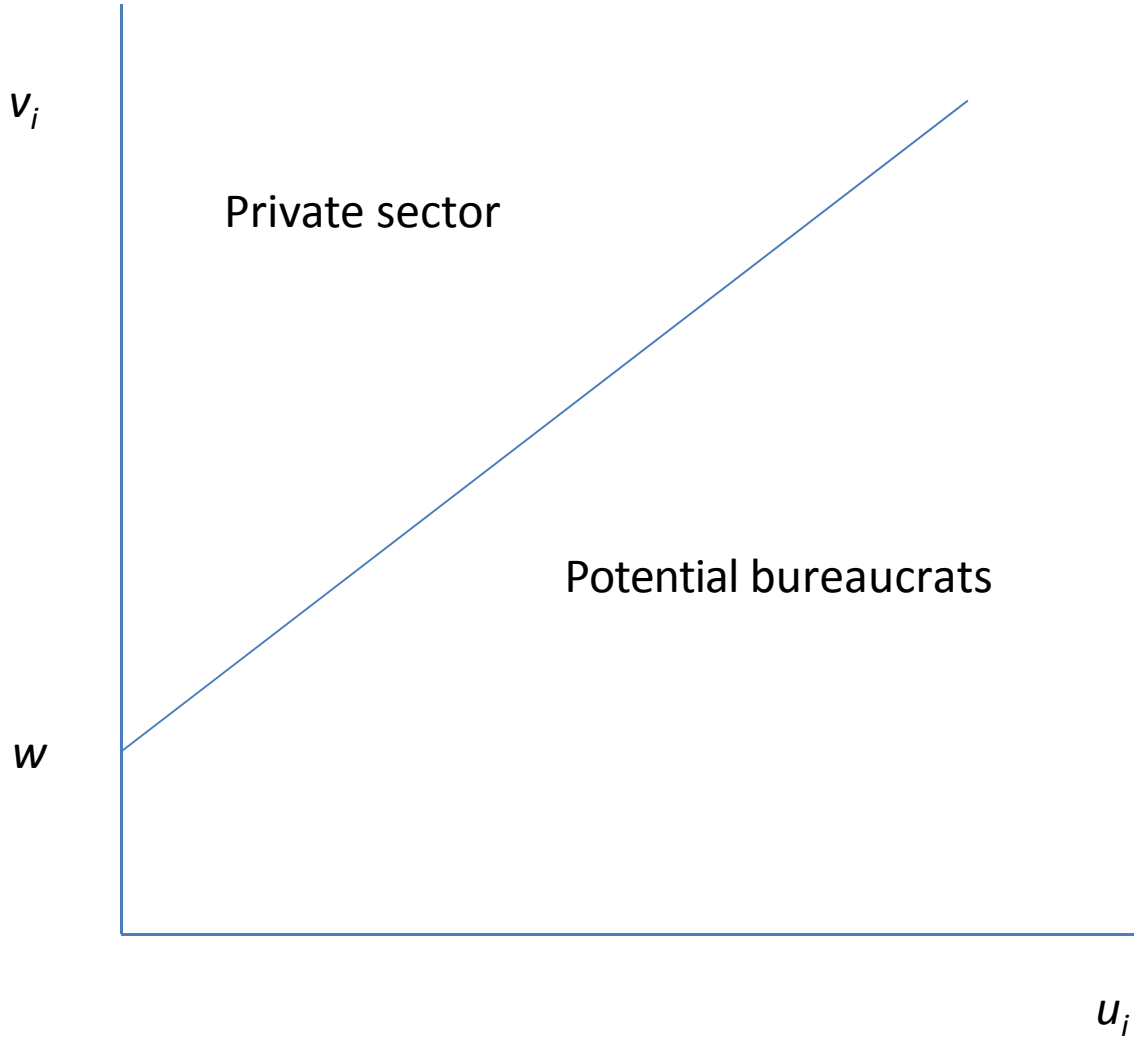
- The other way that wages can matter is through selection
- Suppose that people in the population have an outside wage v_i and get utility rents from office u_i.
- They will choose to become bureaucrats if

$$w > v_i - u_i$$

  and suppose that within this group that is interested, we randomly choose someone to be a bureaucrat
- Suppose that we care about some combination of v_i (correlated with competence) and u_i (correlated with idealism, public service)
- What happens if we increase w? Is this good or bad?
- Depends on the correlation of u_i and v_i.

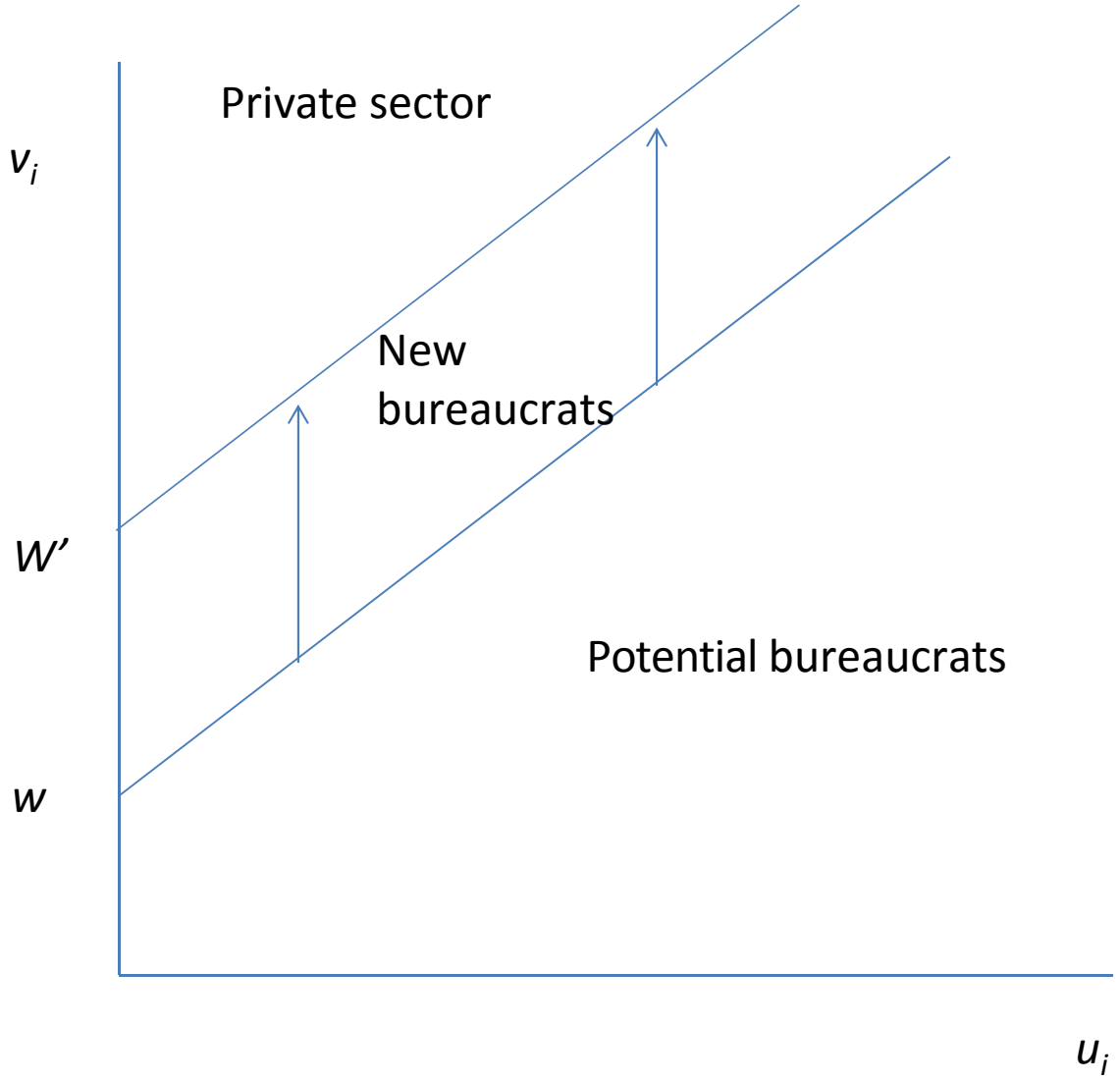
Wages and selection

Who become bureaucrats?



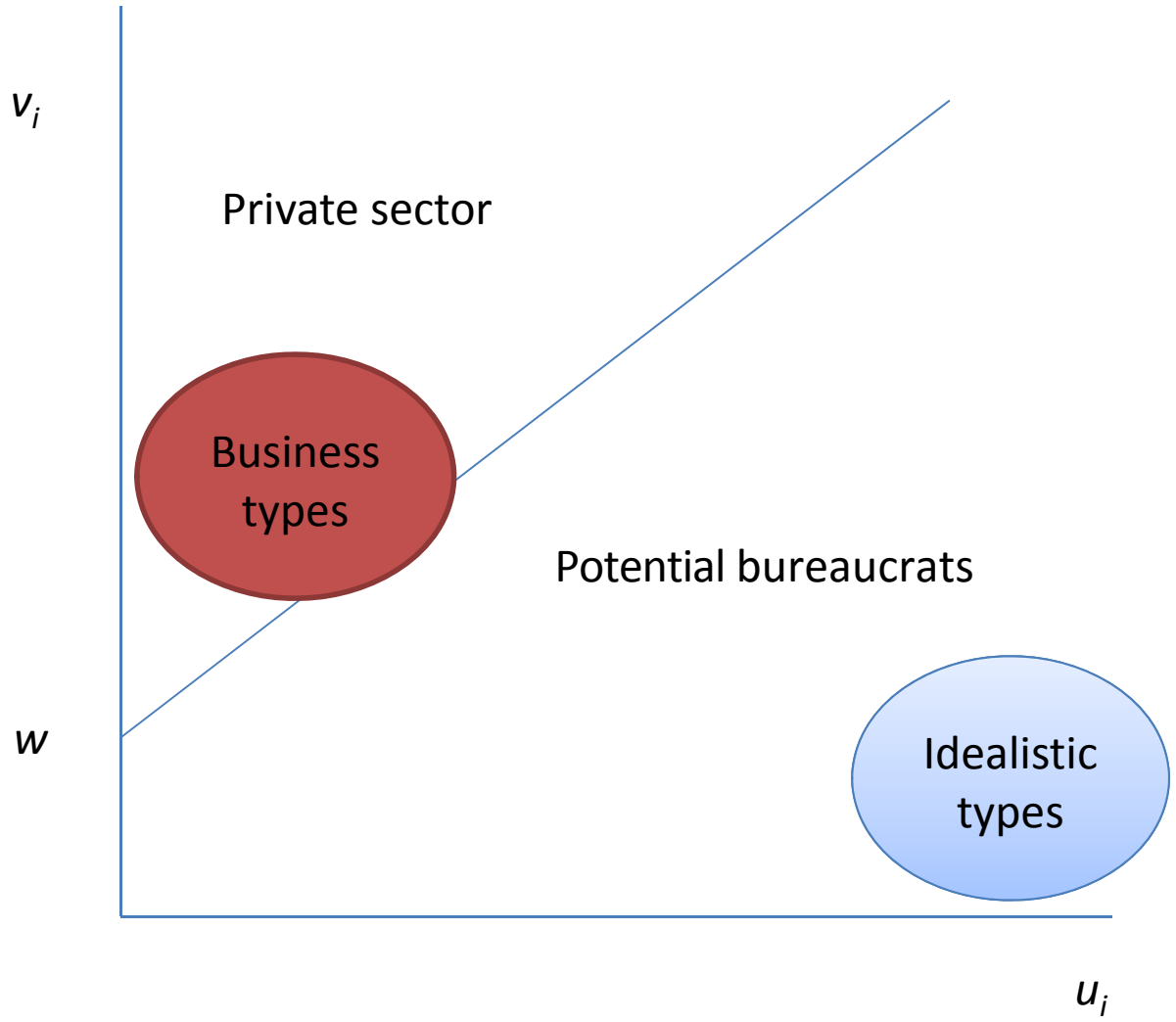
Wages and selection

What happens when we increase w?



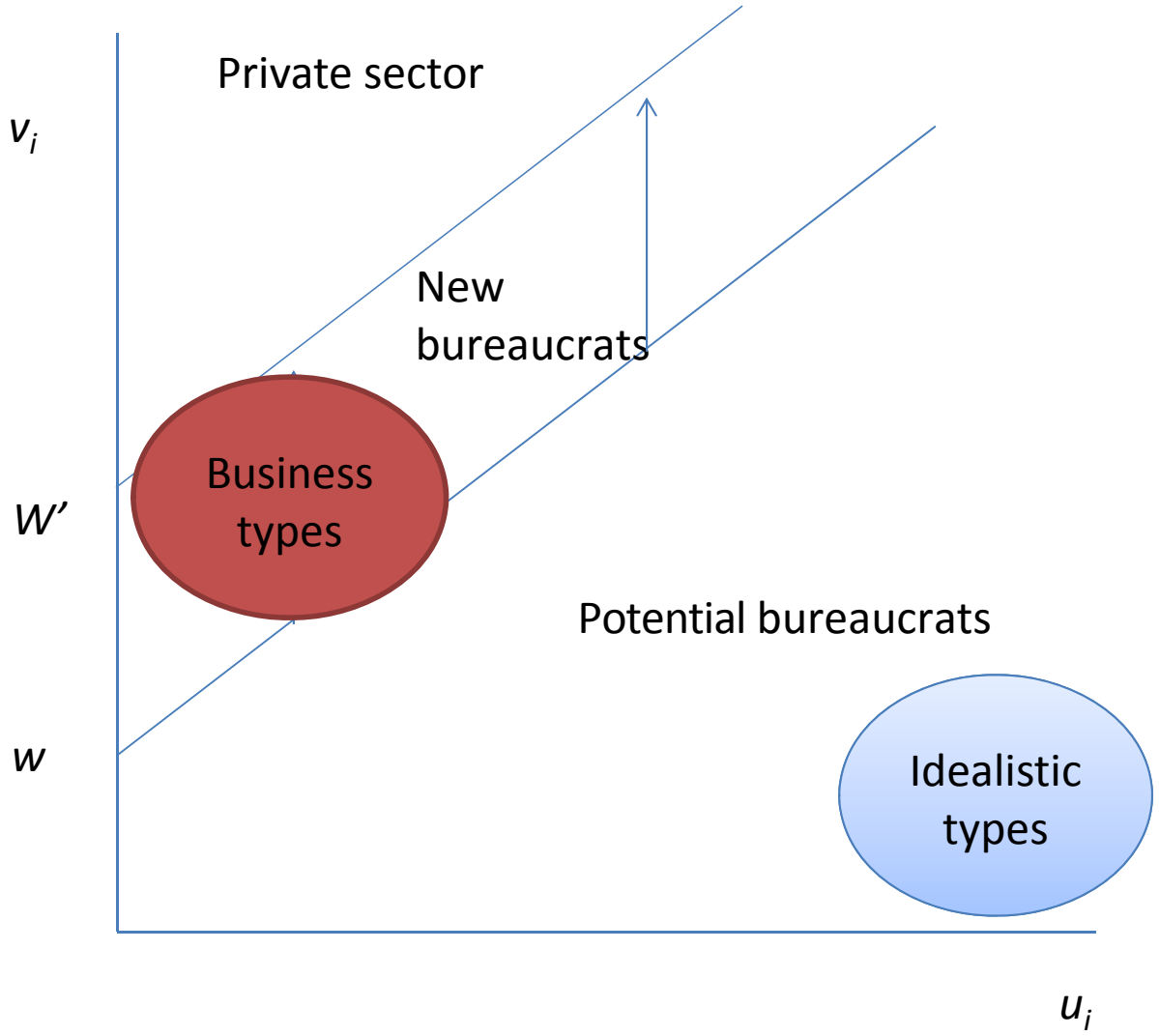
Wages and selection

Example with negative correlation between v and u



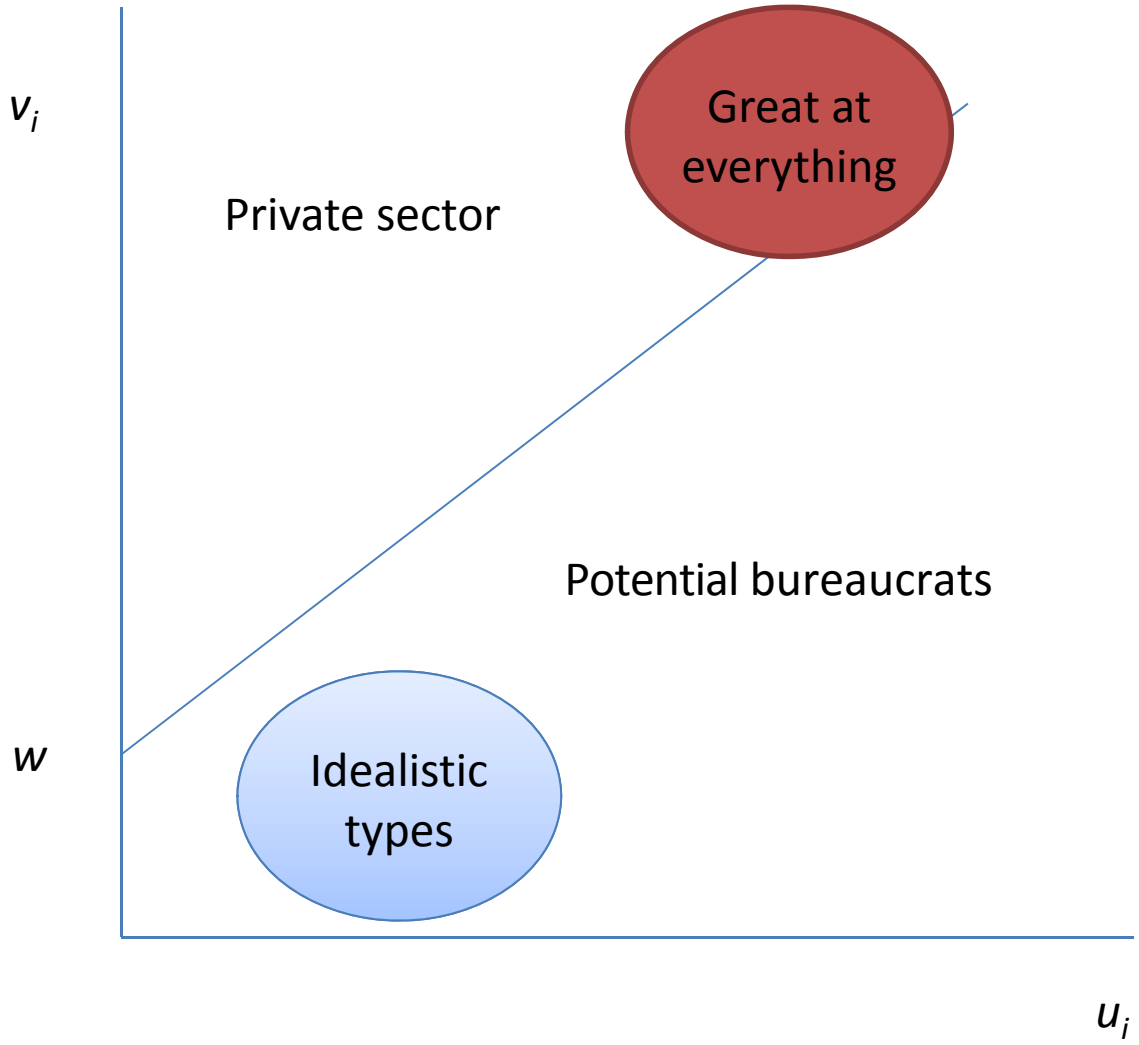
Wages and selection

Example with negative correlation between v and u



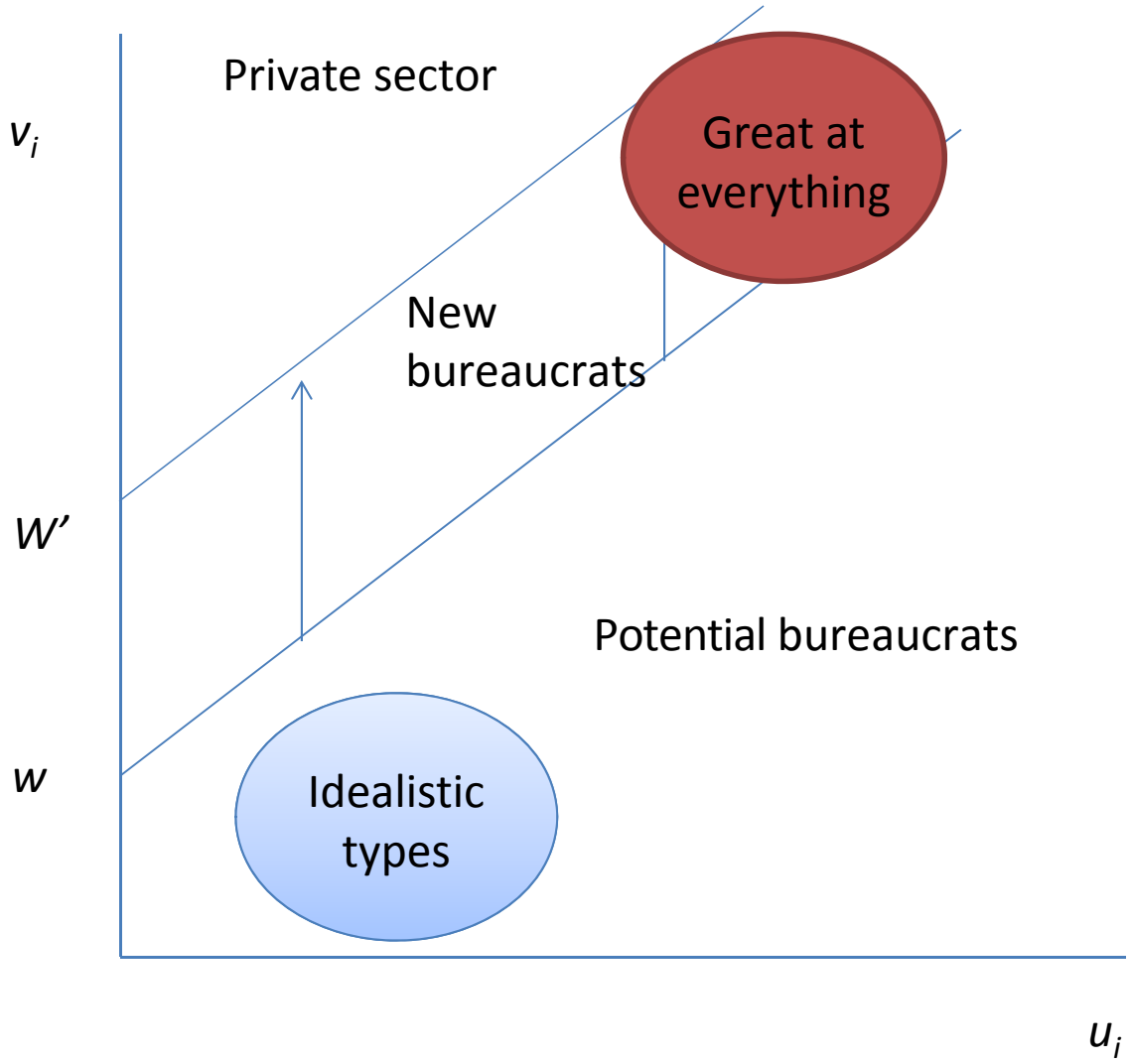
Wages and selection

Example with positive correlation between v and u



Wages and selection

Example with positive correlation between v and u



Wages and selection: empirics

Dal Bó, Finan, and Rossi (2013): Strengthening State Capabilities: The Role of Financial Incentives in the Call to Public Service

- This paper sought to experimentally vary wages for a government job: being a facilitator for a Mexican "'Regional Development Program"'
- Treatment: offer wages of 5,000 pesos/month vs. 3,750 pesos/month
- Not listed on recruiting posters; instead, once you call in to inquire about the job, they tell you the wage that applies to your location Does this matter?

Effect on market characteristics

- What would you predict effect on market-prices skills?

TABLE III

EFFECTS ON FINANCIAL INCENTIVES ON APPLICANT POOL: PRODUCTIVE ATTRIBUTES

	Observations (1)	Control (2)	Treatment effect (3)	Randomization inference p-value (4)	FDR q-value (5)
Number of applicants	106	18.093	4.714 [4.430]	.36	n/a
Panel A: Market skills					
Wage in previous job	1,572	3479.667	819.154 [174.703]***	.00	0.00
Previous job was white collar	1,170	0.243	0.069 [0.029]***	.01	0.02
Currently employed	2,225	0.104	0.053 [0.019]***	.01	0.02
Has work experience	2,212	0.459	0.167 [0.048]***	.00	0.00
Years of experience in past 3 spells	2,212	1.185	0.284 [0.171]	.08	0.06
IQ (Raven test)	2,229	8.488	0.506 [0.223]**	.01	0.02
Raven score ≥ 9	2,229	0.572	0.091 [0.039]**	.01	0.02
Chose dominated risk option	2,213	0.431	−0.064 [0.025]**	.01	0.02
Years of schooling	2,198	14.552	0.091 [0.308]	.40	0.14

Aside: randomization inference p-values

- They report "'randomization inference p-values"'. What is this?
- A p-value is the probability that the absolute value of the difference between treatment and control group would be at least as large as observed if it was only generated by random chance
- With randomization-inference we can compute this directly:
  - Repeat for N iterations:
    - For each iteration i, randomly permute treatment and control values. Define $TREAT_i$ as the treatment status for permutation i for a given observation.
    - Compute the absolute value of difference outcomes for permutation i, as $Diff_i = |\mathbf{E}[Y \mid TREAT_i = 1] - \mathbf{E}[Y \mid TREAT_i = 0]|$.
  - Define $\Phi(x)$ as the CDF of $Diff_i$ across iterations.
  - Denote the true difference for actual assignment $TREAT$ as $Diff^* = |\mathbf{E}[Y \mid TREAT = 1] - \mathbf{E}[Y \mid TREAT = 0]|$.
  - The RI p-value is $1 - \Phi(Diff^*)$.

Effect on market characteristics

- Back to substance: What would you predict effect on public-service orientation?

	Observations (1)	Control (2)	Treatment effect (3)	Randomization inference p-value (4)	FDR q-value (5)
Panel A: PSM traits					
PSM index	2,074	0.000	0.092 [0.046]**	.05	0.09
Attractiveness	2,217	2.803	0.070 [0.041]*	.05	0.14
Commitment	2,170	3.316	0.045 [0.035]	.15	0.18
Social justice	2,180	3.646	0.075 [0.026]***	.01	0.04
Civic duty	2,158	3.924	0.027 [0.033]	.25	0.22
Compassion	2,168	3.001	0.066 [0.031]**	.04	0.14
Self-sacrifice	2,168	3.687	0.039 [0.034]	.15	0.18
Panel B: Prosocial behavior					
Altruism	2,199	23.491	0.039 [0.291]	.53	0.29
Negative reciprocity	2,206	0.508	0.075 [0.023]***	.00	0.00
Cooperation	2,157	26.174	0.675 [0.404]*	.08	0.16
Did charity work in the past year	2,223	0.605	−0.096 [0.041]**	.01	0.05
Volunteered in the past year	2,224	0.710	−0.006 [0.027]	.38	0.34
Importance of wealth	2,025	3.159	0.107 [0.087]	.14	0.18
Belongs to a political party	2,225	0.113	−0.026 [0.014]*	.07	0.16
Voted	2,225	0.758	0.019 [0.035]	.33	0.26

Summing up

- Civil service regulations mean that who you *select* into becoming a bureaucrat may be important for the job.
- Many have worried about a tradeoff between wages and "'pro-social"' motivation – empirics show that not to be too much of a concern thus far.
- But worry that corrupt people may select into bureaucracy when there are opportunities for corruption.
- Natural transition to our next topic!

14.770 Introduction to Political Economy

Fall 2017