Social Mobility and Revolution: The Impact of the Abolition of China's Civil Service Exam

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Motivation: the consequence of social mobility

Social mobility is often considered an important element in determining political stability.

- An increase in social mobility may facilitate stability.
 - Public education in France in the late 19th century (Bourguignon and Verdier 2000)
- ► The lack of social mobility may ignite and facilitate revolution.
 - Tiananmen movement in 1989 in China (Zhao 2001)
 - Arab Spring (Malik and Awadallah 2013)
- However, the link has not been established empirically.
 - Not surprising: social mobility evolves slowly with other factors.

This Paper

Does (perceived) mobility affect political stability? This paper:

- studies a dramatic interruption of a mobility channel: the abolition of the civil service exam system that lasted 1,300 years.
 - the exam system (605-1904)
 - the primary way of creating a gentry class (including staffing the bureaucracy)
 - influences: Vietnam, Korea and Japan; Britain
 - ▶ a fairly open system that greatly promoted perceived mobility
 - it was governed by a quota system.
- links the prefecture quota to
 - the origins of revolutionaries before and after the abolition (1900-1906)
 - the incidence of early uprisings in 1911
 - the 1911 Revolution marked the end of the over 2,000 years of imperial rule
 - France in 1870, Germany in 1918

the abolition and the revolution

"The abolition of the examination system inevitably resulted in the dissolution of existing political and social order. The importance of this measure for the final collapse of the traditional system which soon followed cannot be overestimated." (Wolfgang Franke, 1957)

"The year 1905 marks the watershed between old China and new; it symbolizes the end of one era and the beginning of another. It must be counted a more important turning point than the Revolution of 1911, because it unlocked changes in what must be the main institutional base of any government: the means of awarding status to the society's elites and of staffing the administration." (Gilbert Rozeman, 1982)

"With the Republican Revolution of 1911, the imperial system ended abruptly, but its demise was already assured in 1904 when the Qing state lost control of the education system" (Benjamin Elman, 2009)

the abolition and the revolution

"If the exam were not abolished, who would have joined the revolution?" — Hu Hanmin



Hu: born in 1879 to a poor family.

succeeded in the provincial level exam in 1900.

joined Tongmenghui in 1905 and became one of the leaders of Kuomintang.

Preview

- 1. Quantifying the impact: A one s.d. in the quota (0.57) leads to
 - ▶ 6 percent. pts higher prob. of revolution participation post abolition
 - ▶ 1 percent. pts higher incidence of early uprisings in 1911 (lower bound)
- 2. Understanding the mechanism:
 - most consistent with a model of perceived mobility (mobility + Passarelli and Tabellini 2013):

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abolition of the exam system\Rightarrow perceived mobility for a large population \downarrow
\Rightarrow participation in revolution \uparrow
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- Related to the POUM literature (Benabou and Ok 2001; Ravallion and Lokshin 2000, Alesina and La Ferrara 2005...)
- Unclear how redistribution can be realized in authoritarian regimes.
- 3. Additional findings: modern human capital and social capital
 - Modern human capital also contributed to the revolution.
 - Social capital strengthens the impact of the quota.

Roadmap

1. Historical background and data

- 2. A simple model of revolution participation
- 3. Estimation strategy and baseline results
 - Estimating the impact on revolution participation using DID
 - Linking the impact to the incidence of uprisings in 1911
 - Testing the auxiliary prediction of social capital
- 4. Robustness checks
 - Measurement checks
 - Placebo tests (the Boxer Rebellion; grain prices)
 - Results from instruments (# small rivers; "luck" before the quota system)
- 5. Alternative interpretations
 - Modern human capital
 - Economic shocks
 - Ideology

Background and Data: the civil service exam

- 1. The structure of the exam
- 2. The exam as a mobility channel
- 3. The abolition of the exam and its impact

Figure: The Ladder of Success



- mobility: status change between the commoner and the gentry.
- ▶ The gentry class: 1-2% of the population (4-8% male aged 15-49) (Chang 1962).
- Around 2 million men (including many repeaters) registered for each prefecture-level exam.

The Exam as a Mobility Channel

- 1. The exam was in principle open to men from all socio-economic backgrounds.
 - Despite the entry costs, it was a fairly efficient mobility channel: 40-60% of graduates were newcomers. (Ho 1962, Kracke 1947, Chang 1955; Hsu 1949).
 - Iower including larger clan networks but "these differences were not so pronounced as to suggest that certain descent groups monopolized opportunities, and that others were shut out" (Campbell, 2012).
 - The effect on perceived mobility was more important.
- 2. The exam mattered for the prospect of a large amount of population.
 - Around 2 million men registered for *each* prefecture-level exam.
 - The number got amplified in the family-centered society.
- 3. The numbers of candidates in each level were controlled by a quota system.

Data: the quota

、 、 、 、 、 、 、 、 、 、 、 、 、	Shandong Province Prefecture: Jinan The quota of Jinan (Prefecture) school is 20 Zhanggin County: 20 Zhanggin County: 15 Zichana County: 15 Zichang County: 15 Changging County: 15 Changging County: 15 Zichang County: 12 Zichang County: 12 Deigou County: 12 Deigou County: 12 Dezuo Garrison School 1: 7.5 DeZuo Garrison School 2: 7.5
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Data: the quota

Assignment: counties + prefecture capital

- binding at prefecture level
- no explicit rule. correlated with population, importance etc.

Two features \Rightarrow Large regional variations

- very stable + extra due to fighting Taiping Rebellion
 - collect data for both the early (1724-1851) and the late (1873-1904) Qing
- stepwise rule ("Seeing Like a State")



Data: the quota (late Qing)



Province fixed effects explain 30% of the variations in quota. s.d. of In Quota: 0.88; s.d. of In Quota (w. In Pop): 0.57

Background: the abolition and its impact

The Late Qing: many wars with the West. The exam: thought to be the root of under-development

- sought out men who are "obedient to their elder"
- focused on reciting the classics

The process:

- ► 1901: relaxed the eight-legged essay, but the three level structure was retained.
- ► 1903-1904: the Committee on Education submitted a memorandum urging the abolition
 - received imperial approval on 13 January 1904
 - abolition in 5-10 years
- the exam at all levels were stopped in 1905
 - ► Japan defeated Russia in the Russo-Japanese War.

Background: the abolition and its impact

New channels

- Study abroad (e.g. Japan)
- Attend new schools (limited)

"Whereas under the old scheme a scholar with limited financial resources had a good chance to succeed, under the new one the opportunity to receive higher education was virtually limited to a small group of men from official, professional, and mercantile families." Wang (1960)

Selection of bureaucrats without the exam

- influenced by the incumbents (Spence, 1990)
 - the political link was interrupted without an elite background

Impact on the entry into the bureaucracy: Table 2(b)

	Bef	ore the Aboli	tion		After the Abolition			
	Ln	(k+ # Prese	nted	Ln (k+ # Quasi-Pi	resented		
	So	holars in 190)4)		Scholars in 19)7)		
	(1)	(2)	(3)	(4)	(5)	(6)		
Ln(Quota)	0.375***	0.378***	0.305***	0.191***	0.218***	0.131*		
	(0.076)	(0.097)	(0.092)	(0.069)	(0.078)	(0.067)		
Ln(Popu 1880)	0.156**	0.148	0.091	0.197***	0.048	-0.045		
	(0.069)	(0.094)	(0.084)	(0.072)	(0.086)	(0.068)		
Ln(1+# in office)	· · ·	· · ·	0.414***	· · ·	· · ·	0.423***		
(<i>'''</i> /			(0.073)			(0.097)		
Province FE		Y	Ύ		Y	Ύ		
Observations	262	262	262	262	262	262		
R-squared	0.255	0.279	0.411	0.132	0.381	0.510		

► See ► Table 2(a) for the whole Qing dynasty.

- winners-losers:
 - across prefectures: link between quota and entry \downarrow after the abolition.
 - \blacktriangleright within a prefecture: open to average citizens \rightarrow connected elites

Information on Revolution

more on the background

- 1. Origins of revolutionaries in the six major groups (1900-1906)
 - National-level organizations (leaders)
 - ▶ 1,464 revolutionaries (1,277 with origins)
 - Chang Yu-fa (Academia Sinica): member rosters disclosed after the revolution + biographies / memoirs
 - concern: whether the data missing is correlated with the quota and varies before and after the abolition
- 2. The incidence of early uprisings in 1911
 - source: Tokyo Daily News (1911)



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A Simple Model of Revolution Participation

Introduce mobility to the simple model in Passarelli and Tabellini (2013)

- ▶ 2 status: the current status w_0 ; the future status $w_1 > w_0$.
- Under the exam, w. prob. $\eta_0(q)$, agent *i* with w_0 gets w_1 .
- The abolition of the exam $\downarrow \frac{\partial \eta_0(q)}{\partial q}$ (recall Table 2(b)).
- With revolution: w. prob. $\eta_1(q)$, agent *i* with w_0 gets w_1 .
- Revolution is costly: $\mu + \varepsilon^i$, where $\varepsilon^i \sim \mathcal{G}(\cdot)$
- ▶ Benefit of revolution: $\Delta = (\eta_1(q) \eta_0(q))(w_1 w_0)$
 - grow with # other participants: $p\lambda\Delta$
 - simplified way of modeling strategic complementarity

A Simple Model

Participate iff:

$$p\lambda(\eta_1(q) - \eta_0(q))(w_1 - w_0) \ge \mu + \varepsilon^i$$

Focus on the interior solution:

$$p = G(p\lambda(\eta_1(q) - \eta_0(q))(w_1 - w_0) - \mu)$$

Under the exam system:

$$\frac{\partial p}{\partial q} = \frac{g p^* \lambda (w_1 - w_0) \left[\frac{\partial \eta_1(q)}{\partial q} - \frac{\partial \eta_0(q)}{\partial q} \right]}{1 - g \lambda (\eta_1 - \eta_0) (w_1 - w_0)} \tag{1}$$

After the abolition:

$$\frac{\partial p'}{\partial q} = \frac{gp^*\lambda(w_1 - w_0)\left[\frac{\partial\eta_1(q)}{\partial q} - \frac{\partial\eta_0'(q)}{\partial q}\right]}{1 - g\lambda(\eta_1 - \eta_0)(w_1 - w_0)}$$
(2)

The effect of quotas before and after the abolition:

$$\frac{\partial p'}{\partial q} - \frac{\partial p}{\partial q} = \frac{gp^*\lambda(w_1 - w_0)}{1 - g\lambda(\eta_1 - \eta_0)(w_1 - w_0)} \left[\frac{\partial \eta_0(q)}{\partial q} - \frac{\partial \eta_0'(q)}{\partial q}\right] > 0 \quad (3)$$

Predictions and Empirical Strategy

$$\frac{\partial p'}{\partial q} - \frac{\partial p}{\partial q} = \frac{gp^*\lambda(w_1 - w_0)}{1 - g\lambda(\eta_1 - \eta_0)(w_1 - w_0)} [\frac{\partial \eta_0(q)}{\partial q} - \frac{\partial \eta_0'(q)}{\partial q}] > 0$$

- ▶ (P1) People (of status w₀) are more likely to join the revolution in prefectures with higher q after the abolition of the exam.
 - Empirical setup: this comparison calls for a differences-in-differences strategy.
- (P2) The effect of quotas is strengthened by inequality $(w_1 w_0)$ and cooperation (λ) .
 - Empirical setup: the role of (λ) can be tested by proxies of social capital (temples; language diversity)

Baseline 1: Estimation Using DID

$$R_{p,t} = \beta \ln Quota_p \times Post_t + \theta X_p \times Post_t + \lambda_p + \gamma_t + \delta_{prov} \times \gamma_t + \varepsilon_{p,t},$$

- $R_{p,t} = 0/1$; $R_{p,t} = \ln(K + \#revolutionaries)$.
- λ_p and γ_t: prefecture and year fixed effects;
- $\delta_{prov} \times \gamma_t$: province trends
- ► X_p:
 - size: In (population size in 1880) [Alternative: Quota_p Popu]; In (area size)
 - geography: coastal; major rivers
 - foreign influence: treaty port
 - urbanization: dummies for city ranks (Rozman, 1982)
 - (300,000-), (70,000-30,000), (30,000-70,000)
- standard errors clustered at the prefecture level

Baseline 1: The impact of quotas on R=0/1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln (Quota) * Post	0.138***	0.206***	0.139***	0.147***	0.126***	0.113**	0.128**
	(0.020)	(0.025)	(0.044)	(0.044)	(0.046)	(0.046)	(0.050)
Ln (Population) * Post			0.073*	0.090**	0.103**	0.101**	0.057
			(0.037)	(0.039)	(0.043)	(0.044)	(0.035)
Ln (Area) * Post				-0.048	-0.057*	-0.054	-0.019
				(0.034)	(0.034)	(0.035)	(0.026)
Coastal * Post					-0.049	-0.080	-0.047
					(0.091)	(0.093)	(0.091)
Major River * Post						0.083*	0.082*
						(0.048)	(0.044)
Treaty Port * Post						0.096	0.120
						(0.078)	(0.078)
Small City * Post						-0.012	0.023
Middle City * Deet						(0.059)	(0.093)
Wildle City Fost						(0.022)	-0.000
Large City * Post						0.153	0.275**
Large City 10st						(0.136)	(0.131)
Prefecture FF	Y	Y	Y	Y	Y	(0.150) V	(0.151) Y
Year FE	Ŷ	Ý	Ý	Ý	Ŷ	Ý	Ý
Province FE*Year FE		Ŷ	Ý	Ŷ	Ŷ	Ý	Ŷ
Weighted by Popu.							Ŷ
Observations	1,834	1,834	1,834	1,834	1,834	1,834	1,834
R-squared	0.279	0.449	0.452	0.454	0.458	0.462	0.403

Baseline 1: Dynamic Impacts

$$\begin{array}{ll} R_{p,t} & = & \Sigma_{\tau=1901}^{1906} \beta_{\tau} \ln Quota_{p} \times Year_{\tau} + \theta_{\tau} \Sigma_{\tau=1901}^{1906} X_{p} \times Year_{\tau} \\ & & + \lambda_{p} + \gamma_{t} + \delta_{prov} \times \gamma_{t} + \varepsilon_{p,t}, \end{array}$$



Baseline 2: What does this impact imply for revolution?

Linking with data on the 1911 uprisings (Tokyo Daily News, 1911)

• Step 1: quota \times abolition $\Rightarrow \Delta$ participants

$$\ln (K + \# rev.)_{p,t} = \beta \ln Quota_p \times Post_t + \theta X_p \times Post_t + \lambda_p + \gamma_t + \delta_{prov} \times \gamma_t + \varepsilon_{p,t},$$

Step 2: Δ participants \Rightarrow incidence:

Incidence_{p,1911} =
$$\alpha \Delta \ln(K + \# rev.)_p + \theta X_p + \delta_{prov} + \varepsilon_p$$
.

► The impact of quota \times abolition on incidence: $\beta \times \alpha$, independent of which K we add.

Baseline 2: What does this impact imply for revolution?

Dependent Var.	Ln (1+#rev.)	Incid.	Ln (0.1+#rev.)	Incid.	$Ln(\#+(\#^2+1)^{\frac{1}{2}})$	Incid.
	(1)	(2)	(3)	(4)	(5)	(6)
Ln (Quota) * Post	0.155**		0.372**		0.196**	
(β ['])	(0.071)		(0.155)		(0.089)	
Δ Ln (1+#rev.)		0.107**		0.041*		0.085**
(α)		(0.051)		(0.023)		(0.041)
$\beta' * \alpha$	0.017	,	0.015		0.017	
, Baseline * Post	Y		Y		Y	
Prefecture FE	Y		Y		Y	
Year FE	Y		Y		Y	
Prov. FE*Year FE	Y		Y		Y	
Baseline Controls		Y		Y		Y
Province FE		Y		Y		Y
Observations	1,834	262	1,834	262	1,834	262
R-squared	0.477	0.274	0.500	0.265	0.481	0.273

▶ The impact of quota × abolition on incidence: $\beta \times \alpha$, independent of which K we add.

Baseline 3: The role of social capital (λ)

 λ : social capital/cooperation proxied by

1. # temples 2. language fragmentation $1 - \sum_{n=1}^{N} s_n^2$

	(1)	(2)	(3)	(4)	(5)	(6)
Temples Per 10,000 * Ln (Quota) * Post	0.041***	0.044***				
	(0.014)	(0.013)				
Ln (Temples) * Ln (Quota) * Post			0.045***	0.041***		
			(0.012)	(0.014)		
Fractionalization index* Ln (Quota) * Post					-0.353**	-0.349**
					(0.146)	(0.143)
Ln (Quota) * Post	0.210***	0.120**	0.246***	0.164***	0.205***	0.111**
	(0.024)	(0.047)	(0.039)	(0.062)	(0.025)	(0.046)
Temples Per 10,000 * Post	0.056***	0.054**				
	(0.017)	(0.022)				
Ln (Temples) * Post			0.003	0.012		
			(0.042)	(0.047)		
Fractionalization index* Post					-0.042	0.014
					(0.148)	(0.161)
Baseline Controls * Post		Y		Y		Y
Prefecture FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Province FE*Year FE	Y	Y	Y	Y	Y	Y
Observations	1,834	1,834	1,834	1,834	1,834	1,834
R-squared	0.457	0.467	0.457	0.466	0.453	0.465

Summary of Baseline Findings

- ▶ A standard deviation of ln Quota (0.57 after controlling for ln Pop) \Rightarrow
 - 6 percentage pts higher probability of revolution participation (mean: 15%)
 - > 1 percentage pts higher incidence of early uprisings in 1911 (mean: 15%)
- The impact of quotas is strengthened by social capital.

Roadmap

- 1. Historical background and data
- 2. A Simple Model
- 3. Baseline Results
- 4. Robustness checks
 - Measurement checks
 - candidates at different levels and using (<u>Quota</u>)
 - county-level data from Guangdong (1894-1906) Figure 4(b)
 - Endogeneity checks
 - Prefectures with higher quotas might be more prone to conflict.
 Using the Boxer Rebellion as a placebo Table 7(a)
 - The abolition of the exam might indicate the weakness of the state.
 Using grain prices as a placebo Table 7(b)
 - The effect of omitted variables differed before and after the abolition.
 –Employing two instruments
- 5. Alternative explanations

Instrumental Variables

If the impacts of omitted variables differ pre and post abolition, the DID estimate is biased.

- The selection criteria post abolition are likely to be positively correlated with the quota, e.g. political networks.
- ightarrow \Rightarrow the DID estimate is likely to be a lower bound

Can we find some instruments for the quota?

- geography: number of rivers (given river lengths)
- history: performance before the quota system

Mechanism of IV I: Figure 5

 $\frac{\#smallrivers}{Riverlength}$ in a prefecture \rightarrow # counties \rightarrow quotas (given population)



• Figure A.3 maps county seats and rivers. • Table A.3 presents placebos on transportation/crop suitability/climate/basin fragmentation.

Mechanism of IV II: "luck" before the quota

- The quota system was initially introduced between 1425-1436 (for national-level)
- ▶ The short-run performance before 1425 was likely to be considered.
- $\blacktriangleright (ln[1 + PresentedScholar_{1398-1425}])_{p} (ln[1 + PresentedScholar_{1368-1398}])_{p}$



Table A.4 presents placebos on long-run performance.

IV Results: Table 8

	IV1: #SmallF	Rivers./Riv.	L. * Post	IV2: ΔLn (P	res. Scholar) * Post
	Reduce Form	ÍV	IV	Reduced Form	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Ln (Quota) * Post		0.352**	0.373**		0.272**	0.269**
		(0.166)	(0.188)		(0.112)	(0.119)
#SmallRivers./Riv. L. * Post	0.092**					0.024
	(0.044)					
∆Ln (Pres. Scholar) * Post			-0.022	0.061**		
			(0.048)	(0.026)		
		First	Stage		First	Stage
#SmallRivers./Riv. L. * Post		0.260***	0.231***			0.231***
		(0.036)	(0.034)			(0.034)
ΔLn (Pres. Scholar) * Post			0.212***		0.224***	0.212***
			(0.020)		(0.021)	(0.020)
Baseline Controls * Post	Y	Y	Y	Y	Ý	Y
Ln (River Length) * Post	Y	Y	Y			Y
Ln (Pres. Scholar ₀) * Post			Y	Y	Y	Y
Placebo Variables * Post						
Prefecture FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Province FE * Year FE	Y	Y	Y	Y	Y	Y
Observations	1,834	1,834	1,834	1,834	1,834	1,834
R-squared	0.459	0.440	0.437	0.459	0.452	0.453
p-value of the over-id Test						

See **Table 8** for results using both instruments.

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 - (A1) Modern human capital
 - (A2) Current economic shocks
 - (A3) Ideology

A1: Modern Human Capital (Figure 6, Table 10)

Modernization leads to revolution (Hungtington 1968).

Modern human capital proxied by # private firms or # students studying in Japan.



 Modern human capital contributed to the revolution but cannot explain the effect of the quota.

A2: Current Economic Shocks (Table 11)

Economic shocks (w_0 in the model) proxied by weather shocks.

	(1)	(2)	(3)	(4)	(5)	(6)
Ln (Quota) * Post	0.112**	0.109**	$0.11/^{**}$	$0.11/^{**}$	0.113**	0.133***
	(0.046)	(0.046)	(0.046)	(0.047)	(0.046)	(0.051)
Weather shocks	0.037	0.024				
	(0.026)	(0.026)				
Weather shocks * Ln (Quota) * Post		0.015				
		(0.021)		0.050		
Average weather * Post			0.272	0.256		
			(0.233)	(0.223)		
Average weather * Ln (Quota) * Post				0.046		
				(0.286)		
Weather S.D. * Post					0.017	-0.030
					(0.087)	(0.085)
Weather S.D. * Ln (Quota) * Post						0.121
						(0.105)
Prefecture FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Province FE*Year FE	Y	Y	Y	Y	Y	Y
Baseline Controls * Post	Y	Y	Y	Y	Y	Y
Observations	1,834	1,834	1,834	1,834	1,834	1,834
R-squared	0.462	0.463	0.462	0.463	0.462	0.463

Yearly/average/volatility of weather cannot explain our finding.

A3: Ideology (Table 12)

	Inc	dividual-Le	vel		Prefecture-Level				
	Kungmingtang $=0/1$			Ln	(1+	Ln	(1+		
				#Kungmin	tang Mem.)	#Other Pa	arty Mem.)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
In Quota	0.070	-0.035	-0.039	0.226***	0.155**	0.250***	0.181***		
	(0.045)	(0.048)	(0.048)	(0.066)	(0.067)	(0.055)	(0.058)		
In Population	-0.049	0.009	0.012	0.232***	0.200***	0.100**	0.086		
	(0.031)	(0.037)	(0.037)	(0.053)	(0.055)	(0.050)	(0.055)		
Age in 1912			-0.005*						
			(0.003)						
Baseline Controls			. ,		Y		Y		
Province FE		Y	Y	Y	Y	Y	Y		
Observations	703	703	701	262	262	262	262		
R-squared	0.004	0.181	0.185	0.494	0.519	0.472	0.505		

- Kuomintang was more radical.
- No difference in party identification.
 - suggests that economic factors mattered more than ideological factors.

Summary

- 1. Higher quotas (per capita) were associated with
 - ▶ a higher probability of having revolutionaries after the abolition
 - higher incidence of uprisings in 1911
- 2. The data is most consistent with the channel that:

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abolition of the exam system \Rightarrow perceived mobility \downarrow \Rightarrow participation in revolution \uparrow
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- 3. Document that perceived mobility can be an important factor in the Republic Revolution.
 - Not to say that this was the only factor. Modern human capital and social capital also mattered.
 - "A revolution necessarily involves the alienation of many groups from the existing order...Only a combination of groups can produce a revolution." (Huntington 1968)

Remarks: what we cannot tell apart

- Returns to traditional education vs. mobility (Campante and Chor 2012)
- Individual mobility vs. Group mobility (Brinton 1938).

Quotas and Political Newcomers: the Qing Dynasty

Dependent Var.	Ln (k+ ≠	≠ Presented	Scholars)		Ln (k + # Officials)			
	(1)	(2)	(3)		(4)	(5)	(6)	
Ln(Quota)	0.818***	0.734***	0.652***	(0.720***	0.582***	0.527***	
	(0.039)	(0.059)	(0.066)		(0.056)	(0.080)	(0.090)	
Ln(Popu 1880)		0.110*	0.164**			0.181***	0.163**	
		(0.059)	(0.070)			(0.064)	(0.080)	
Province FE			Y				Ý	
Observations	262	262	262		262	262	262	
R-squared	0.669	0.674	0.752		0.518	0.532	0.626	

Quotas and Political Newcomers: Revolution

	Befor	e the Revo	lution	Afte	After the Revolution			
	Ln(k	+ # Parlia	ament	Ln(k	Ln(k+ # Parliament			
	mer	mbers in 19	908)	me	mbers in 19	12)		
	(1)	(2)	(3)	(4)	(5)	(6)		
Ln(Quota)	0.278***	0.252**	0.182*	0.523***	0.490***	0.456***		
	(0.078)	(0.102)	(0.093)	(0.066)	(0.083)	(0.080)		
Ln(Popu 1880)	0.227***	0.241**	0.186*	0.288***	0.363***	0.327***		
	(0.077)	(0.109)	(0.102)	(0.056)	(0.079)	(0.078)		
Ln(1+# in office)			0.396***			0.166***		
			(0.073)			(0.039)		
Province FE		Y	Y		Y	Y		
Observations	262	262	262	262	262	262		
R-squared	0.225	0.250	0.369	0.586	0.604	0.624		

Candidates at different levels: Table 6

Back

	(1)	(0)	(0)	(1)	(5)	(6)	(7)	(0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln (Quota) * Post	0.113**			0.110**				
	(0.046)			(0.053)				
Ln (Prese. Scholars +1) * Post		0.034		-0.029				
		(0.026)		(0.037)				
Ln (Officials+1) * Post			0.045*	0.044				
			(0.026)	(0.031)				
(100*Quota/Popu) * Post					0.034***			0.039***
					(0.009)			(0.011)
(100*Pres.Scholar/Quota) * Post						0.058		0.039
						(0.077)		(0.076)
(Official/Pres.Scholar) * Post						()	-0.030	0.015
(,							(0.074)	(0.073)
Prefecture FE	Y	Y	Y	Y	Y	Y	Ý	Y
Year FE	Ý	Ŷ	Ý	Ŷ	Ý	Ŷ	Ŷ	Ý
Province FE*Year FE	Ŷ	Ŷ	Ŷ	Ŷ	Ŷ	Ŷ	Ŷ	Ý
Baseline controls * Post	Ý	Ý	Ý	Ŷ	Ý	Ý	Ý	Ý
Observations	1 834	1 834	1 834	1 834	1 834	1 83/	1 778	1 778
D squared	0.462	0.450	1,034	0.462	1,034	0.457	1,110	1,770
iv-squareu	0.402	0.459	0.459	0.405	0.404	0.457	0.409	0.400

The entry level matters most.

Robust to use ratio to measure quota impact.

County-level Dynamics: Figure 4(b)





Controlling for prefecture importance: Table A.2

Back

various measures of importance

(1)	(2)	(3)	(4)	(5)	(6)	(7)
0.111**	0.132**	0.107**	0.111**	0.106**	0.110**	0.115**
(0.045)	(0.052)	(0.046)	(0.048)	(0.046)	(0.045)	(0.052)
0.089						0.101
(0.121)						(0.118)
	-0.124					-0.089
	(0.261)					(0.239)
		0.031				0.056
		(0.051)				(0.051)
			0.008			-0.035
			(0.053)			(0.061)
				0.091*		0.095*
				(0.055)		(0.057)
					0.063	0.063
					(0.046)	(0.053)
Y	Y	Y	Y	Y	Ý	Ý
Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y
Y	Y	Y	Y	Y	Y	Y
1,834	1,799	1,834	1,834	1,834	1,834	1,799
0.462	0.462	0.462	0.462	0.464	0.463	0.467
	(1) 0.111** (0.045) 0.089 (0.121) Y Y Y Y 1.834 0.462	(1) (2) 0.111** 0.132** (0.045) (0.052) 0.089 (0.121) -0.124 (0.261) Y Y Y Y Y Y Y Y Y Y 1.834 1,799 0.462 0.462	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

Using the Boxer Rebellion as a Placebo: Table 7(a)

- Concern: regions with higher quotas were more prone to conflict or nationalist sentiments
- The Boxer Rebellion (1899-1901): anti-government and anti-foreign imperialism but uncorrelated with the exam

	Incidence	of Boxer Upr	ising, 1899-1901	Incidence	Incidence of Xinhai Revolution, 1911				
Ln(Quota)	(1) 0.023	(2) 0.010	(3) 0.000	(4) 0.094**	(5) 0.085**	(6) 0.075*			
	(0.023)	(0.024)	(0.024)	(0.040)	(0.043)	(0.044)			
Ln(Population)	Ý	Y	Y	Ý	Ý	Y			
Ln(Area)		Y	Y		Y	Y			
Baseline controls			Y			Y			
Province FE	Y	Y	Y	Y	Y	Y			
Observations	262	262	262	262	262	262			
R-squared	0.385	0.394	0.422	0.231	0.242	0.248			

Using Inflation Rates as a Placebo: Table 7(b)

	h	nflation Rate	es	Within-month Price Variation				
	(1)	(2)	(3)		(4)	(5)	(6)	
Ln(Quota) * Post	0.011	0.011	0.008		0.029	0.032	0.034	
	(0.017)	(0.018)	(0.019)		(0.022)	(0.021)	(0.023)	
Ln(Population) * Post	Ý	Ý	Ý		Y	Ý	Ý	
Ln(Area) * Post		Y	Y			Y	Y	
Other controls * Post			Y				Y	
Prefecture FE	Y	Y	Y		Y	Y	Y	
Year FE	Y	Y	Y		Y	Y	Y	
Province FE * Year FE	Y	Y	Y		Y	Y	Y	
Observations	1,497	1,497	1,497		1,549	1,549	1,549	
R-squared	0.534	0.534	0.535		0.133	0.134	0.141	

Validity Tests for Instrument I

	Re	elevance Tests		Placebo Tests								
	Ln (Quota)			Transp	Transportation			Suitability		Basin		
	Late Qing	Early Qing	Change	Pref.	County Average	Rice	Foxmillet	Sweet Potato	Drought /Flood	HH Index		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
#Small River/RiverLeng.	0.260**	0.262*	-0.001	-0.118	-0.071	0.172	0.034	0.135	0.010	0.034		
	(0.121)	(0.140)	(0.029)	(0.084)	(0.060)	(0.124)	(0.184)	(0.132)	(0.014)	(0.053)		
Ln (River Length)	0.213*	0.223	-0.009	0.020	0.033	0.066	-0.064	-0.273*	0.020*	-0.068		
	(0.126)	(0.140)	(0.032)	(0.087)	(0.072)	(0.143)	(0.201)	(0.144)	(0.011)	(0.042)		
Major River	0.131*	0.113	0.018	0.150**	0.126***	0.010	-0.078	0.101	0.011	-0.020		
	(0.069)	(0.069)	(0.015)	(0.070)	(0.046)	(0.106)	(0.123)	(0.116)	(0.009)	(0.035)		
Baseline Controls	Ý	Ý	Ý	Ý	Ý	Ý	Ý	Ý	Ý	Ý		
Province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Observations	262	262	262	262	262	262	262	262	262	262		
R-squared	0.772	0.749	0.702	0.287	0.237	0.690	0.720	0.541	0.400	0.378		

County Seats and Rivers



Validity Tests for Instrument II

	Relevance Tests			Placebo Tests: Changes in Presented Scholars in the Long Run							
	Ln Quota			1436-1505 vs.	1506-1572 vs.	1573-1643 vs.	1644-1722 vs.	1723-1795 vs.	1796-1861		
	Late Qing	Early Qing	Change	1368-1435	1436-1505	1506-1572	1573-1643	1644-1722	1723-1795		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
$\Delta ln(PresentedScholar)$	0.224***	0.214***	0.009	-0.024	-0.104	-0.084	-0.125	0.037	-0.058		
	(0.044)	(0.044)	(0.013)	(0.087)	(0.079)	(0.064)	(0.081)	(0.096)	(0.072)		
In(PresentedScholar ₀)	Ý	Ý	Ý	Y	Y	Y	Y	Ý	Y		
Baseline Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Province FE	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Observations	262	262	262	262	262	262	262	262	262		
R-squared	0.785	0.761	0.704	0.424	0.135	0.160	0.273	0.471	0.183		

Results using both instruments

	IV1: #Small	Rivers./Riv.	L. * Post	IV2: ΔLn (P	res. Scholar) * Post		Both	
	Reduce Form	IV	IV	Reduced Form	IV	IV	Reduced Form	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ln (Quota) * Post		0.352**	0.373**		0.272**	0.269**		0.300**	0.302***
		(0.166)	(0.188)		(0.112)	(0.119)		(0.098)	(0.089)
#SmallRivers./Riv. L. * Post	0.092**					0.024	0.086*		
	(0.044)					(0.052)	(0.044)		
ΔLn (Pres. Scholar) * Post			-0.022	0.061**			0.057*		
			(0.048)	(0.026)			(0.026)		
		First	Stage		First Stage			First Stage	
#SmallRivers./Riv. L. * Post		0.260***	0.231***			0.231***		0.231***	0.282***
		(0.036)	(0.034)			(0.034)		(0.034)	(0.033)
ΔLn (Pres. Scholar) * Post			0.212***		0.224***	0.212***		0.212***	0.227***
			(0.020)		(0.021)	(0.020)		(0.020)	(0.020)
Baseline Controls * Post	Y	Y	Y	Y	Y	Ý	Y	Y	Ý
Ln (River Length) * Post	Y	Y	Y			Y	Y	Y	Y
Ln (Pres. Scholar ₀) * Post			Y	Y	Y	Y	Y	Y	Y
Placebo Variables * Post									Y
Prefecture FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Province FE * Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,834	1,834	1,834	1.834	1,834	1,834	1,834	1,834	1.834
R-squared	0.459	0.440	0.437	0.459	0.452	0.453	0.461	0.449	0.451
p-value of the over-id Test								0.646	0.662

Age Distribution



Buddist Temples



Exam Contents

1644 to 1756 format:

Session One (the most important)

- The Four Books (Analects, Mencius, Great Learning and Doctrine of the Mean) - 'eight-legged essays' on 3 quotations
- Student's choice of one of the Five Classics (Changes, Documents, Poetry, Annals, or Rites) - 'eight-legged essays' on 4 quotations

Session Two

- Discourse essay (lun) on one quotation from the Classic of Filial Piety (Xiaojing) or Song Neo-Confucian texts
- Drafting an edict or memorial 3 drafts
- Test of knowledge on 5 judicial terms

Session Three

5 essays on policy questions (ce)

An Example of eight-legged essays

Quotation: "When people have enough, how can the ruler alone have too little?" -Analects

Break open the topic (p'o-t'i 破题]):百姓足,君執不足?
 When the people below are prosperous, the ruler above will be prosperous.

民即富於下,君自富於上。

[2. Receiving the topic (ch'eng-t'i 承題)]:

The wealth of the ruler is stored among the people. If the people are prosperous, why should the ruler alone be poor? 蓋君之富藏於民者也。民即富矣,君豈有獨貧之理哉?

[3. Beginning discussion (ch'i-chiang 起講)]:

In giving advice to Duke Ai, Yu Jo said profoundly that the people and the ruler were one.⁵⁹ He implied that the Duke had increased taxation because he lacked resources. To ensure his resources, the Duke should have first satisfied his people.

有若深言君民一體之意以告哀公,蓋謂公之加賦以用之不足也。欲足 其用,蓋先足其民乎。

- [4. Initial leg (ch'i-ku 起股)]:
 - If one can honestly

tithe one hundred *mou* with a mind to stay frugal and love the people, and the one-tenth tax is not levied so the people provide his livelihood, then

what the people would produce would not be for tax levies, what resources they have would not all be for tax collection, there would be accumulation and surplus in village households,

and no worries in caring for parents or raising children,

Trends of Revolutionaries



Background: revolutionaries & the 1911 Revolution

Back

In response to the decline of the Qing state

- revolutionary groups were founded in the 1890s
- earliest were founded outside of China
- Sun Yat-sen's Xingzhonghui (Revive China Society) was established in Honolulu in 1894
 - spread to Guangdong
- ▶ 6 major revolutionary groups established between 1894-1906

Background: revolutionaries & the 1911 Revolution

Back

The revolution consisted of many revolts and uprisings.

- Usually failed. The turning point is the success of the Wuchang Uprising (Oct. 10, 1911).
- Many uprisings followed across China.
 - ended with the abdication of the "Last Emperor" on Feb. 12, 1912
 - marked the end of over 2,000 years of imperial rule and the beginning of China's republican era
 - not really an established democracy (Acemoglu and Robinson 2001)





Revolution Measure I: origins of revolutionaries

Back

Studies by Chang Yu-fa (Academia Sinica)

- his sources: member rosters disclosed after the revolution + biographies / memoirs
- Six major groups (national level)
 - (i) Xingzhonghui (the Revive China Society), 1894
 - (ii) Junguomin Jiaoyuhui (the Society of National Military Education), 1903
 - (iii) Huaxinghui (the China Arise Society), 1903
 - (iv) Guangfuhui (the Revive the Light Society), 1904
 - (v) Tongmenghui (the Chinese Revolutionary Alliance): united (i) and (iii), late 1905
 - median age: 24
 - the nucleus of the Kuomintang
 - (vi) Rizhihui (the Society for Daily Improvement), 1905-06

Tongmenghui got divided into many groups in 1907

262 prefectures (1900-1906): 1,464 revolutionaries (1,277 with origins)

Monthly Robustness

	(1)	(2)	(3)
	05/1905 - 08/1905	09/1905 - 12/1905	01/1906 - 04/1906
Ln(Quota)	0.047	0.131**	0.103**
	(0.032)	(0.056)	(0.045)
Ln(Population)	0.078**	0.062	0.081**
	(0.034)	(0.045)	(0.039)
Ln (Area)	-0.061**	0.007	-0.072*
	(0.029)	(0.044)	(0.038)
Coastal	0.047	0.063	0.038
	(0.044)	(0.055)	(0.048)
Major River	0.087	-0.014	-0.043
-	(0.086)	(0.106)	(0.088)
Treaty Port	0.060	0.070	0.081
-	(0.090)	(0.090)	(0.085)
Small City	0.018	0.005	-0.119**
	(0.058)	(0.069)	(0.060)
Middle City	0.096	-0.064	-0.045
	(0.082)	(0.099)	(0.087)
Large City	0.092	0.388***	0.125
	(0.134)	(0.109)	(0.187)
Whether having	0.112*	0.006	0.169**
revolutionary before 1905	(0.063)	(0.083)	(0.066)
Observations	262	262	262
R-squared	0.319	0.375	0.274