Capital Markets and Colonial Institutions in China

Wolfgang Keller and Carol H. Shiue

China's Treaty Port Era (1842-1943)

▸ A political turning point in China's history after her ports of trade were opened (by "treaty") after the First Opium War (1840-42)

▸ New foreign presence in terms of
   ▸ Military occupation
   ▸ Legal system: foreign courts
   ▸ Customs system: more foreign (and domestic) trade

▸ Diverging views on impact of foreign presence
   ▸ China's view (official textbook): Destructive; postponed China's development
   ▸ Other views more nuanced: Also learning effects (Feuerwerker 1983), increased population growth (Jia 2013)

      ▸ But: Foreign presence too limited to have substantial effect on China as a whole, either positive or negative (Fairbanks; Feuerwerker; Rawski)

Question of the paper

▸ Did the new foreign presence affect local capital markets?

  ▸ Measure: interest rates

▸ Present evidence on changes in interest rates in China caused by the new foreign presence

  ▸ In locations of foreign presence themselves
  ▸ In broader parts of China

▸ Motivation: *Low* interest rates are an indicator of secure contractual institutions, spurring investment

  ▸ North and Weingast (1989)
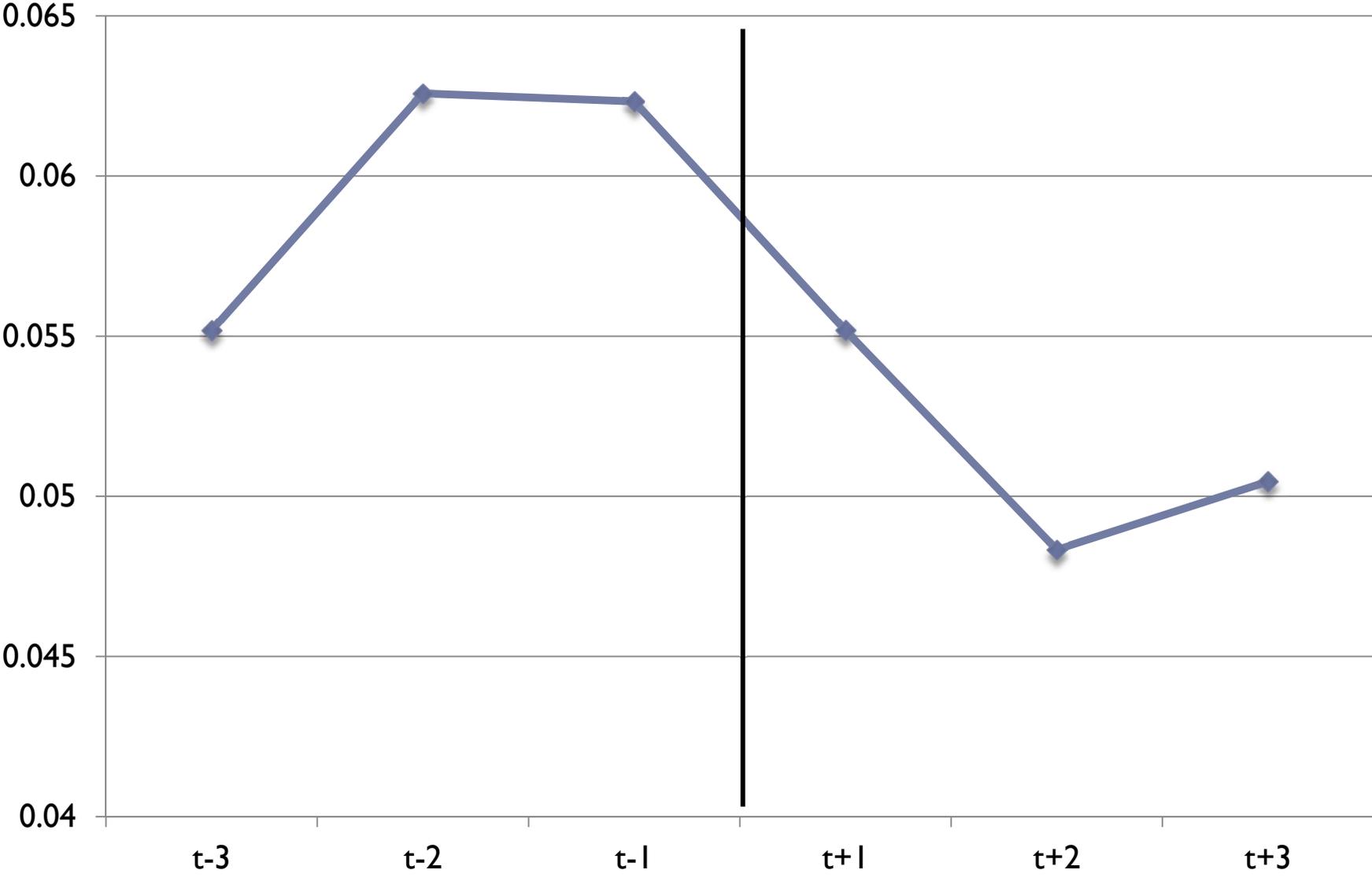 ▸ Institutions and long-run growth: DeLong and Shleifer 1993, Acemoglu, Johnson, and Robinson (2001)

▸

Answers

- Foreign presence reduced interest rates by about 5-10%

- At distances of up to 400 kilometers away from ports

- Customs more important than courts

Interest Rates and Foreign Presence

Interest Rates and Asset Pricing

- Direct information on interest rates is scarce
- And specific: Borrower, lender, date, location, maturity, collateral, risk, insurance, .. all matters

- Solution: Use the theory of storage (Kaldor, Working), and info on grain prices to estimate local annual interest rates, 1820-1911
  - Diff-in-diff: Before foreign presence, and after

Grain price changes and interest rates

$$F_{t,T} = (1 + r_t + a_t)S_t + c_t$$

▸ $F_{t,T}$ forward price at time t for delivery at T,
▸ S_t the spot price at time t
▸ r_t the interest rate on a risk-free asset from t to T
▸ a_t the risk-premium
▸ c_t the cost of storage

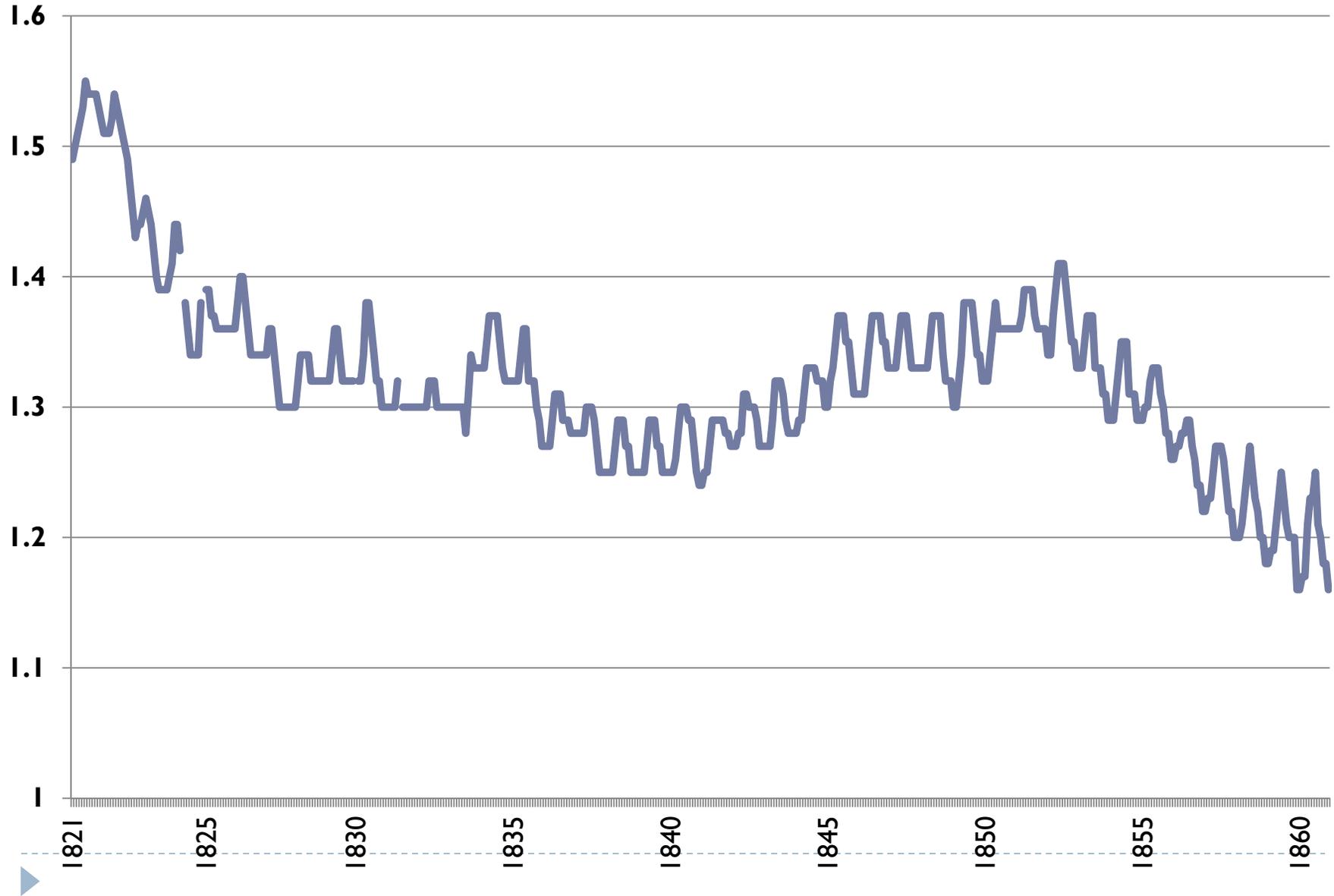▸ Using S_T instead of unobserved $F_{t,T}$, no-arbitrage with storage in equilibrium requires

$$\frac{S_T - S_t}{S_t} = Carrying\ Cost = \underbrace{(r_t + a_t)}_{\substack{Interest\ rate \\ adj.\ for\ risk}} + \underbrace{c_t/S_t}_{\substack{Storage \\ cost}}$$
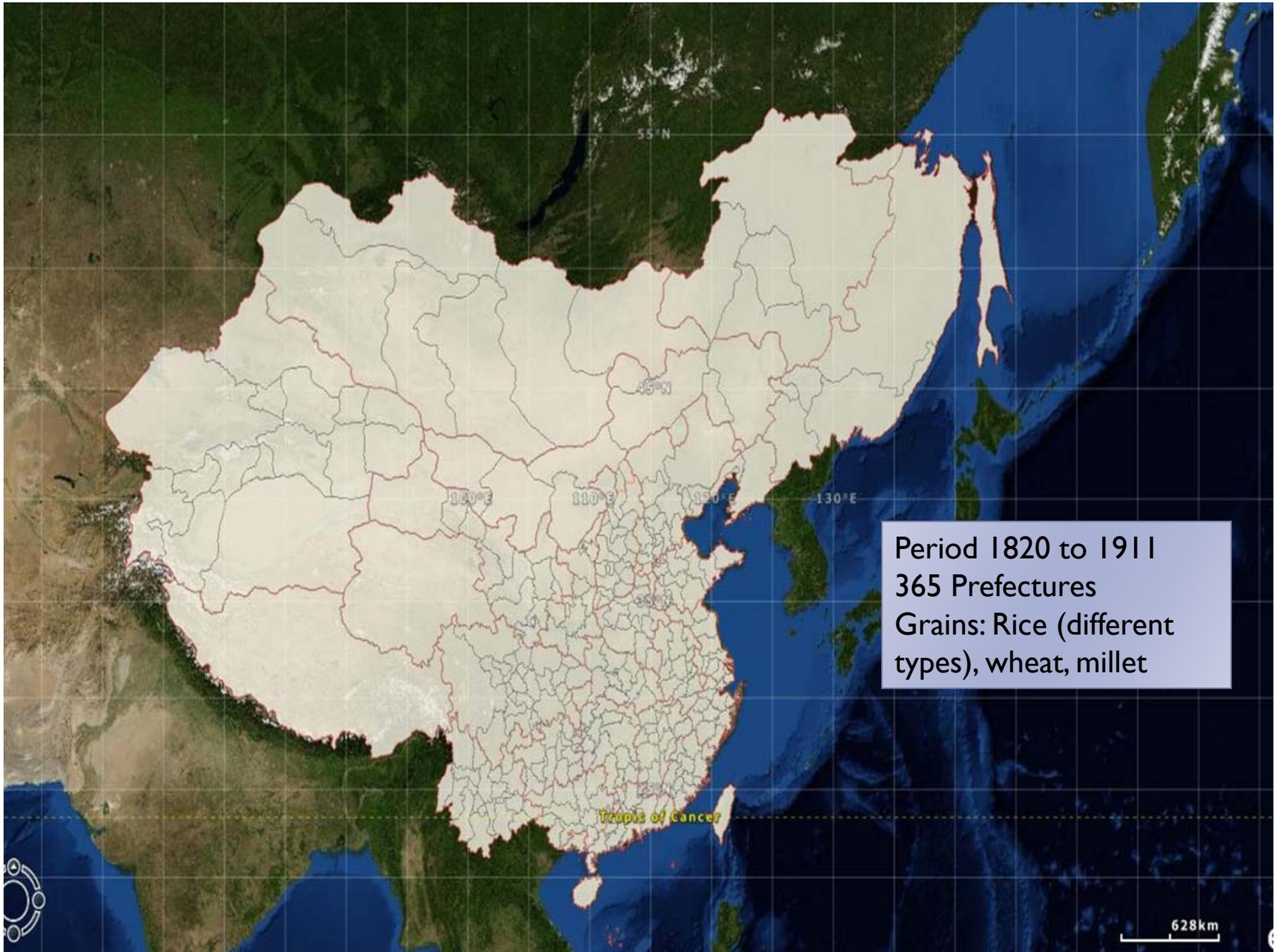
$$\underbrace{\hspace{6cm}}_{Dep.\ Variable}$$

▸

Grain prices over time
Prefecture in Guangxi province, First-grade rice

Period 1820 to 1911
365 Prefectures
Grains: Rice (different types), wheat, millet

Interest rate estimates: summary stats

	All grains	Rice	First- and second-grade rice
Mean	0.076	0.074	0.077
Median	0.060	0.055	0.061
10th percentile	0.017	0.017	0.017
90th percentile	0.159	0.157	0.160
# of prefectures	324	154	142
# of provinces	21	10	9
N	54,979	41,281	30,941

Foreign presence and carrying costs

Foreign = 1 if either Occupation or Customs or Court in prefecture, 0 otherwise

$$\ln Carry\_Cost_{igt} = \beta_1 Foreign_{it} + \mu_t + \mu_{ig} + X_{igt} + \varepsilon_{igt}$$

$$i = prefecture \; ; g = grain \; ; t = year$$

|	Robust	Clustered Prefecture x grain	Clustered Prefecture
Foreign	-0.093 (0.016)	-0.093 (0.010)	-0.093 (0.016)
N	54,979	54,979	54,979
Clusters		1,778	324

Estimation issues

- Simultaneity, reverse causation? Not likely
- Endogeneity, selection: Propensity score = f(**Coastal**, Latitude, longitude, pop in 1776, **pop growth 1776-1820**, Yangzi, Pearl)

	(1)	(2)	(3)	PS Weights	Placebo
Foreign	-0.093** (0.016)	-0.112** (0.016)	-0.109** (0.034)	-0.102** (0.028)	
Foreign x interest rate growth 1821-1842		0.090** (0.031)			
Foreign x Propensity Score			0.049 (0.085)		
Past treaty date, before arrival of foreigners					0.037 (0.035)
N	54,979	54,979	54,979	54,979	54,979

Carry cost = capital cost + storage cost
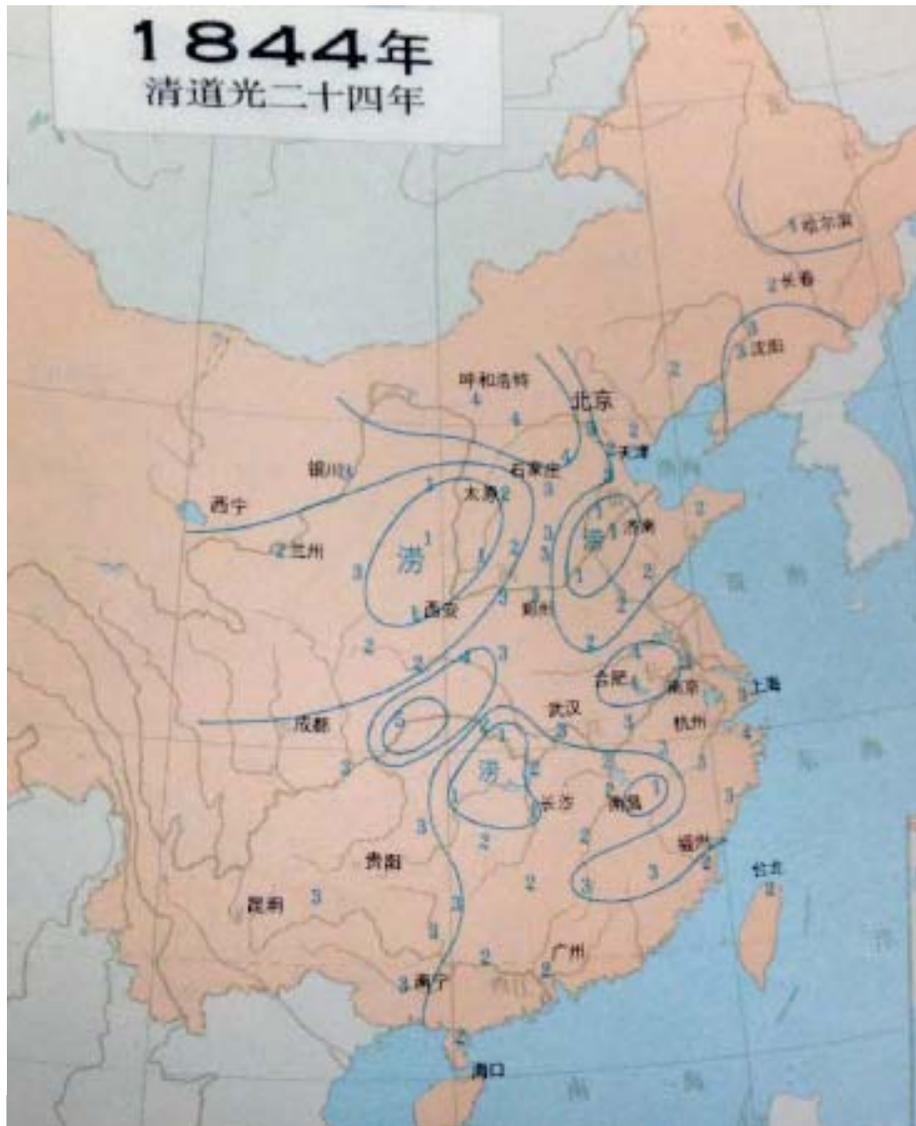
- ▸ Grain storage costs vary with weather

- ▸ Weather is classified Very Wet to Very Dry (5 categories) in 120 stations

- ▸ Findings: Storage costs ~ 25% of total, consistent w/ other estimates
  - ▸ No Δ w/ foreign presence

Mechanisms

1. Military occupation

2. Customs system
   - International and domestic trade w/ steamships
   - Infrastructure: lighthouses, harbor development, warehousing, and postal system
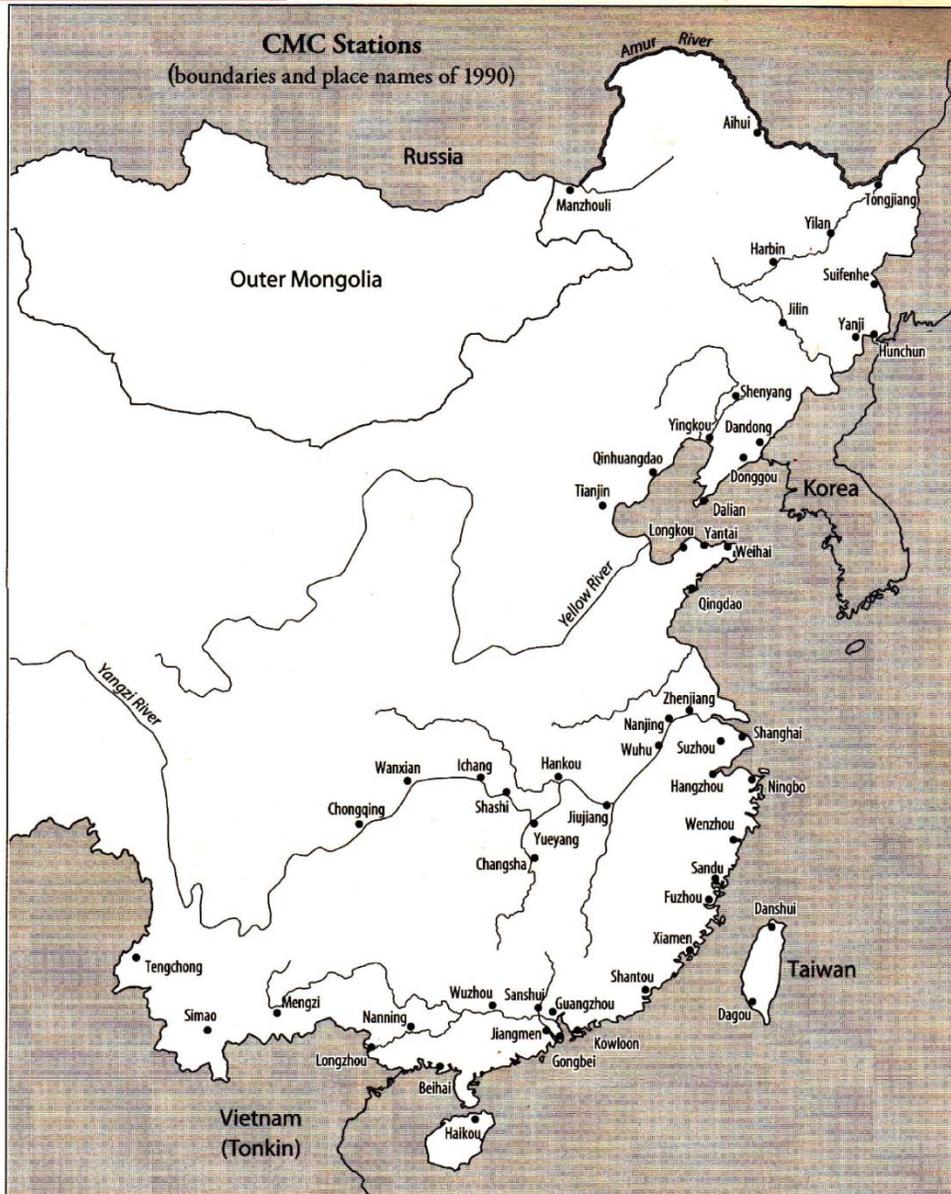   - Security: Campaigns against piracy, protection from domestic warlords through foreign troops/ships

3. Legal system
   - Consular and other courts

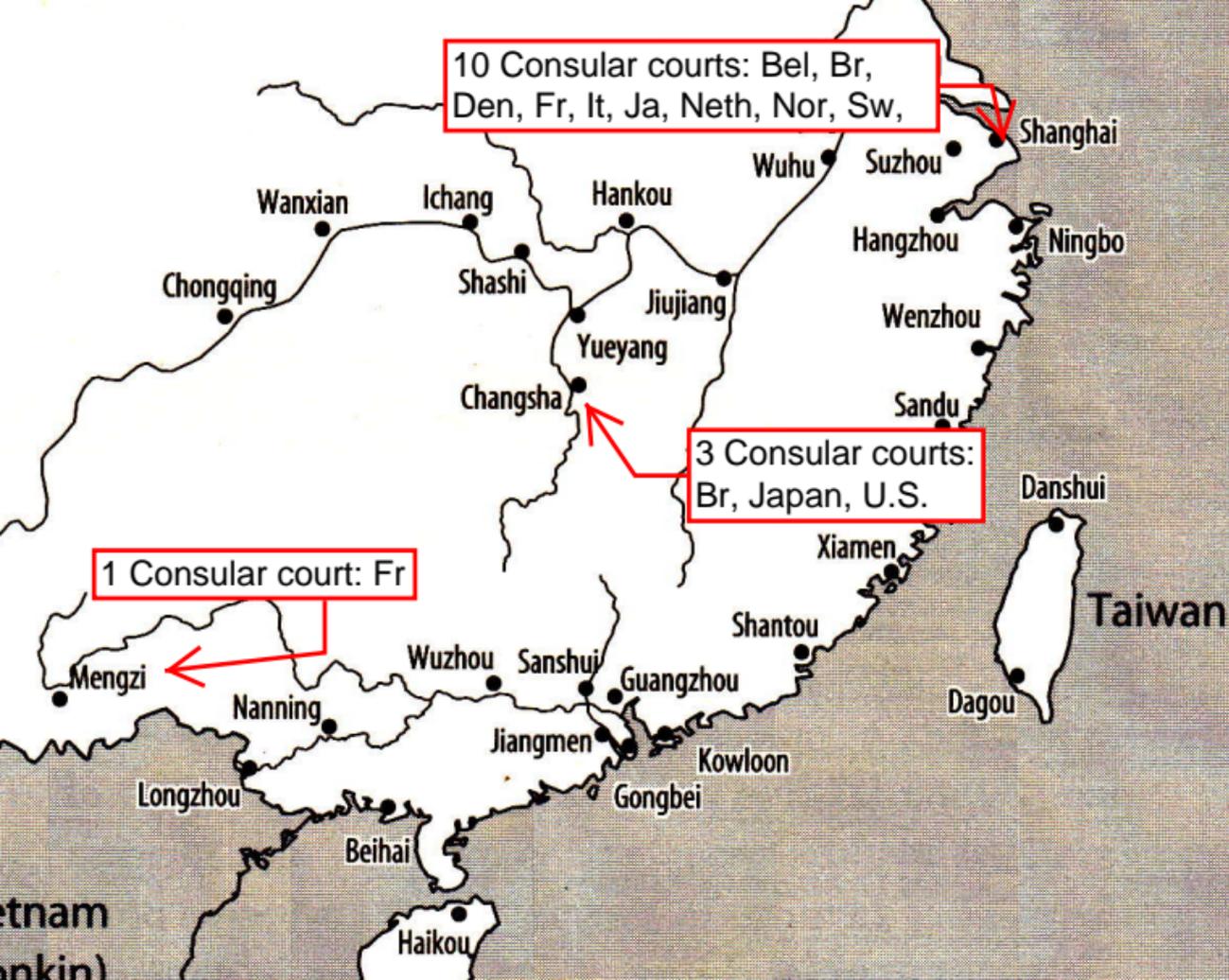# Customs operations in treaty ports

Map 2. Treaty Ports

- First opening in 1854 (Shanghai)

- Last opening in 1907

- Total of 46 locations

Foreign law presence in China

- Extraterritorial jurisdiction secured by 19 countries*
  - Accorded foreign persons accused of wrongdoing exemption from Chinese courts
  - Dealt with by foreign consuls of own nationality

- Countries varied in how strongly they enforced their own laws in China
  - # of consular districts established
  - extent of legal authority invested in the foreign consular office

*Russia, Great Britain, the United States, France, Sweden and Norway, German Customs Union, Denmark, The Netherlands, Spain, Belgium, Italy, Austria-Hungary, Peru, Brazil, Portugal, Japan, Mexico and Switzerland

10 Consular courts: Bel, Br, Den, Fr, It, Ja, Neth, Nor, Sw,

3 Consular courts: Br, Japan, U.S.

1 Consular court: Fr

Shanghai
Wuhu
Suzhou
Wanxian
Ichang
Hankou
Hangzhou
Ningbo
Chongqing
Shashi
Jiujiang
Wenzhou
Yueyang
Changsha
Sandu
Danshui
Xiamen
Taiwan
Wuzhou
Sanshui
Shantou
Nanning
Guangzhou
Dagou
Jiangmen
Kowloon
Mengzi
Longzhou
Gongbei
Beihai
Haikou
Vietnam
(nkin)

Foreign consular courts

1) Scope of jurisdiction
  ▸ Can foreign court hear civil and criminal cases w/o limit?

Yes = 1	No = 0

2) System of appeals
  ▸ Can the court's decision be appealed in China?

Yes = 1	No = 0

3) Sentencing
  ▸ Are the prisons to carry out sentence in China?

Yes = 1	No = 0

4) Assesors
  ▸ Are foreign assessors sent to trials in Chinese courts?

Yes = 1	No = 0

Compute *Legal* variable as sum of 0/1 vars over population in 1820

▸

Foreign assessors in Chinese courts

▸ Foreign assessors as a measure of foreign interference in cases where Chinese is the defendant:

  ▸ U.S. and U.K.: Foreign assessor present in the mixed court or Chinese court cases where their nationals are plaintiffs to watch, cross-examine witness, and protest proceedings

  ▸ Japan, Mexico, Brazil: Exclusive jurisdiction applies, no foreign assessors are present

  ▸ All other countries: Many cases are dealt with by the foreign consul and the Chinese official jointly
    ▸ The settlement is one by mediation or arbitration, a method most in line with Chinese practice

Which channel matters most?

	(1)	(2)	(3)	(4)
Occupation	0.067 (0.044)			
Legal		-0.148** (0.022)		-0.190** (0.022)
Customs			-0.108** (0.010)	
Customs \ Legal				-0.391** (0.085)
N	54,979	54,979	54,979	54,979
Dep. Var. *Carry Cost*, prefecture x grain FE, year FE, controls				

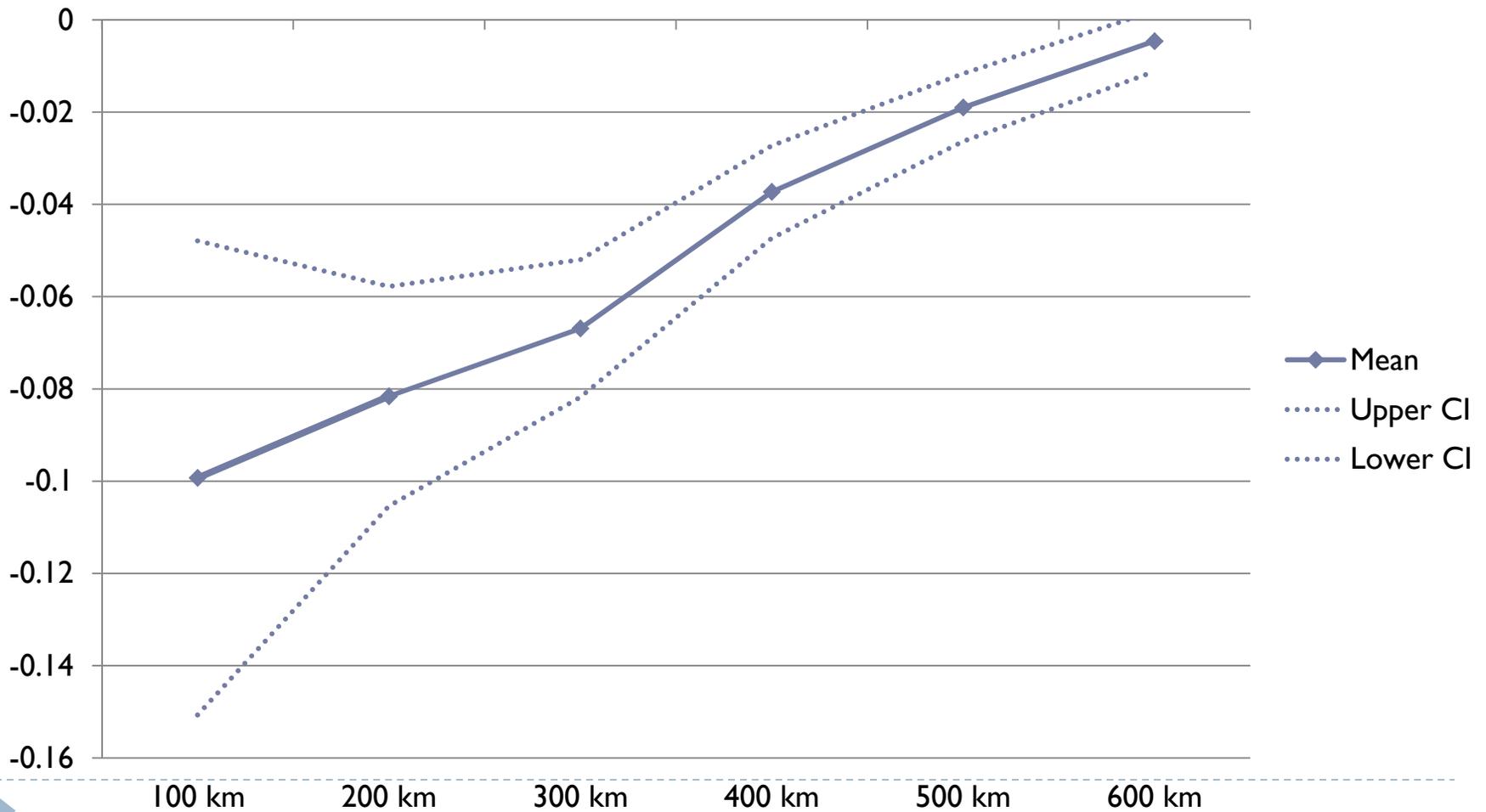▸ Customs is economically larger than Legal: beta coeff's of -2.4% vs -1.4%

Foreign presence outside local prefecture

- $Carry\_Cost_{it} = \beta_1 Customs_{it} + \beta_2 \sum_j^J I_{ij} Customs_{jt} + X + \varepsilon_{it}$

Foreign presence outside local prefecture

$$Carry\_Cost_{it} = \beta_1 Customs_{it} + \beta_2 \sum_j^J I_{ij} Customs_{jt} + X + \varepsilon_{it}$$

Summary

- Foreign presence lowered local interest rates
  - Magnitude: by about 5-10%

- Consistent with foreign presence generating positive externalilities for Chinese capital markets
  - C.f. higher tariff revenue that enabled China to borrow at lower rates internationally

- Mechanism: Legal and customs system both played a role, with Customs' effect larger

- Foreign presence lowered interest rates outside local area, up to about 400 km
 - First econometric evidence of this kind
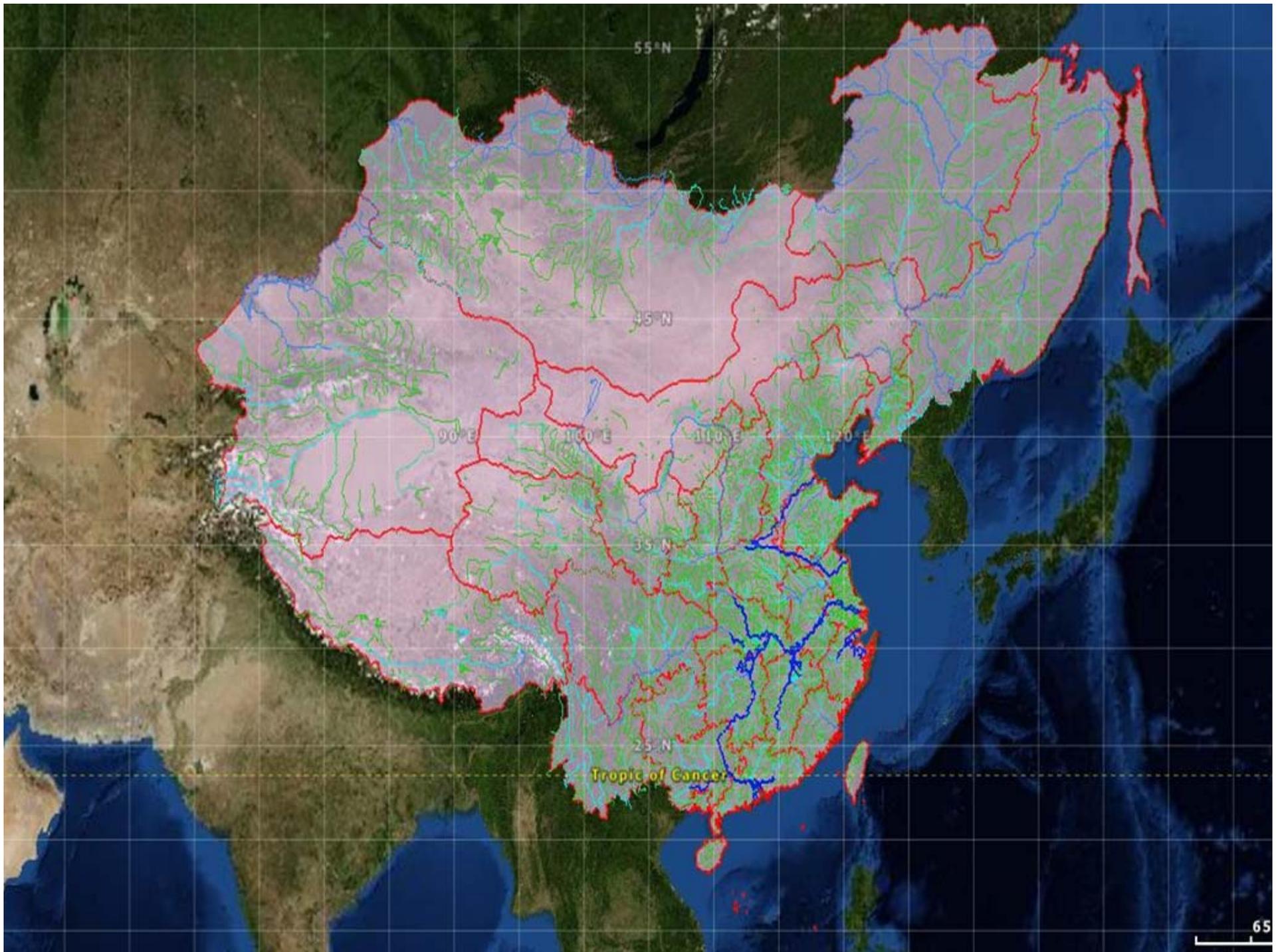
Foreign presence and trade

	(1)	(2)	(3)	(4)
Customs	-0.108**	-0.059+	-0.112**	0.024
Customs x Coastal		-0.092+		
Customs x Yangzi River			0.034	
Customs x Water Access				-0.158**

▸ While regions benefit to a different degree from the Customs effect on interest rates, overall it is closely related to water access and ports

Direct evidence on interest rates in China
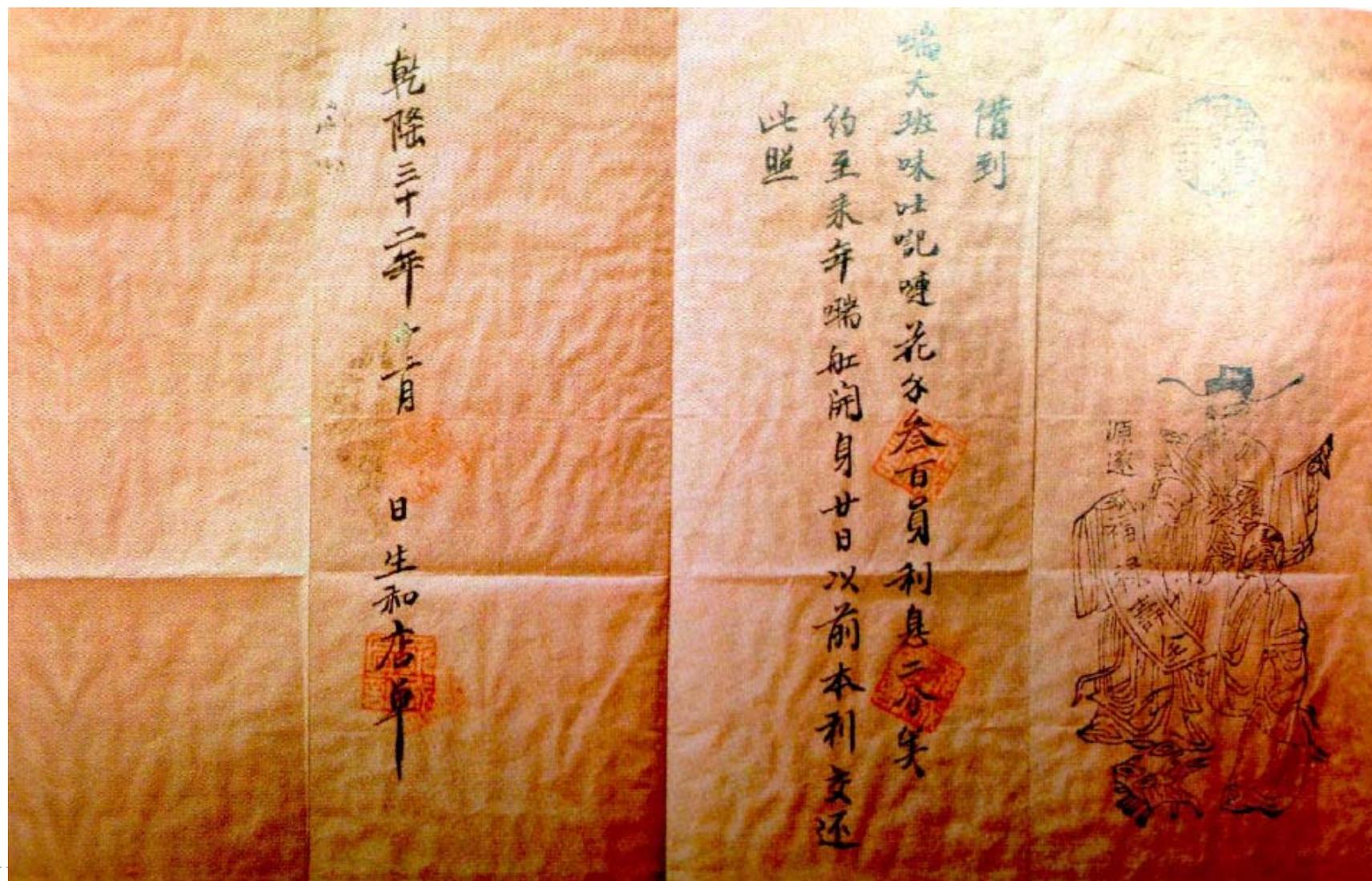
Estimating Storage Costs

	(1)	(2)	(3)	(4)
Foreign	-0.028** (0.006)	-0.028** (0.006)	-0.027** (0.006)	-0.029** (0.006)
Extremely Wet		0.013** (0.004)	0.025** (0.007)	0.011** (0.004)
Extremely Wet x Post 1842			-0.018** (0.008)	
Extremely Wet x Foreign				0.030 (0.018)
Post-1842			-0.002 (0.004)	
R2	0.337	0.338	0.338	0.338

▶ Storage costs do not mimic the new foreign presence