

Credit, labor, and political unrest: Evidence from 1930s China

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December 2017

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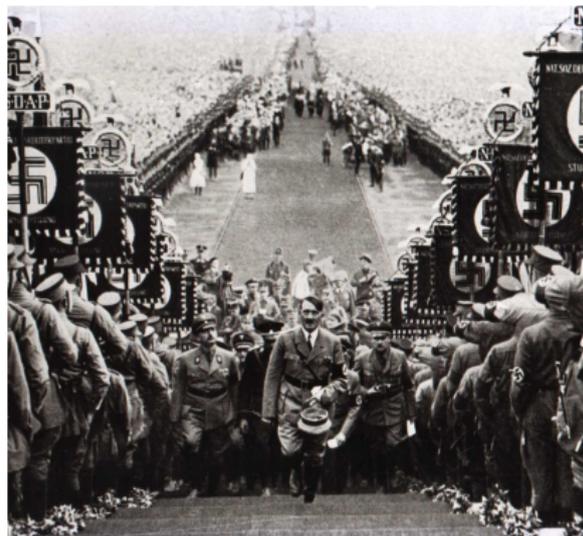
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Can economic shocks inflame political unrest?

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- ▷ Identify extremist base?
- ▷ Causality can run both ways

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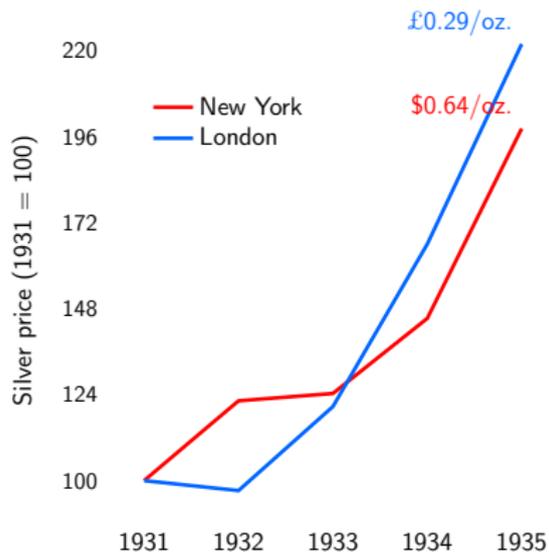
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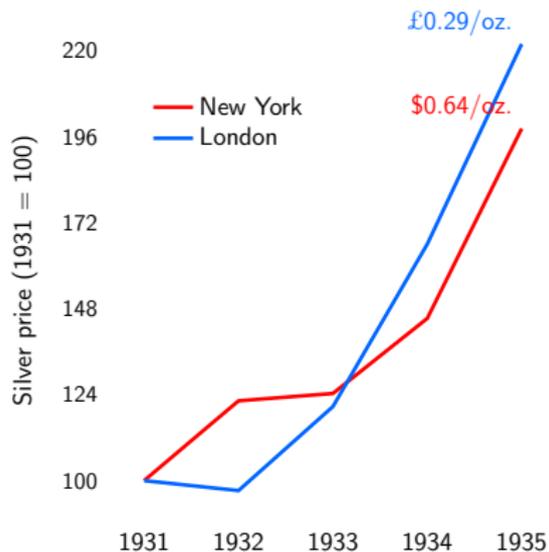
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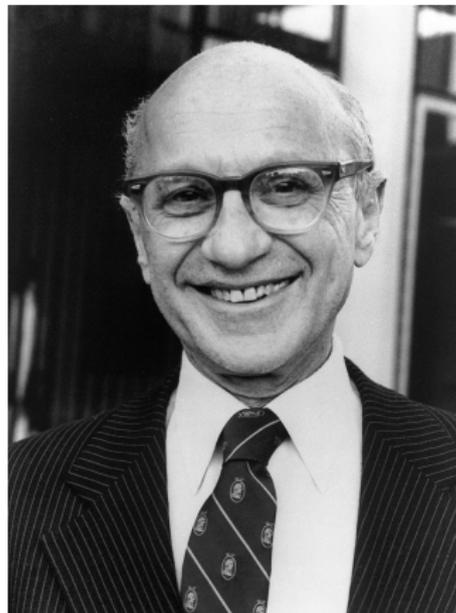
Nov 1933 FDR administration gives in to silver industry lobbying, and announces Silver Purchase program





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- ▷ Causality can run both ways
- ▷ Shock to credit

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US, 2017

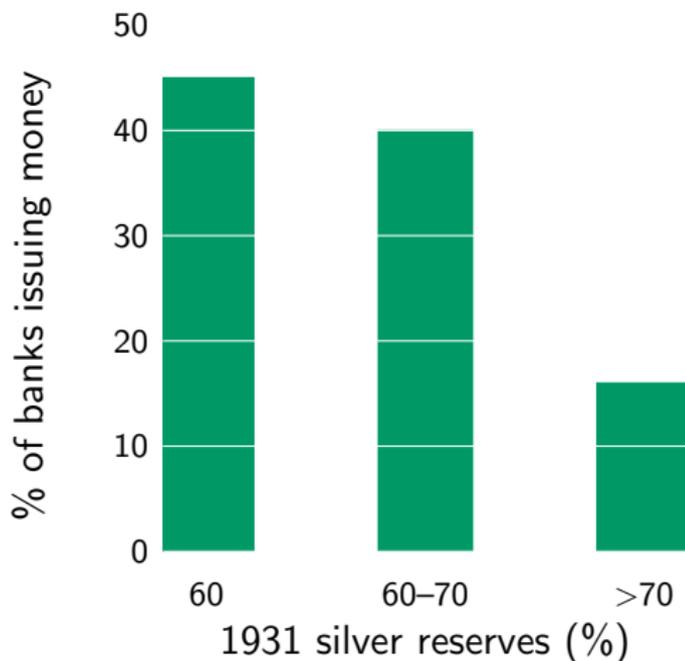
- ▷ Fiat money
- ▷ Central bank:
 - Sets monetary policy
 - Issues money

China, 1933

- ▷ Silver standard
- ▷ No central bank:
 - No monetary policy
 - Banks issue money
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$$N = S + p_B B + L$$

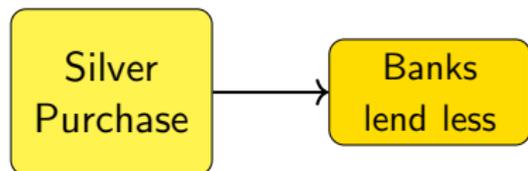
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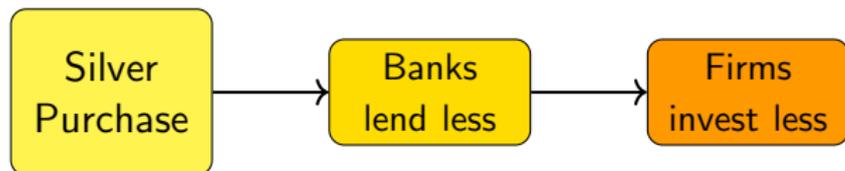
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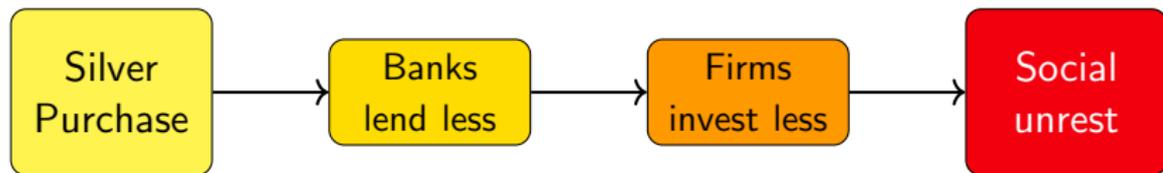
$$L = (1 - p_B) \frac{1 - \sigma}{\sigma} S$$

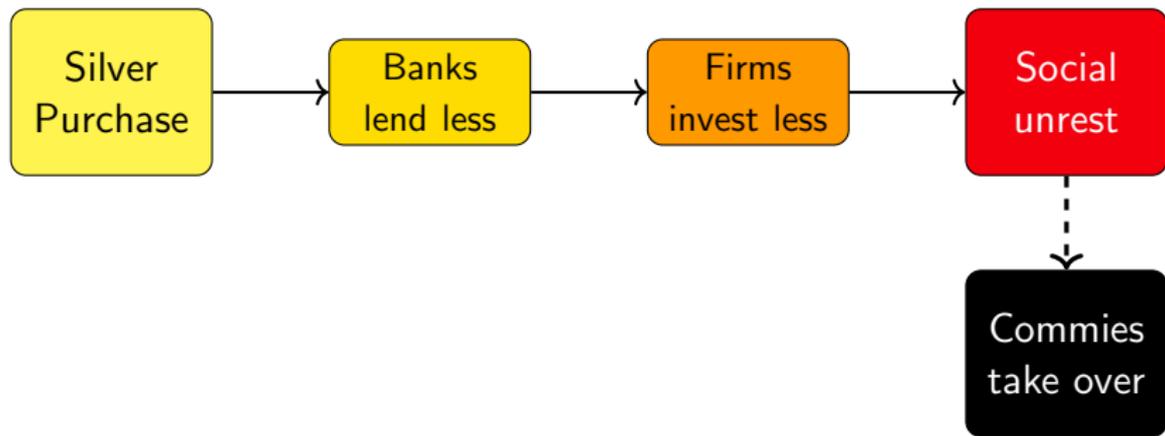


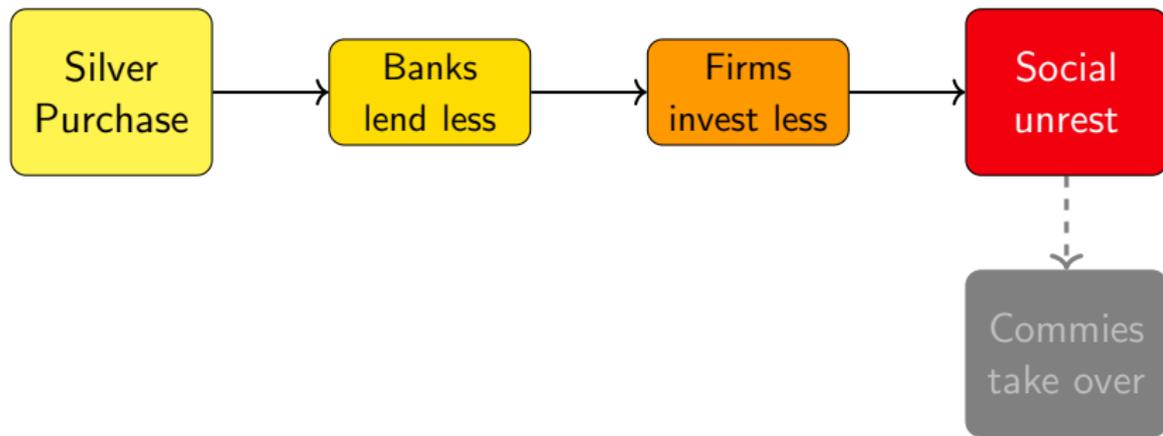
Silver
Purchase

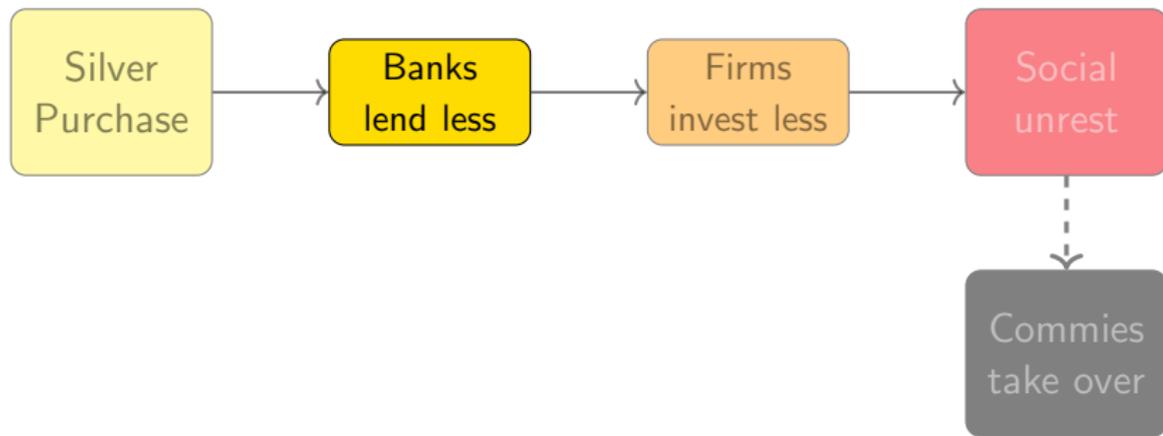




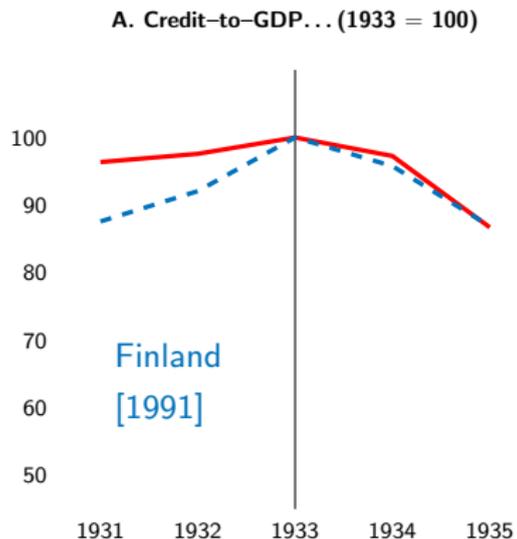


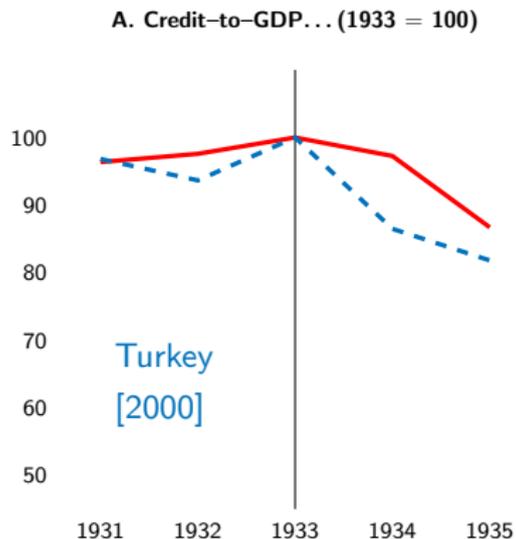


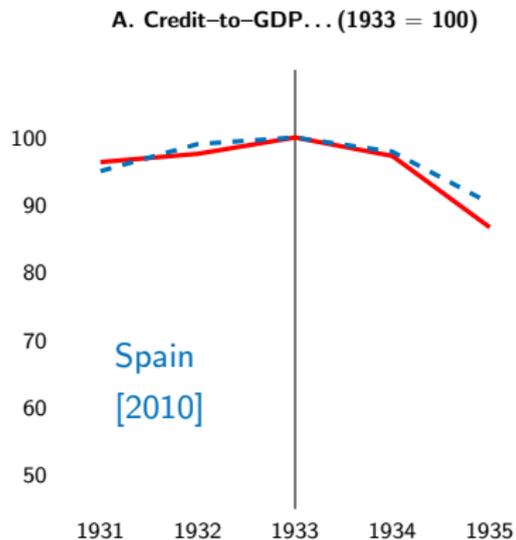


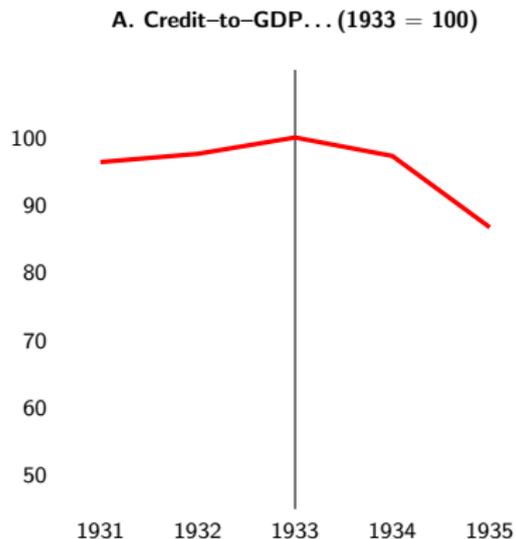




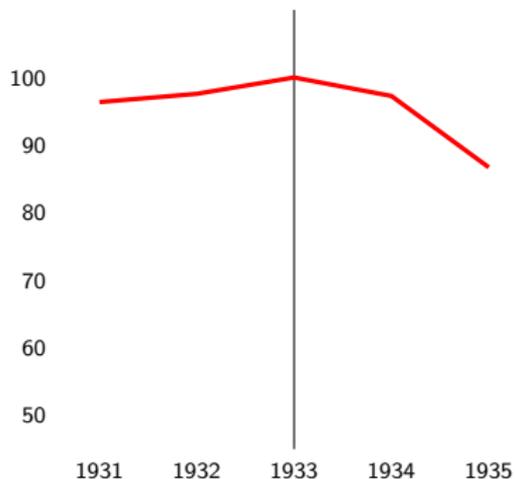




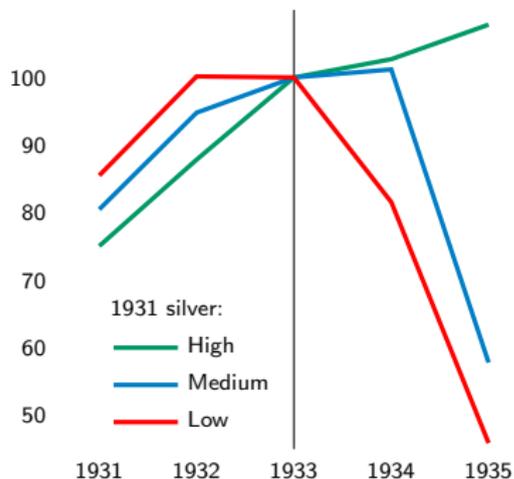




A. Credit-to-GDP... (1933 = 100)



B. ... by 1931 silver holdings (1933 = 100)



$$\log \bar{L}_{b,Post} - \log \bar{L}_{b,Pre} = \alpha + \beta \log Silver_{b,1931} + \gamma' \Delta x_b + \varepsilon_b$$

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)
log Silver _{b,1931}	0.124 (0.039)	0.125 (0.047)	0.129 (0.044)				
log Excess Silver _{b,1931}				0.391 (0.073)	0.400 (0.070)		
Exc. reserves (Y/N)						0.130 (0.041)	0.133 (0.041)
Bank controls	N	Y	Y	Y	Y	Y	Y
Incl. no-issue banks?	N	N	Y	N	Y	N	Y
R ²	0.12	0.30	0.33	0.30	0.33	0.40	0.40
N	47	46	80	46	80	46	80

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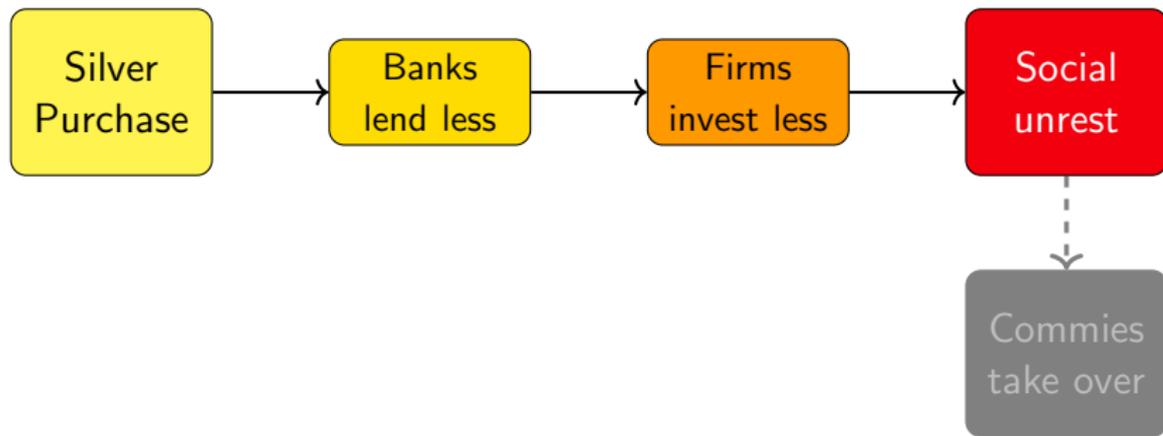
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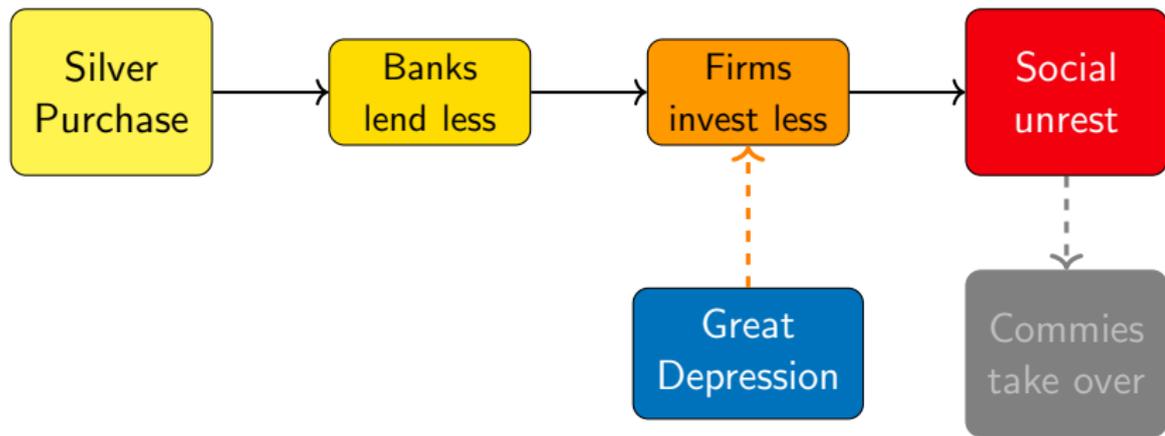
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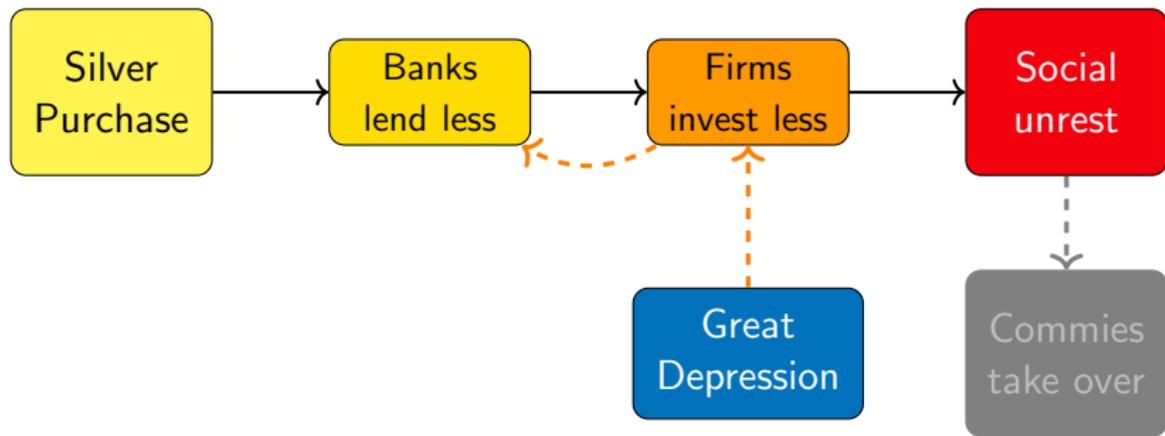
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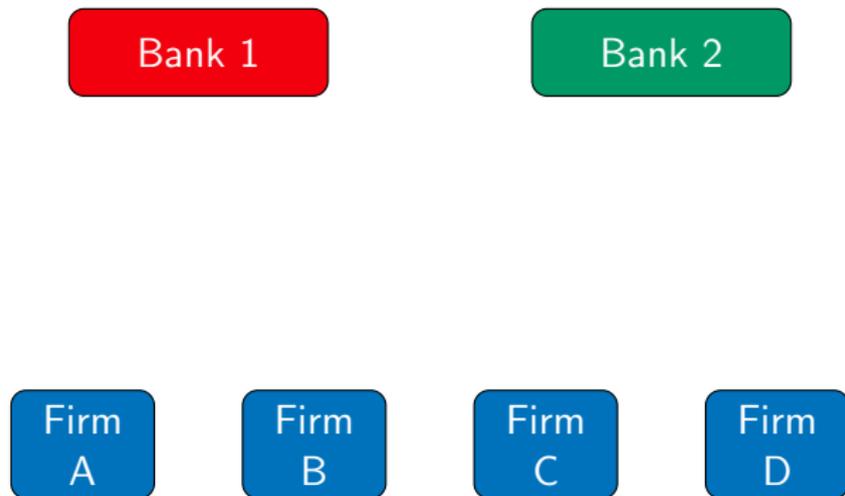


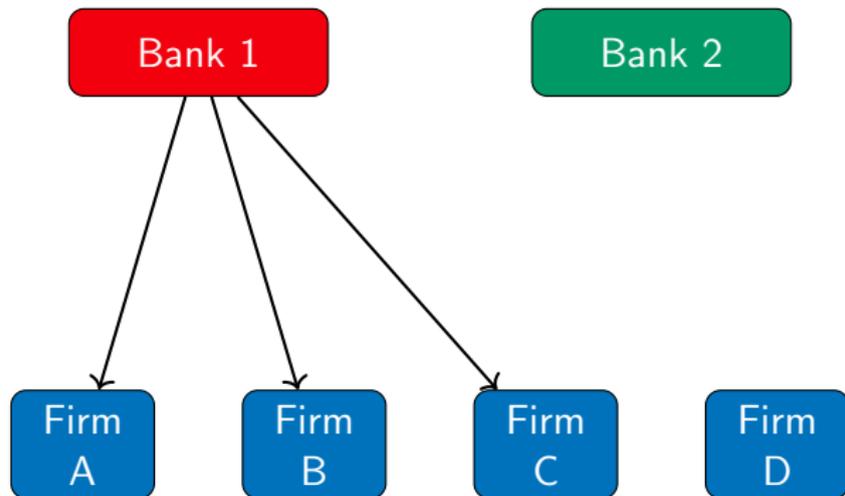


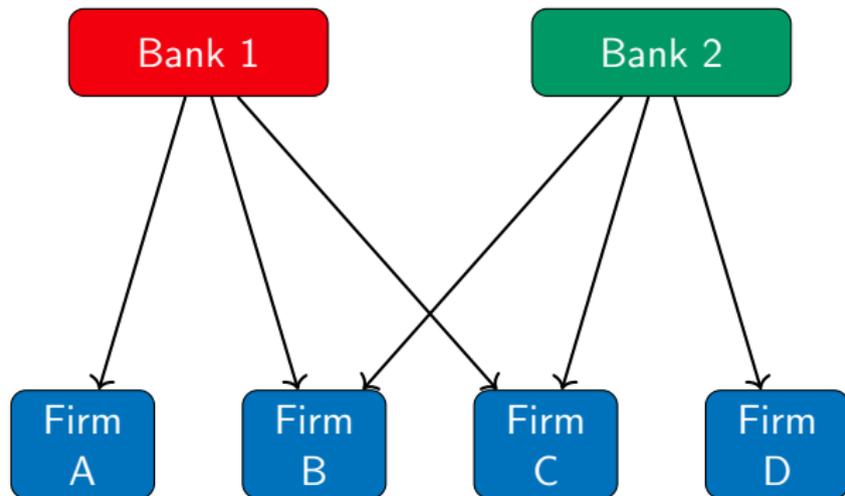


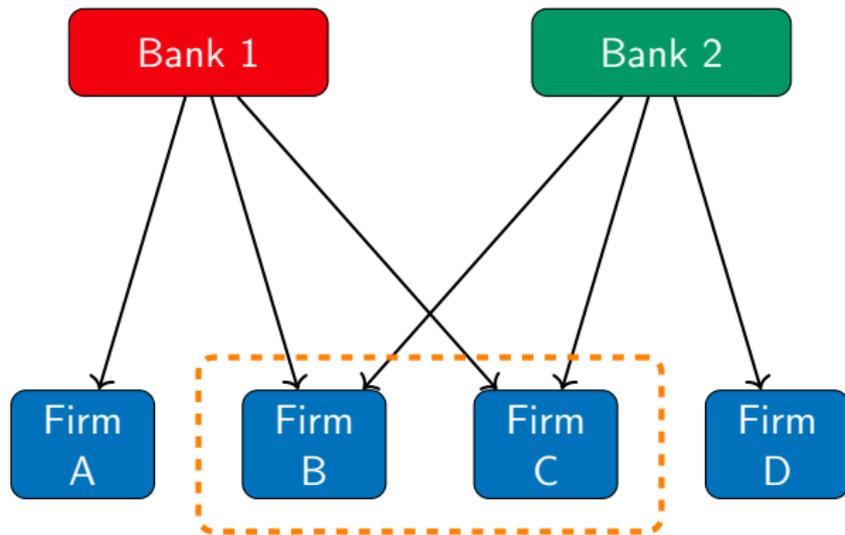
Bank 1

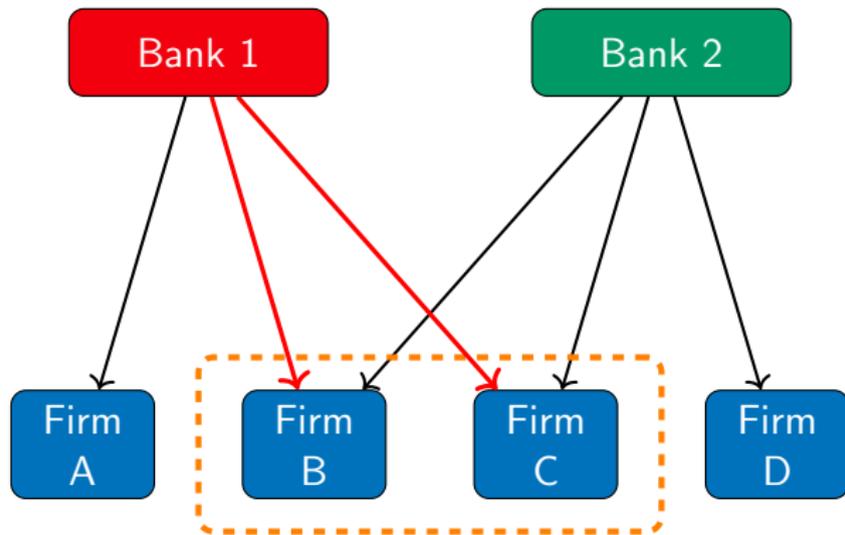
Bank 2











立押款契約人 上海商務儲蓄銀行 (以下簡稱「甲方」) 茲因乙方前於中華民國二十一年八月十九日曾以自置之全部基地廠屋工場機器生財等設定担保物向甲方抵押現大洋伍拾萬元整到期無力償還又積欠利息保險費及貨物押款缺少之墊頭連前共計洋陸拾萬元整 (以下簡稱「借款」) 自願以附表所載自置之基地廠屋工場及其從物機器生財等 (以下簡稱「担保品」) 設定担保物作為担保請求甲方准予延至中華民國二十四年十一月十九日本利悉數清償業經甲方允諾雙方協訂條款如左

- 一 乙方茲會同保人切實負責聲明担保品均係乙方所有其價格業經付清並無其他負擔糾葛倘將來發生問題乙方及保人願連帶負責清理清楚並賠償一切損失
- 二 (借款總額共計銀幣陸拾萬圓整) 當於本契約簽訂之日雙方交割清楚即以本契約為憑無庸另立收據
- 三 借款利息照月息九釐計算即每千元每月生息九元九月三十日為一月按日實計每三個月結付一次不得拖延短少否則甲方除將所欠利息加入借款本銀內依照上述利率計算利息並同受担保品之担保外仍得限乙方於一星期內將原息及其所生之利息如數付清
- 四 乙方除前條之利息外每月應再津貼甲方管理費用銀幣一百元按月於一日預付不得拖延短少否則甲方得按第三條後半段辦理
- 五 本契約所稱銀幣係指每圓含有純銀 (千分足色) 一三·四九三三四四八格蘭姆 (G) 之貨幣而言將來如中華民國政府貶減貨幣成色時乙方償付本息應以與上述銀幣所含純銀 (千分足色) 價值相等之貨幣給付之此項貨幣並以能在本契約履行地點通用及完稅者為限
- 六 乙方應於本契約簽訂之日將附表內之道契權權單等過戶與甲方並將担保品向主管官署為聲請

丙 乙方宣佈停業清理破產或有停業清理或破產之虞時

- 廿一 保人願負責完全責任担保乙方切實履行本契約一切條件如乙方有前條各款情事之一時不論甲方是否已將及願將担保品處分以及担保品是否存在保人願拋棄民法第七四四條之權利與乙方連帶負責即將借款本息以及因乙方違反本契約所生之損害如數償還決不異議
- 廿二 本契約於借款本息完全清償後失效屆時甲方應將所派各員撤回取消清方担保品不動產部分之從物機器生財等之管領並將乙方點交一切契據交還乙方所有因此發生之費用概由乙方負擔
- 廿三 本契約未經規定各點應依上海市銀業同業公會及乙方之營業章程習慣手續辦理之
- 廿四 本契約一式四份除一份送官廳備案外甲乙雙方各執一份及證明律師各執一份存照

上海商務儲蓄銀行
上海四聯股份有限公司
承 讓 保 證 人
陳昭祥
劉如祥
證明律師

中華民國二十四年五月十九日

立押款契約人上海商業儲蓄銀行（以下簡稱乙方）茲因乙方前於中華民國二十一年八月十九日曾以自置之全部基地廠屋工場機器生財等設定担保物權向甲方抵借現大洋伍拾萬元整到期無力償還又積欠利息保險費及貨物押款缺少之墊頭連前共計洋陸拾萬元整（以下簡稱借款）自願以附表所載自置之基地廠屋工場及其從物機器生財等（以下簡稱担保品）設定担保物權作為担保請求甲方准予延至中華民國二十四年十一月十九日本利悉數清償業經雙方允諾雙方協訂條款如左

一 乙方茲會同保人切實負責聲明担保品均係乙方所有其價格業經付清並無其他負擔糾葛倘將肇發生問題乙方及保人願連帶負責清理清楚並賠償一切損失

二 借款總額共計銀幣陸拾萬圓整當於本契約簽訂之日雙方交割清楚即以本契約為憑無庸另立收據

三 借款利息照月息九釐計算即每千元每月生息九元九角三十日為一月按日實計每三個月結付一次不得拖延短少否則甲方除得將所欠利息加入借款本銀內依照上述利率計算利息並同受担保品之担保外仍得限乙方於一星期內將原息及其所生之利息如數付清

四 乙方除前條之利息外每月應再津貼甲方管理費用銀幣一百元按月於一日預付不得拖延短少否則甲方得按第三條後半段辦理

五 本契約所稱銀幣係指每圓含有純銀（千分足色）二三·四九三四八格爾姆（G）之貨幣而言將來如中華民國政府貶減貨幣成色時乙方償付本息應以與上述銀幣所含純銀（千分足色）價值相等之貨幣給付之此項貨幣並以能在本契約履行地點通用及完稅者為限

六 乙方應於本契約簽訂之日將附表內之道契權權單等過戶與甲方並將担保品向主管官署為聲請

- ▷ 763 loan contracts to individual firms, 1931–1935
- ▷ Archives:
 - Beijing (19%)
 - Chongqing (14%)
 - Guangzhou (0.25%)
 - Nanjing (12%)
 - Shandong (7%)
 - Shanghai (20%)
 - Tianjin (27%)

$$\Delta \log L_{fb} = \alpha_f + \beta \log \text{Silver}_{b,1931} + \gamma' \Delta x_{fb} + \varepsilon_{fb}$$

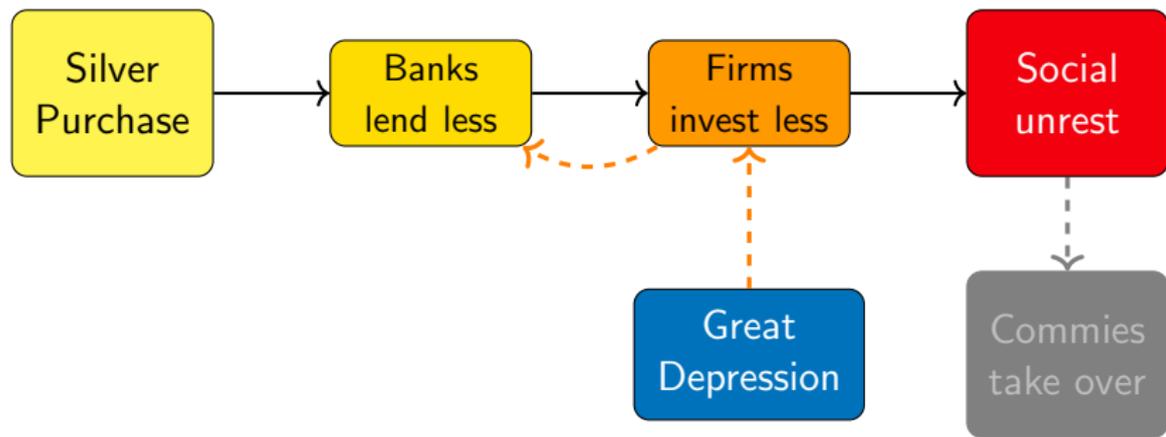
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	OLS			F.E.		
	(1)	(2)	(3)	(3)	(4)	(6)
log Silver ₁₉₃₁	0.121 (0.049)			0.176 (0.057)		
log Excess Silver ₁₉₃₁		0.078 (0.020)			0.100 (0.031)	
Exc. reserves (Y/N)			0.282 (0.149)			0.309 (0.150)
Bank controls	Y	Y	Y	Y	Y	Y
Firm f.e.	N	N	N	Y	Y	Y
R ²	0.02	0.02	0.02	0.84	0.84	0.84
N	306	306	306	229	229	229

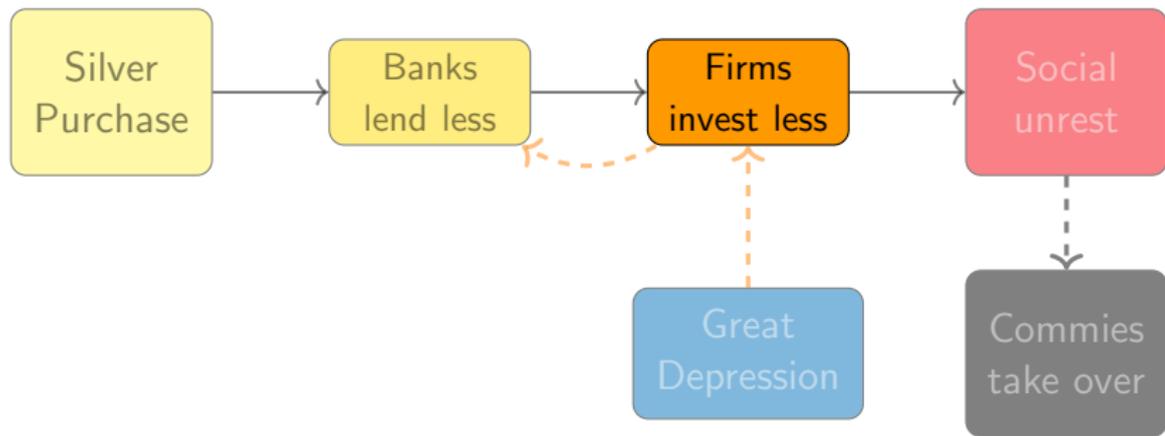
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5. Real shock



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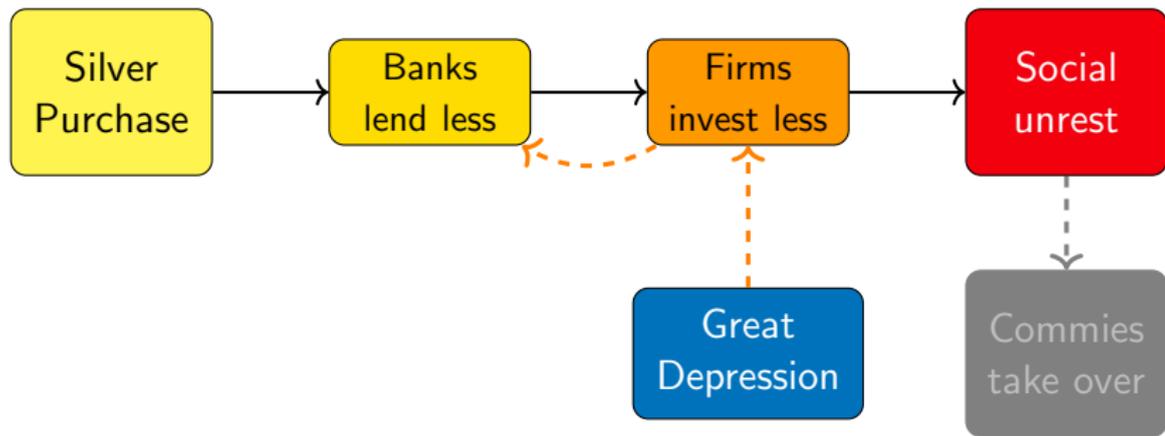


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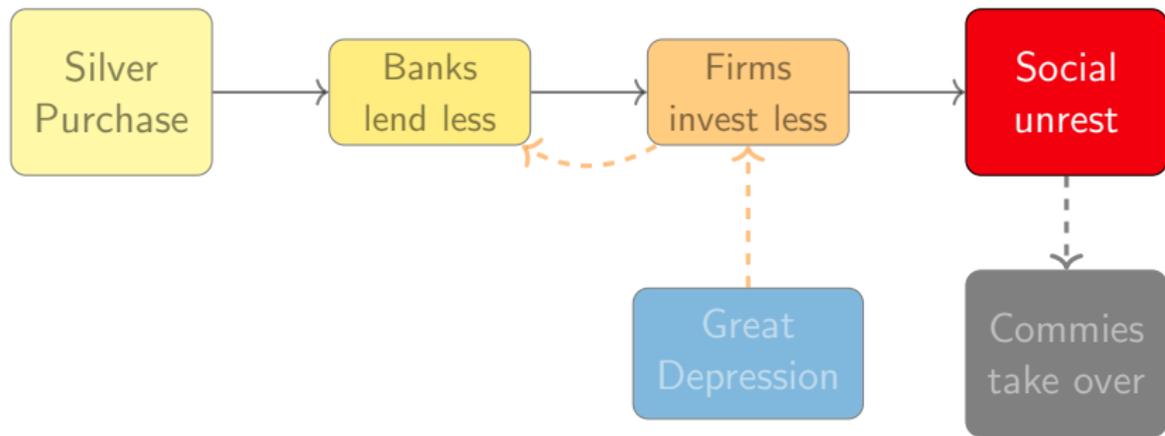
Railway	No. of passengers	Freight (tons)	Passenger revenue	Freight revenue	Total revenue
Peiping-Hankow	3,430,358	3,635,550	\$10,262,520	\$20,073,913	\$30,346,979
Peiping-Liaoning	4,082,876	6,091,900	6,572,320	13,139,250	22,313,469
Quantan-Pukow	2,850,992	3,136,313	10,636,131	10,611,743	22,396,213
Nanking-Shanghai	10,780,289	1,365,126	10,459,644	2,775,089	13,512,573
Shanghai-Hangchow-Ningpo	5,172,935	541,127	4,478,983	2,061,307	6,540,290
Peiping-Suiyuan	1,062,357	1,267,081	1,721,885	6,925,569	9,088,961
Cheng-Tai	901,992	1,776,297	1,225,245	4,190,561	6,422,966
Tientsin-Chingliwa	429,972	1,005,354	321,892	1,330,468	1,678,582
Lung-Hai	1,764,498	962,868	3,578,866	6,226,196	9,873,720
Canton-Kowloon	2,225,568	166,807	1,897,432	226,137	2,171,284
Hupeh-Hunan	941,156	346,846	1,313,475	1,498,970	2,752,111
Shantung	2,881,235	2,432,846	3,495,765	9,820,846	13,332,758
Nauchang-Kiukiang	533,736	163,782	1,001,425	407,076	1,432,921
Total	37,178,728	24,014,737	66,003,153	79,109,036	142,011,902

3. 機器織布局 or Wen Ch'ang gate, Wuchang 7 Jan. 1893
湖北織布官局
湖北紡織官局
This mill was commonly known by the succession of companies which rented it:
源亨公司 1902
源隆公司 1911
源泰公司 1911
源安公司 1913
源明公司 1923 or 1924
源源公司 1928
民生公司 or 漢口商辦民生紡織公司 1931
民生實業 1933
漢口民生紡織公司 1936
復興實業 1936
* also included in joint number 300.

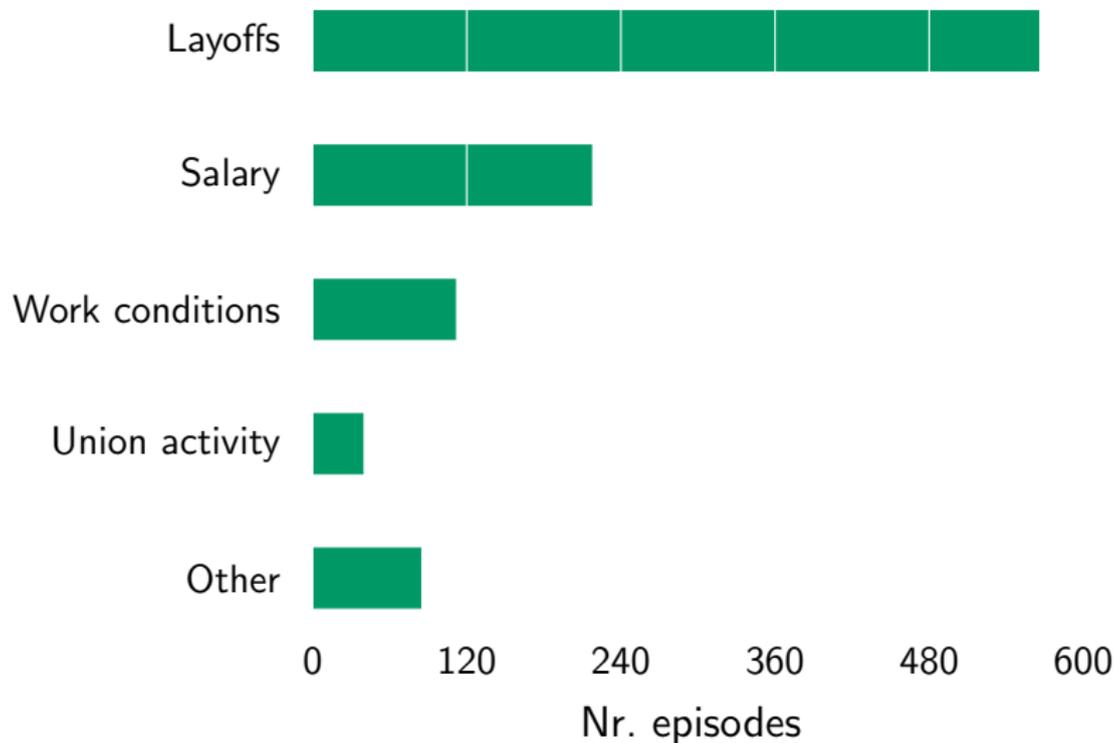
6. Social unrest

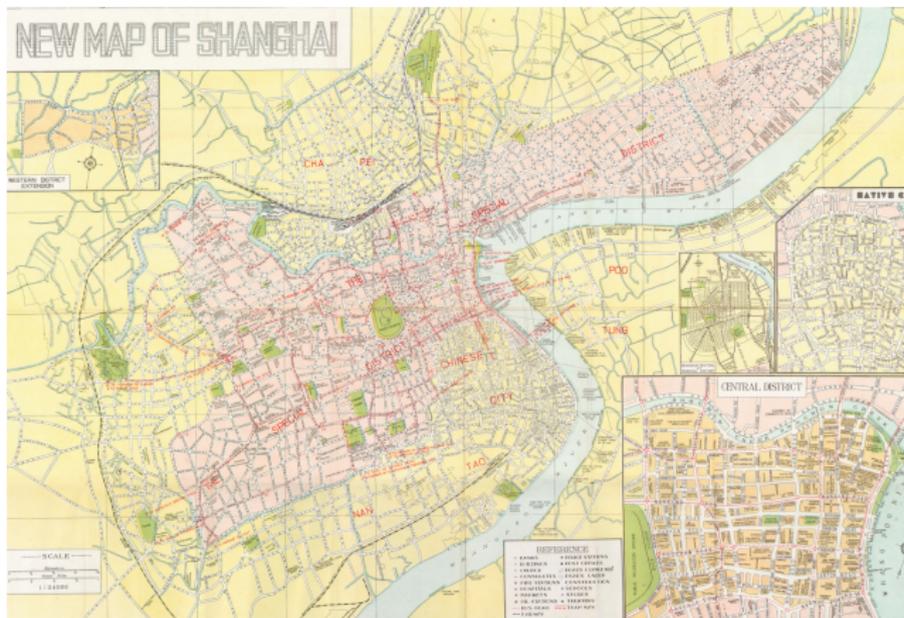


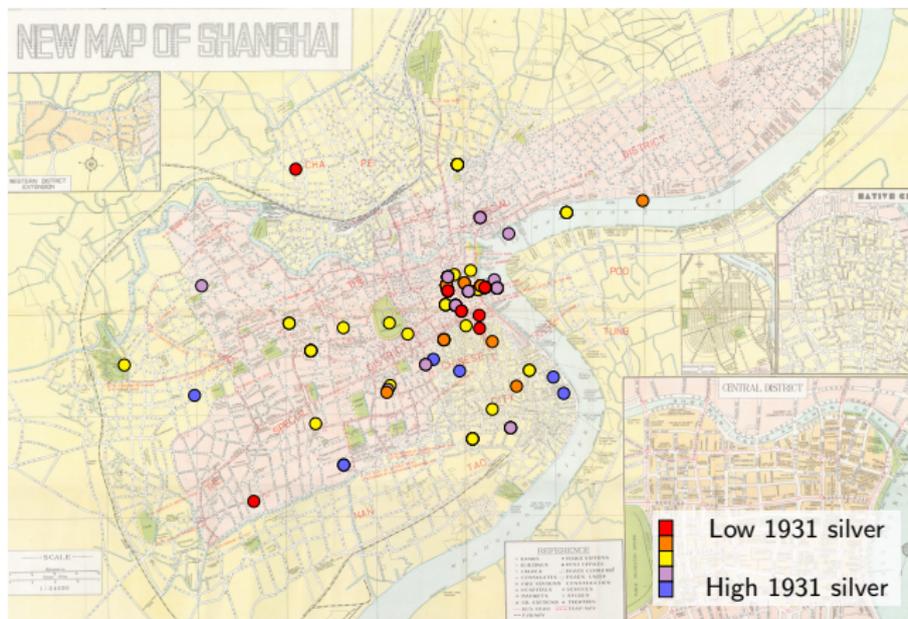
6. Social unrest

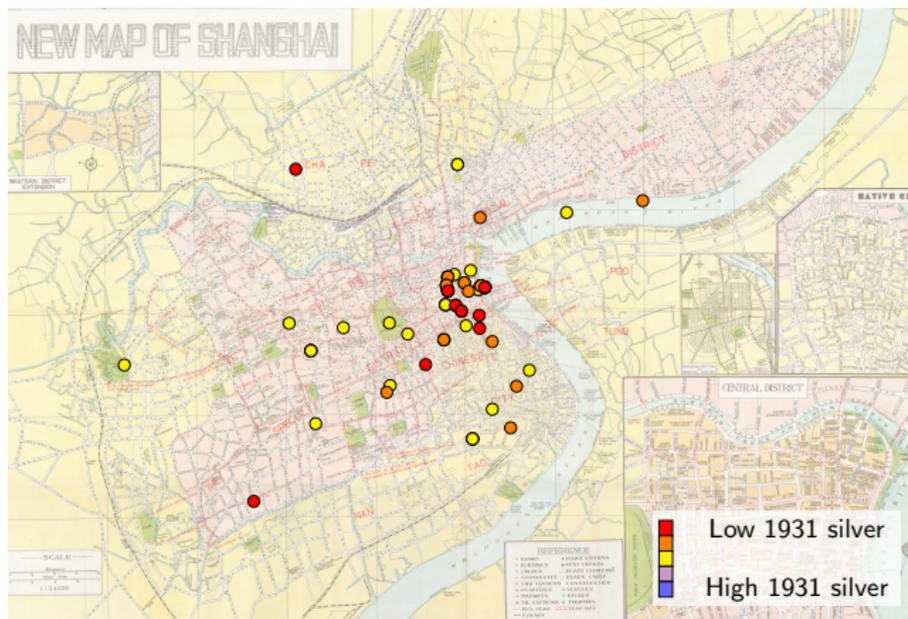


年 月	案件編號	案 由	業務分類	資方國籍	僱傭總數	罷職工數	紛糾日數	調處者	結 果	
	927	華商公共汽車公司開除乘車賭博之工友 AII _{3a}	汽車 CIV	中	1 男	1	1月9日至 1月14日止 計5日	社會局	准予開除	C
	928	永安紡織公司第二廠開除有怠作弊之工友 AII _{3a}	棉紡 BIII ₁₀	中	1 男 1 女	1	1月12日至 2月26日止 計49日	勞資調解 委員會	女工一名准記息一次復工男工一名准 予開除	B
	929	三星棉織工廠開除工作怠惰之工友 AII _{3a}	棉織 BIII ₁₀	中	1 男	1	1月12日至 1月28日止 計17日	社會局	准記大過兩次復工	B
	930	雲亞鋼廠解雇工作怠惰之工友 AII _{3a}	絲織 BIII ₁₀	中	1 男	4	1月13日至 1月22日止 計10日	同上	該職工等自行辭退	C
	931	華商公共汽車職工會駁使新工人抗議雇用 契約 AII _{3a}	汽車 CIV	中	1 男	2	1月13日至 1月16日止 計4日	同上	准予訂立雇用契約工會不得干涉	C
	932	商務印書館四工會要求開放門禁 AII _{3b}	印刷 BIII ₁₄	中	1 男 2,500 450 女	1	1月14日至 1月17日止 計4日	勞資調解 委員會	(1) 廠方承認工會確係因關閉廠方 之種車妨礙可以儘量消除 (2) 廠門仍 由廠方控制關閉 (3) 印刷所稽查夜試 行範圍內第八條規程最明所長向下 添一密字並以無礙於事故為原則 (4) 工方將以上密字通告工友並申述原意	B
	933	裕茂鉛木廠開除工作不良之工友 AII _{3a}	鉛木 BIII ₁₁	中	1 男	2	1月14日至 2月9日止 計27日	社會局	其中一名准由資方津貼洋四十元解雇 一名准由資方資法安插	B
	934	商務印書館四工會反對工作新標準 AII _{3b}	印刷 BIII ₁₄	中	1 男 2,500 450 女	1	1月15日至 1月21日止 計7日	勞資調解 委員會	(1) 資方聲明擬將新工作標準係舊章 的獎勵辦法同人既已認解資方查核同 (2) 勞方聲明第一案前係專為編譯 所新工作標準而發今新工作標準既出 資方應同開勞方第一通告自失其作 用 (3) 資方以從規定新工作標準在事 前應經雙方充分協商 (4) 勞方均應寫 調查表及出勤表印件報告並承認 B	B

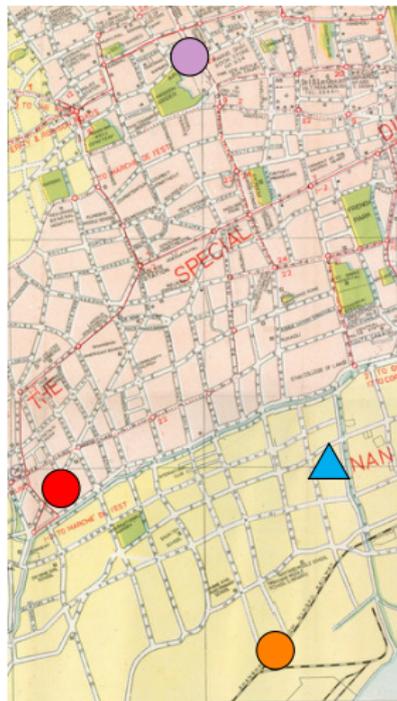


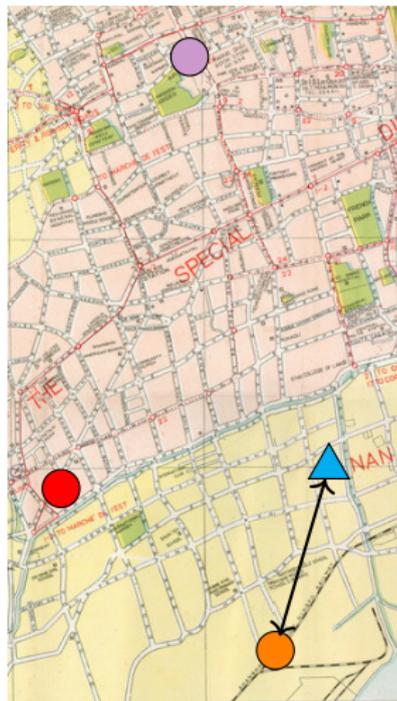


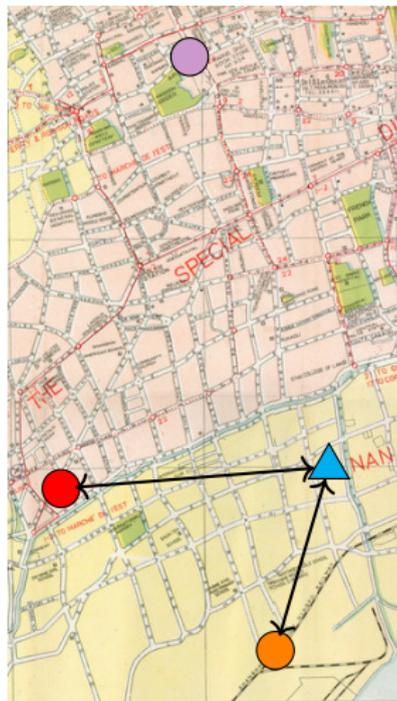


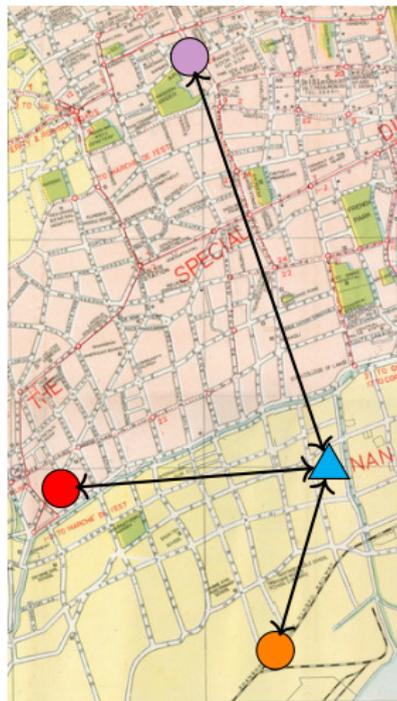


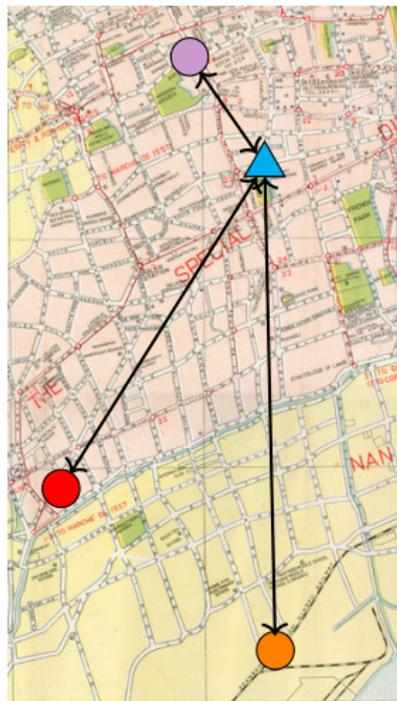


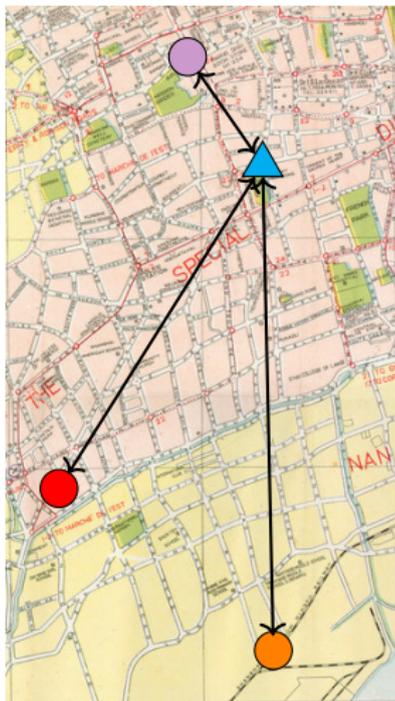




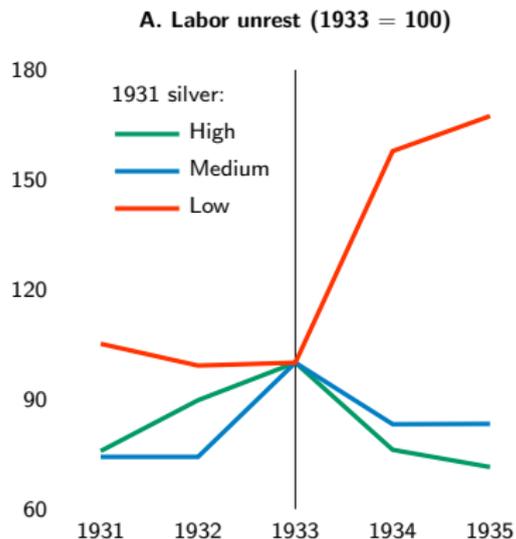








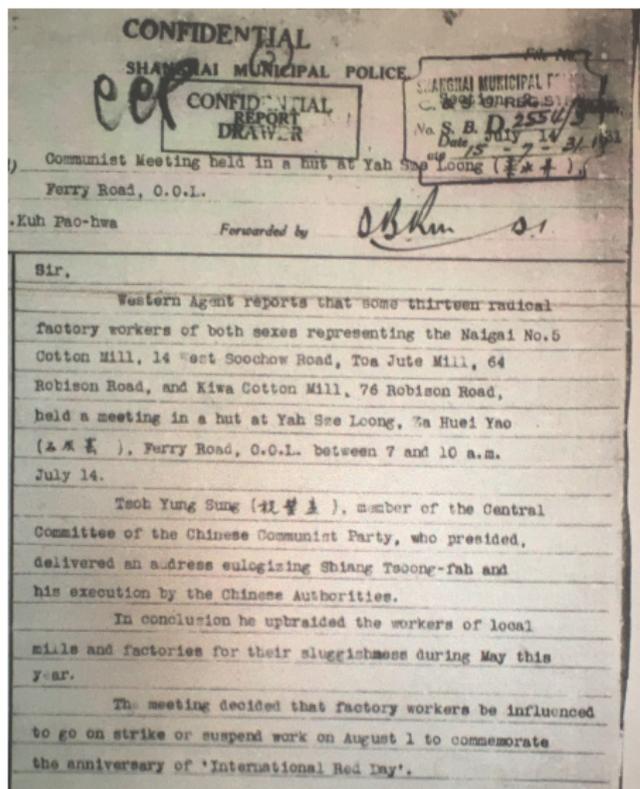
$$S_f = \sum_b \frac{s_b/d(f, b)}{\sum_k 1/d(f, k)}$$



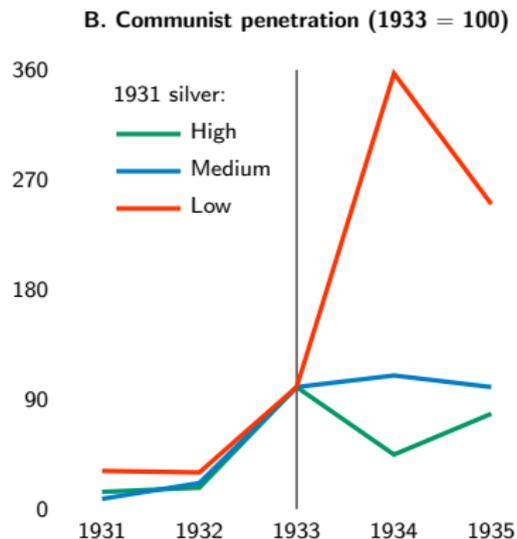
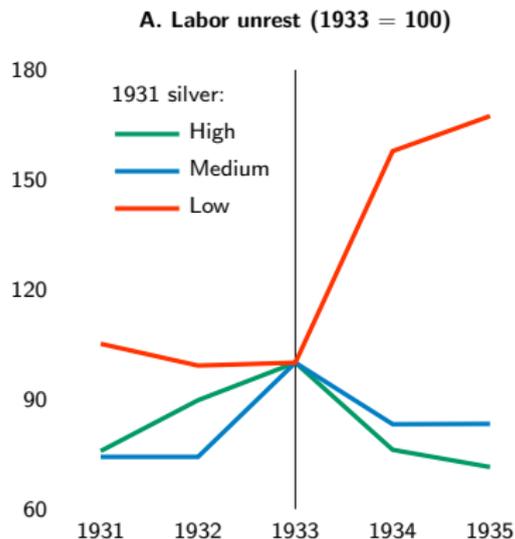
$$\Delta \text{Unrest}_f = \alpha + \beta S_f + \gamma' x_f + \varepsilon_f$$

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	# Unrest episodes			Unrest log-duration		
	(1)	(2)	(3)	(4)	(5)	(6)
Silver pool	-0.246 (0.065)			-0.601 (0.244)		
Excess silver pool		-0.229 (0.056)			-0.602 (0.207)	
Exc. reserves (Y/N) pool			-0.675 (0.208)			-1.326 (0.783)
City district, f.e.						
industry, nationality f.e.	Y	Y	Y	Y	Y	Y
R ²	0.12	0.12	0.12	0.08	0.08	0.08
N	1,743	1,743	1,743	1,500	1,500	1,500

Shanghai Municipal Police files
(1894–1949)

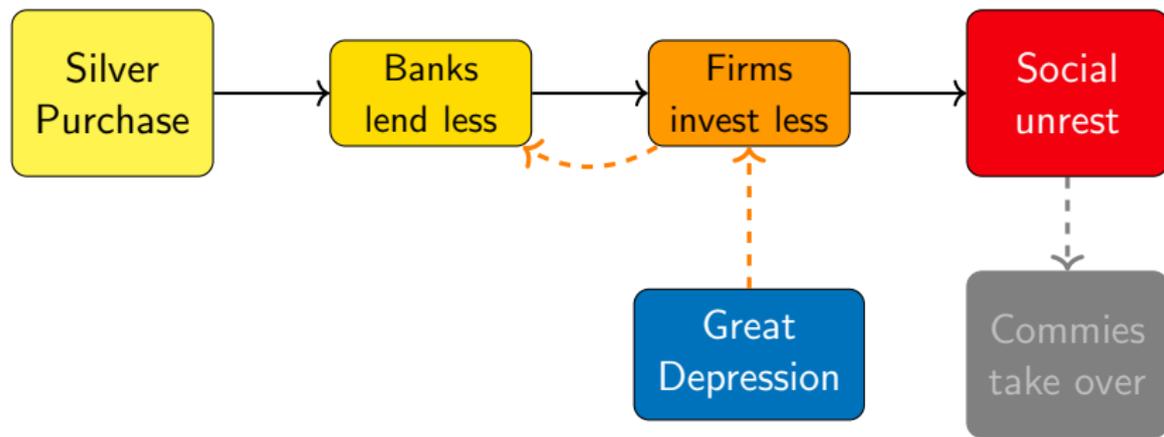
- ▷ British-run municipal police
- ▷ Infiltrating and monitoring subversive groups. . .
- ▷ . . . including Communists

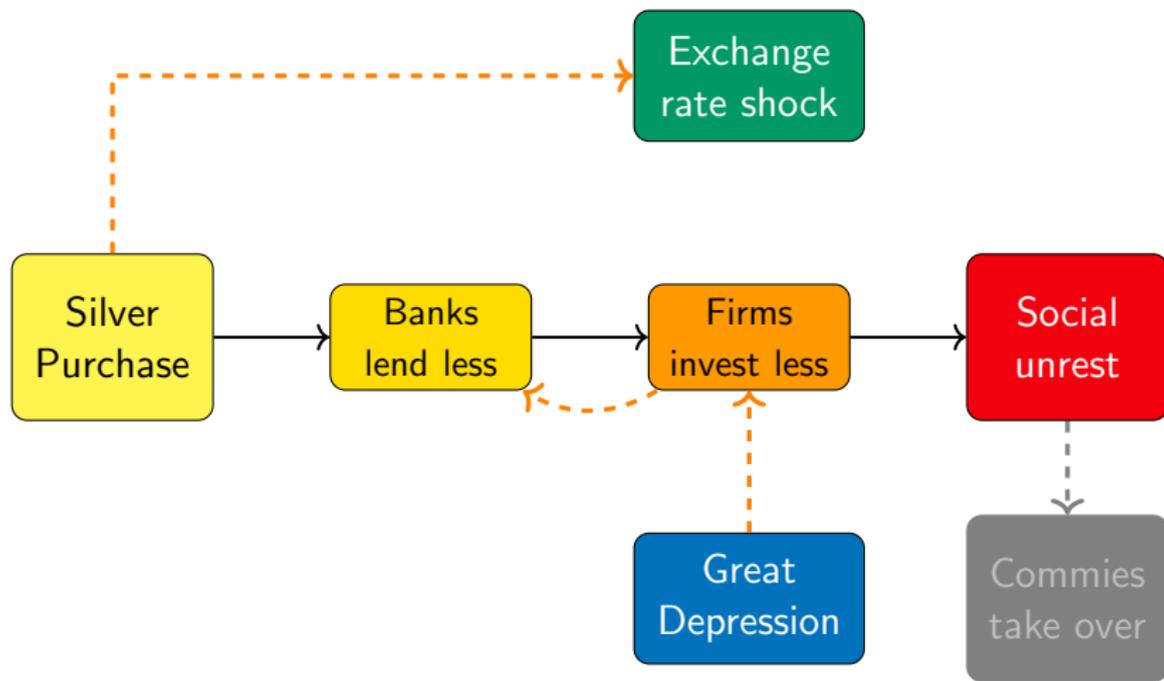


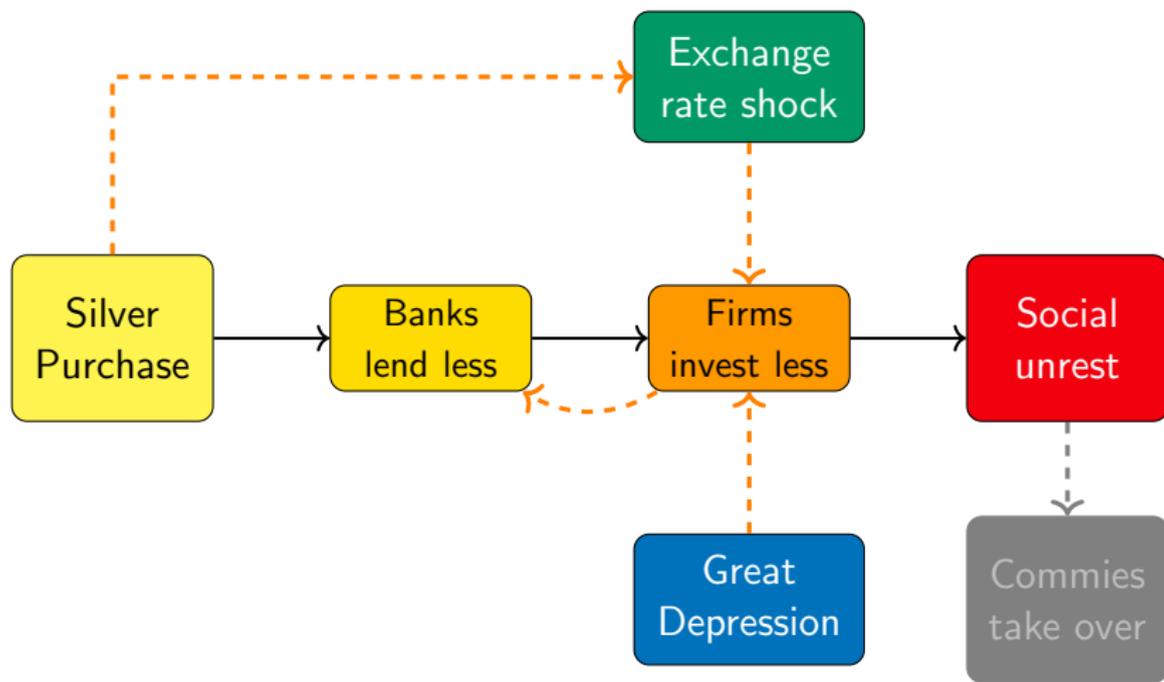
$$\Delta \text{Communist penetration}_f = \alpha + \beta S_f + \gamma' x_f + \varepsilon_f$$

	(1)	(2)	(3)	(4)	(5)	(6)
Silver pool	-0.085 (0.049)	-0.056 (0.043)				
Excess silver pool			-0.083 (0.049)	-0.062 (0.034)		
Exc. reserves (Y/N) pool					-0.167 (0.132)	-0.061 (0.144)
City district, f.e.						
industry, nationality f.e.	N	Y	N	Y	N	Y
R ²	0.00	0.23	0.01	0.24	0.00	0.24
N	1,500	1,500	1,500	1,500	1,500	1,500

7. Alternatives

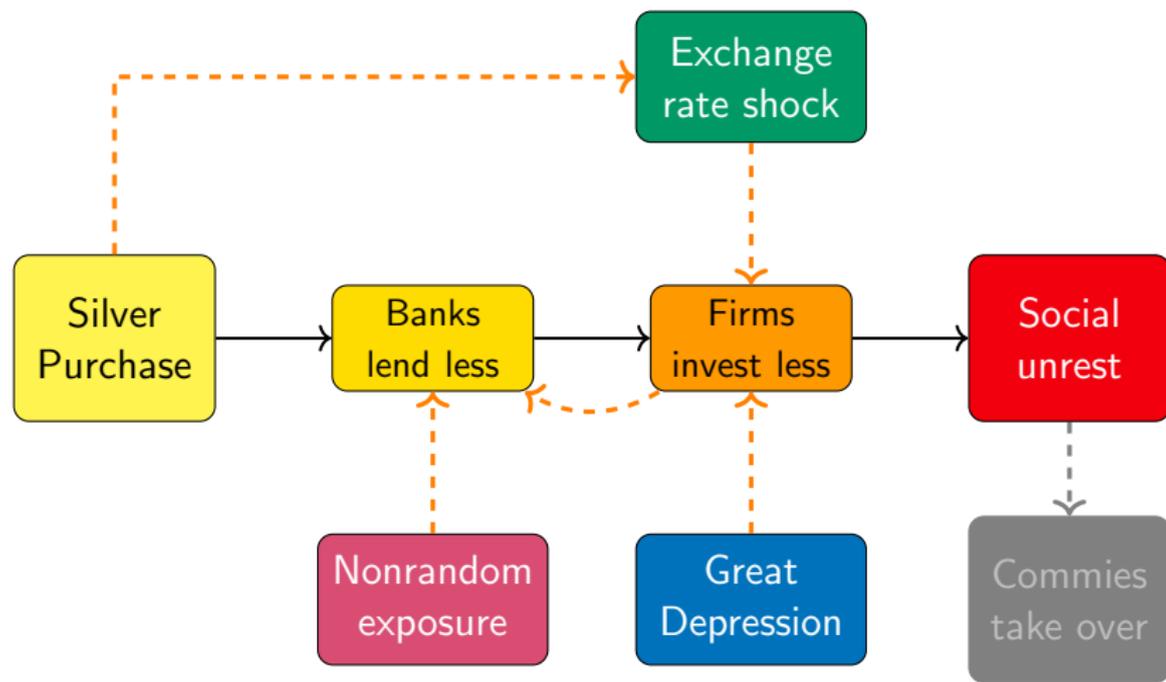




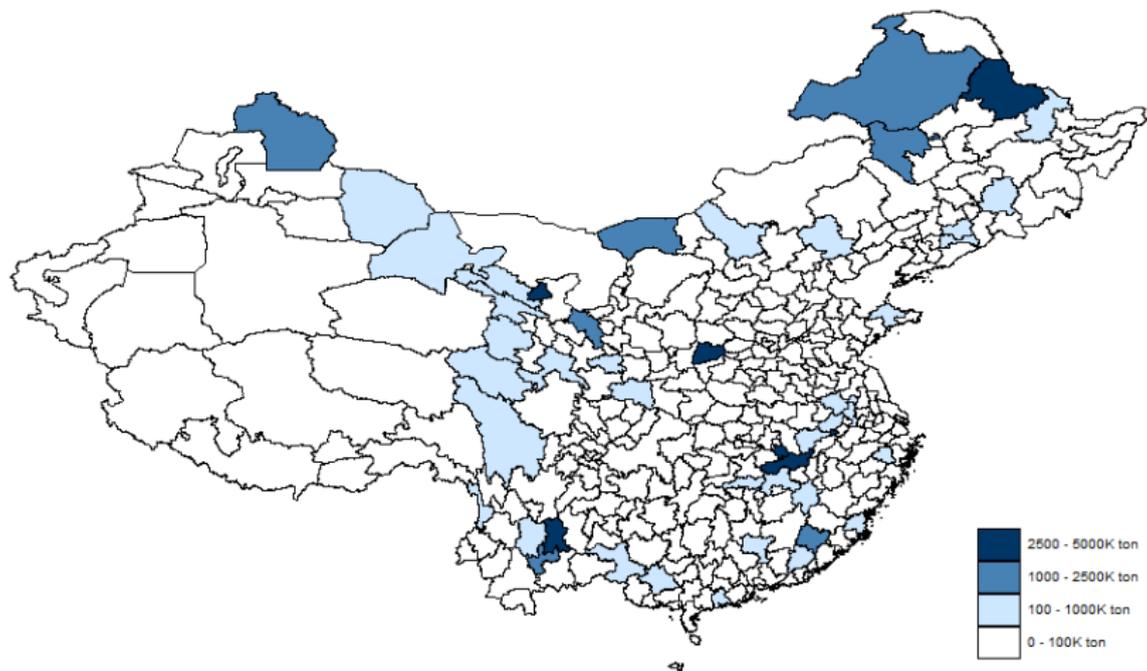


- ▷ Compare traded/non-traded industrial sectors
Exchange rate shock should be more painful for traded
⇒ No sign. differences (actually slightly weaker fx for traded)

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Exchange rate shock should be more painful for traded
⇒ No sign. differences (actually slightly weaker fx for traded) ✓



- ▷ “Native” Chinese banks issue parallel copper-based currency
- ▷ Easier in areas with greater copper availability
- ▷ Lower demand for silver-based currency
⇒ Lower silver reserves
- ▷ The instrument: **Copper availability at local mines**



- ▷ **Compare traded/non-traded industrial sectors**
Exchange rate shock should be more painful for traded
⇒ No sign. differences (actually slightly weaker fx for traded) ✓

- ▷ **Use copper mines availability as an IV**
Related to unique feature of Chinese currency system in 1930s; local copper availability arguably exogenous
⇒ Similar results as our baseline tests

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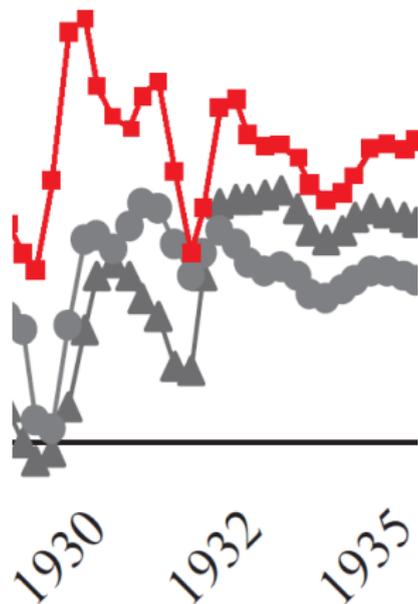
8. Conclusions

- ▷ Social/political impact of economic shocks
- ▷ 1930s China as an ideal laboratory
- ▷ Support Friedman–Schwartz argument
- ▷ Social consequences are material

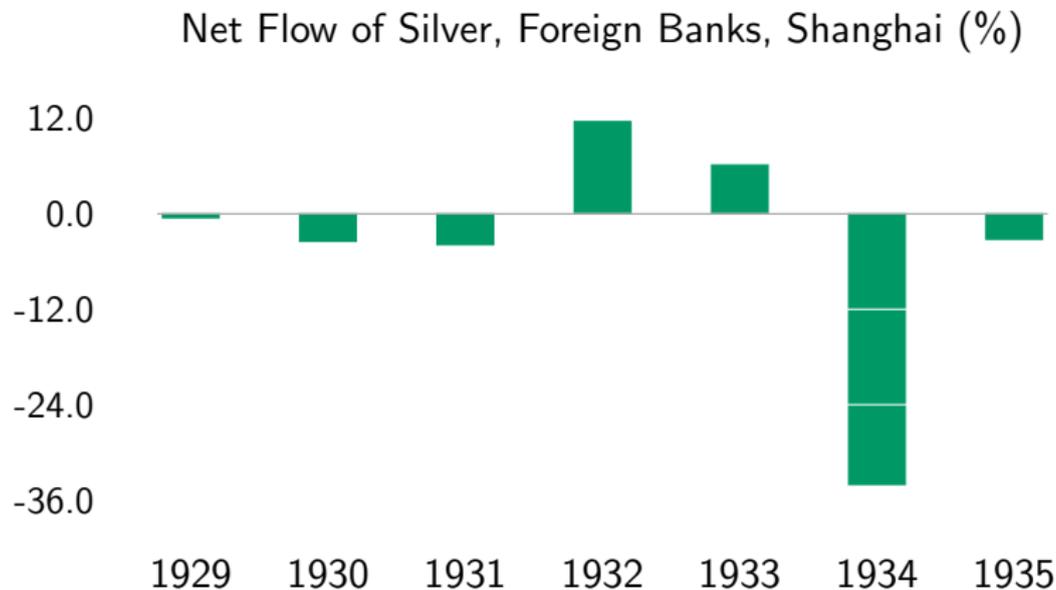
- ▷ 1931–1935 period of stable government & internal politics
- ▷ Only event: Japanese aggression of Manchuria (18 Sep 1931)
Early in the sample; pre-dates Silver Purchase by 2 years
- ▷ Any impact?
 - Not on credit-to-GDP
 - Not on Chinese Treasury bonds' spread to British Gilts
 - No banks have HQ in Manchuria; branches there account for only 2% of total
 - Only 1–2% of loans have Treasuries as collateral
 - Results robust to excluding Zhabei district firms, where Japanese interests concentrate



Source: Goetzmann, Ukhov, and Zhu (2007)



- ▷ Chinese government bond yield spreads to Gilts stable over 1931–35
- ▷ On average, yields on government debt actually slightly decline



Bank's problem:

$$\max \Pi(\sigma, S) \equiv \underbrace{r_L L + S + p_B B - N}_{\text{Exp. return on loans } L} - \pi \frac{\gamma}{2} \underbrace{[(1 - p_B)(1 - \sigma)N]^2}_{\text{Silver shortfall if "run"}}$$

with $N = \sigma S + (1 - \sigma)B$, $\sigma \geq \bar{\sigma} = 60\%$, and $r_L = \bar{r} - \alpha_L L$.

Solution yields:

$$\hat{\sigma} = \max \left\{ \bar{\sigma}, \left[1 + \frac{\bar{r} - 1}{S(1 - p_B)(\alpha_L + \pi\gamma)} \right]^{-1} \right\}$$

$$\text{If } \sigma > \bar{\sigma}: \hat{L} = \frac{\bar{r}-1}{\alpha_L + \pi\gamma}$$

$$\text{If } \sigma = \bar{\sigma}: \hat{L} = (1 - p_B) \frac{1 - \bar{\sigma}}{\bar{\sigma}} S$$

Silver Purchase program like $\Delta S < 0$; if shock turns bank from unconstrained to constrained:

$$\Delta \hat{L} = (1 - p_B) \frac{1 - \bar{\sigma}}{\bar{\sigma}} (S - \Delta S) - \frac{\bar{r} - 1}{\alpha_L + \pi\gamma}$$

Bank lending							
Silver	Silver× Traded	N	R ²	Excess Silver	Exc. silver× Traded	N	R ²
0.247 (0.076)	-0.071 (0.082)	233	0.86	0.109 (0.050)	-0.010 (0.040)	233	0.86
Labor unrest							
Silver pool	Silver pool× Traded	N	R ²	Excess Silver pool	Exc. silver pool × Traded	N	R ²
-0.612 (0.112)	0.436 (0.108)	1,743	0.14	-0.564 (0.100)	0.395 (0.097)	1,743	0.14
Communist penetration							
Silver pool	Silver pool× Traded	N	R ²	Excess Silver pool	Exc. silver pool × Traded	N	R ²
-0.208 (0.080)	0.177 (0.087)	1,500	0.24	-0.207 (0.075)	0.169 (0.081)	1,500	0.24

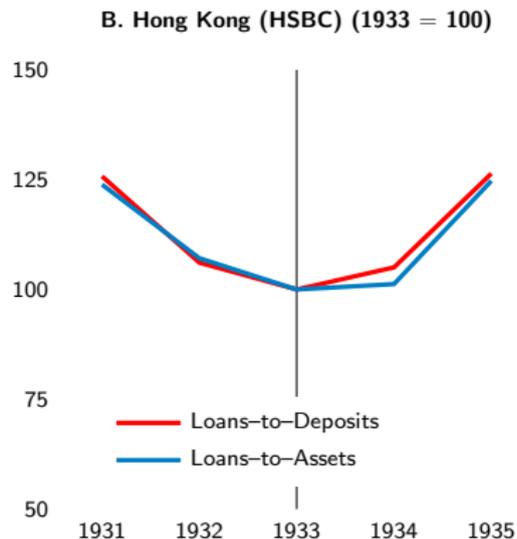
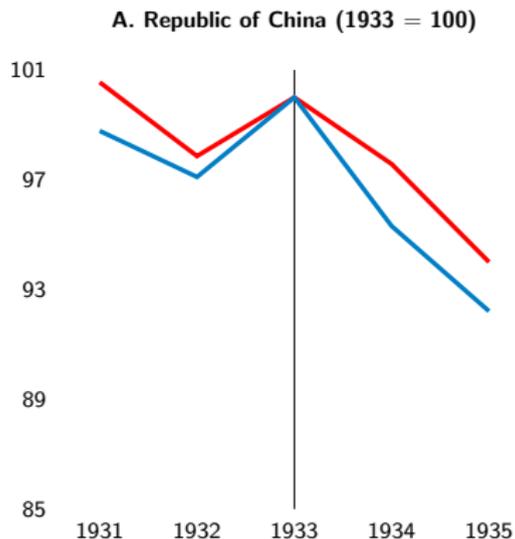
$$\Delta \log L_{fb} = \alpha_f + \beta \log \text{Silver}_{b,1931} + \gamma' \Delta x_{fb} + \varepsilon_{fb}$$

$$\begin{aligned}\Delta \log L_{fb} &= \alpha_f + \beta \log \text{Silver}_{b,1931} + \gamma' \Delta x_{fb} + \varepsilon_{fb} \\ \log \text{Silver}_{b,1931} &= \eta_f + \delta \text{Copper}_{b,1931} + \pi' \Delta x_{fb} + \xi_{fb}\end{aligned}$$

$$\begin{aligned}\Delta \log L_{fb} &= \alpha_f + \beta \log \text{Silver}_{b,1931} + \gamma' \Delta x_{fb} + \varepsilon_{fb} \\ \log \text{Silver}_{b,1931} &= \eta_f + \delta \text{Copper}_{b,1931} + \pi' \Delta x_{fb} + \xi_{fb}\end{aligned}$$

	OLS	IV		1 st stage	
	(1)	(2)	(3)	(4)	(5)
log Silver ₁₉₃₁	0.176 (0.057)	0.324 (0.193)	0.334 (0.109)		
Copper (w.a.)				-4.479 (0.853)	-4.872 (1.526)
Bank controls	Y	Y	Y	Y	Y
Firm f.e.	Y	N	Y	N	Y
R ²	0.86	—	—	0.57	0.58
N	229	229	229	229	229

	IV estimates (2 nd stage)					
	Labor unrest			Communist penetration		
log Silver pool ₁₉₃₁	-0.593 (0.273)			-0.141 (0.135)		
log Excess Silver pool ₁₉₃₁		-0.523 (0.242)			-0.125 (0.120)	
Exc. reserves (Y/N) (pool)			-1.874 (0.864)			-0.430 (0.414)
District, industry, nationality f.e.	Y	Y	Y	Y	Y	Y
N	1,743	1,743	1,743	1,500	1,500	1,500



	Relation (Y/N)	$\Delta \log(\# \text{ Unrest episodes})$		
	(1)	(2)	(3)	(4)
Distance	-0.018 (0.007)			
Silver		-0.027 (0.014)		
Excess silver			-0.024 (0.013)	
Excess reserves (Y/N)				-0.180 (0.085)
City f.e.	Y	Y	Y	Y
N	1,899	60	60	60
R ²	0.01	0.09	0.09	0.13