Community Banking in the 21st Century | Research and Policy Conference

Did capital requirements in the early 20th century United States promote bank stability?

Community Banking Research and Policy Conference

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Motivation

- Capital requirements are designed to promote bank stability
- Rethink capital requirements after financial crises

Challenges analyzing impact of capital requirements on bank stability

- Changes in capital requirements are often responses to ongoing economic events
  - Basel III following recent financial crisis
  - OCC raising minimum capital requirements following bank runs in 1933

- Estimating impact of capital requirements on bank outcomes may be biased

Strategy

- Structure of capital requirements for national banks in early 20th century United States provides an appropriate setting
  - Minimum Capital requirements graded according to town population
    - Amount of capital required doubles at specific population thresholds
  - Compare national banks in towns slightly above and below each population threshold
    - Study excludes state banks

Minimum capital required to establish and operate a national bank, by federal laws, 1865-1933

	Town Population			
	Population<3,000	3000□Population<6000	6000□Population<50000	50000□Population
1863-1900	$50,000	$50,000	$100,000	$200,000

*Source: OCC Annual Reports, 1900 and 1910; White, 1983; Banking Act of 1933

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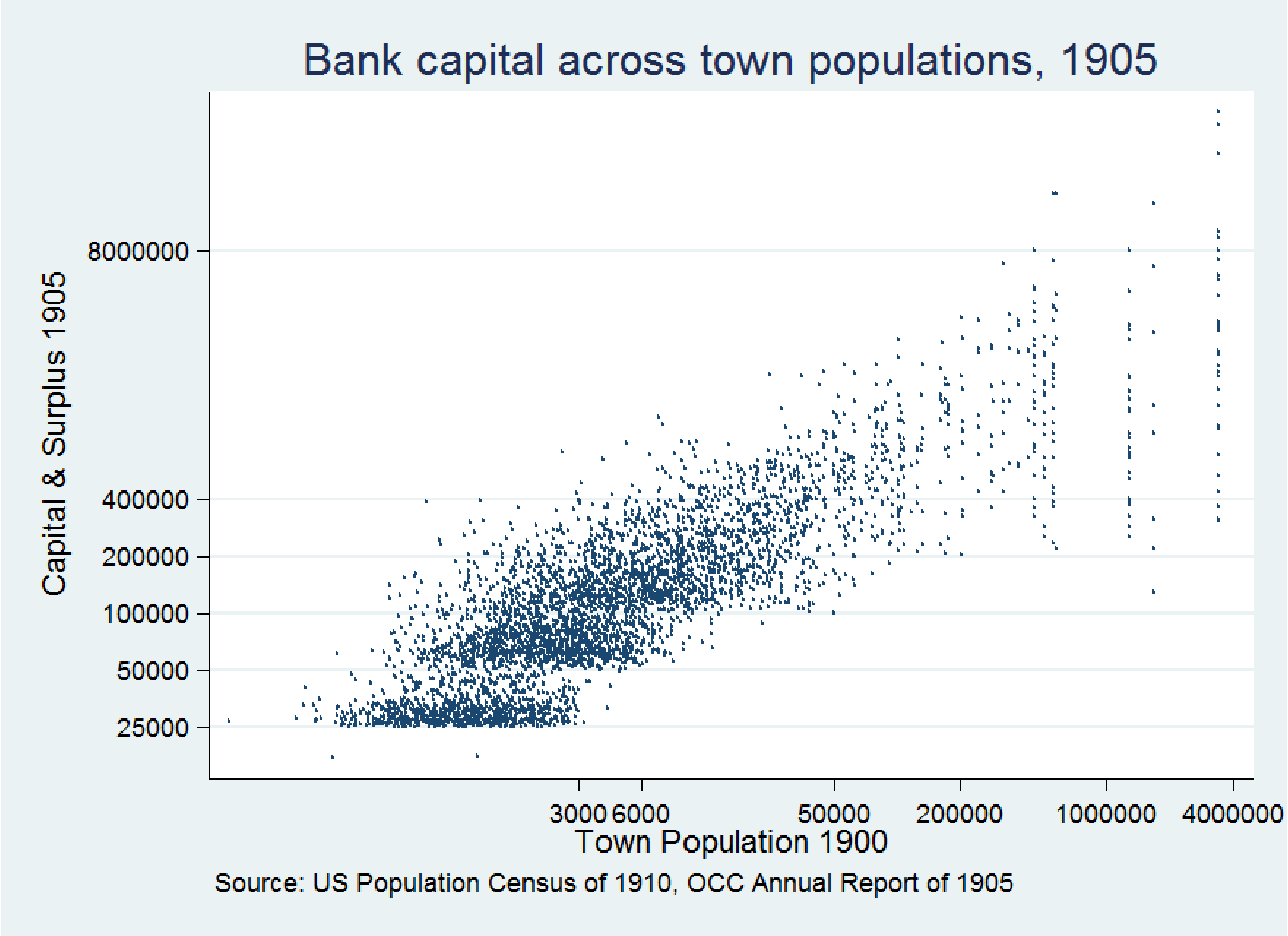
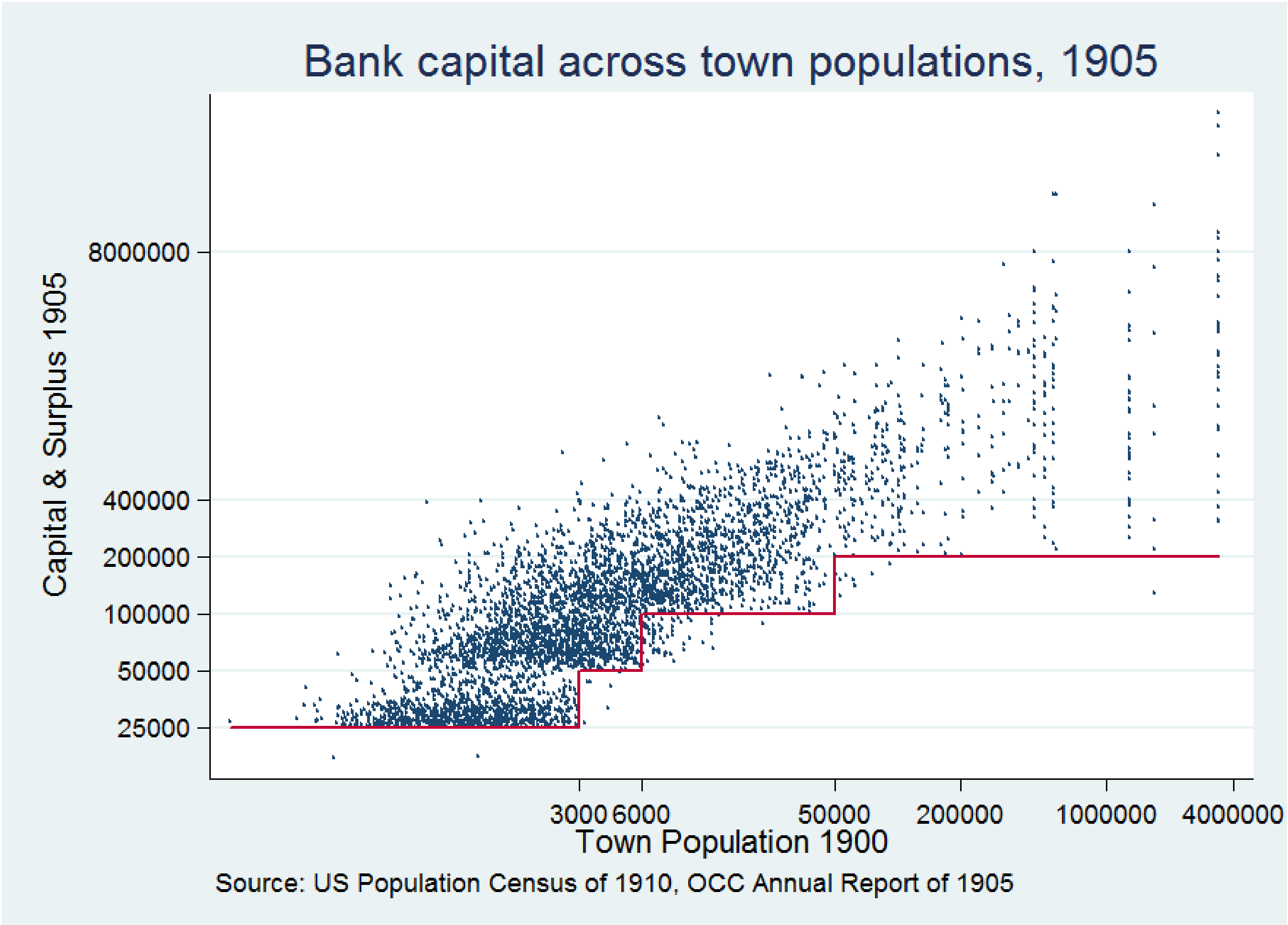

Bank capital across town populations, 1905
Capital & Surplus 1905
8000000
400000
200000
100000
50000
25000
3000 6000
50000
200000
1000000
4000000
Town Population 1900
Source: US Population Census of 1910, OCC Annual Report of 1905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8000000
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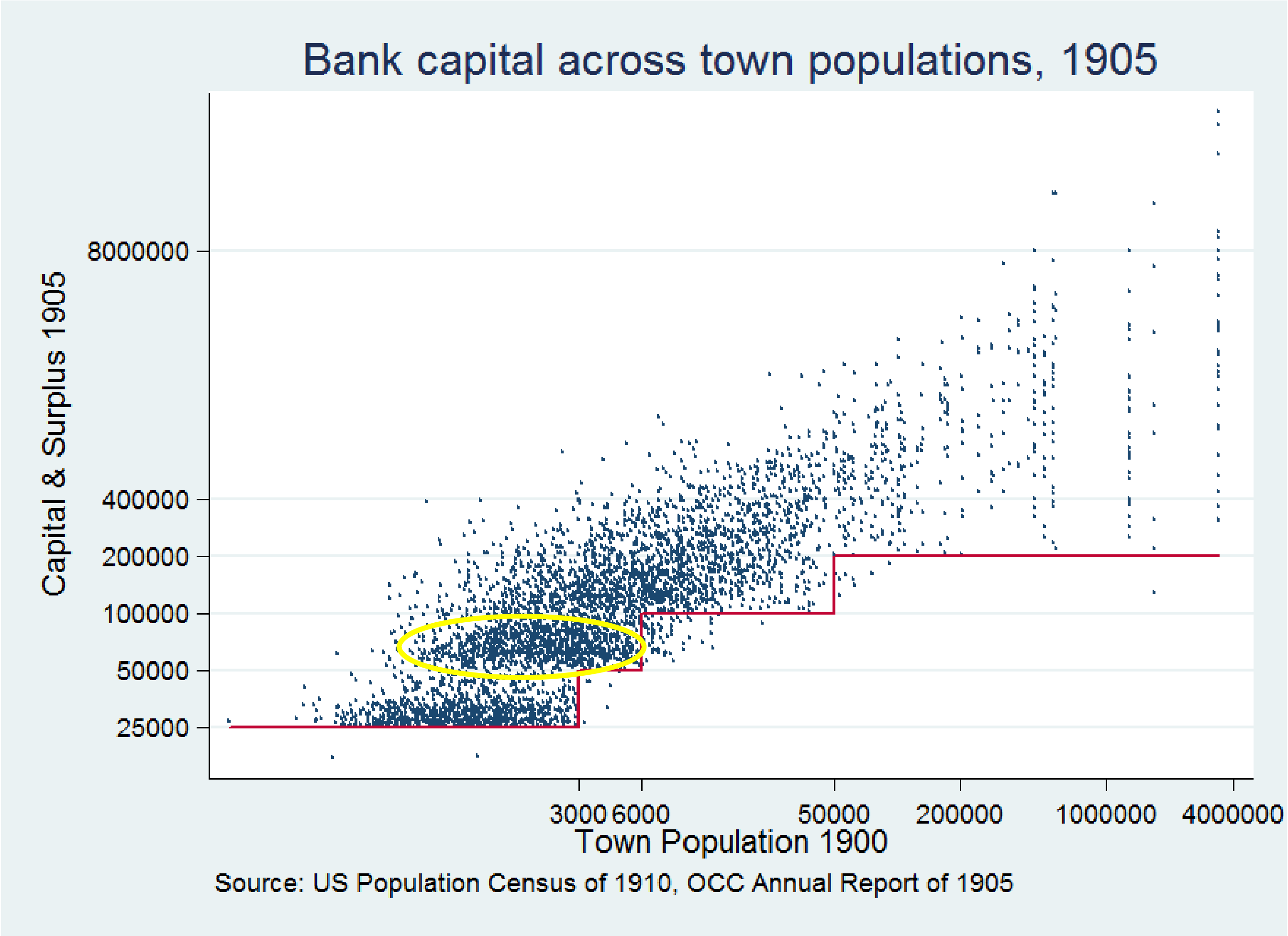
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8000000
400000
200000
100000
50000
25000
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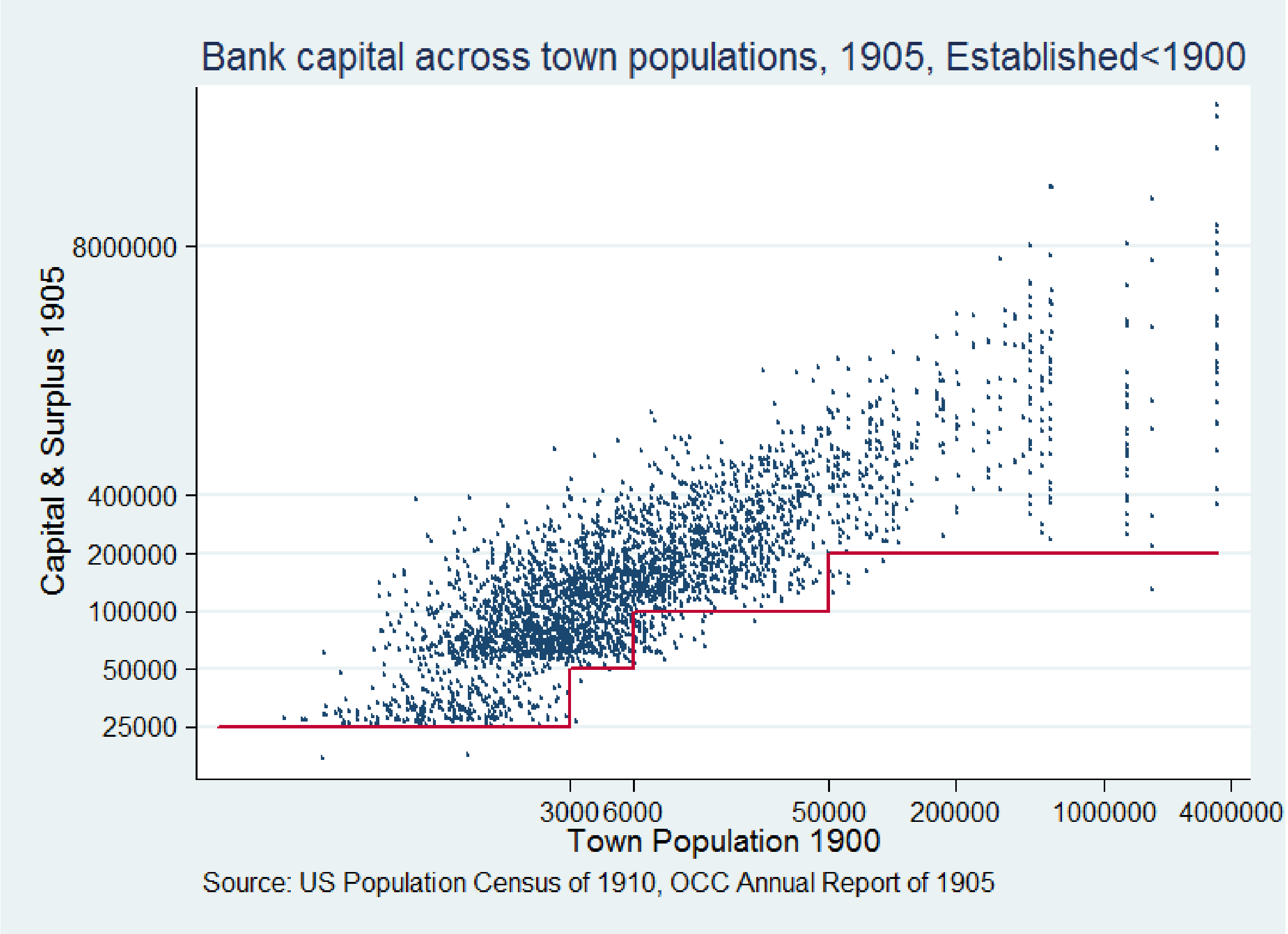

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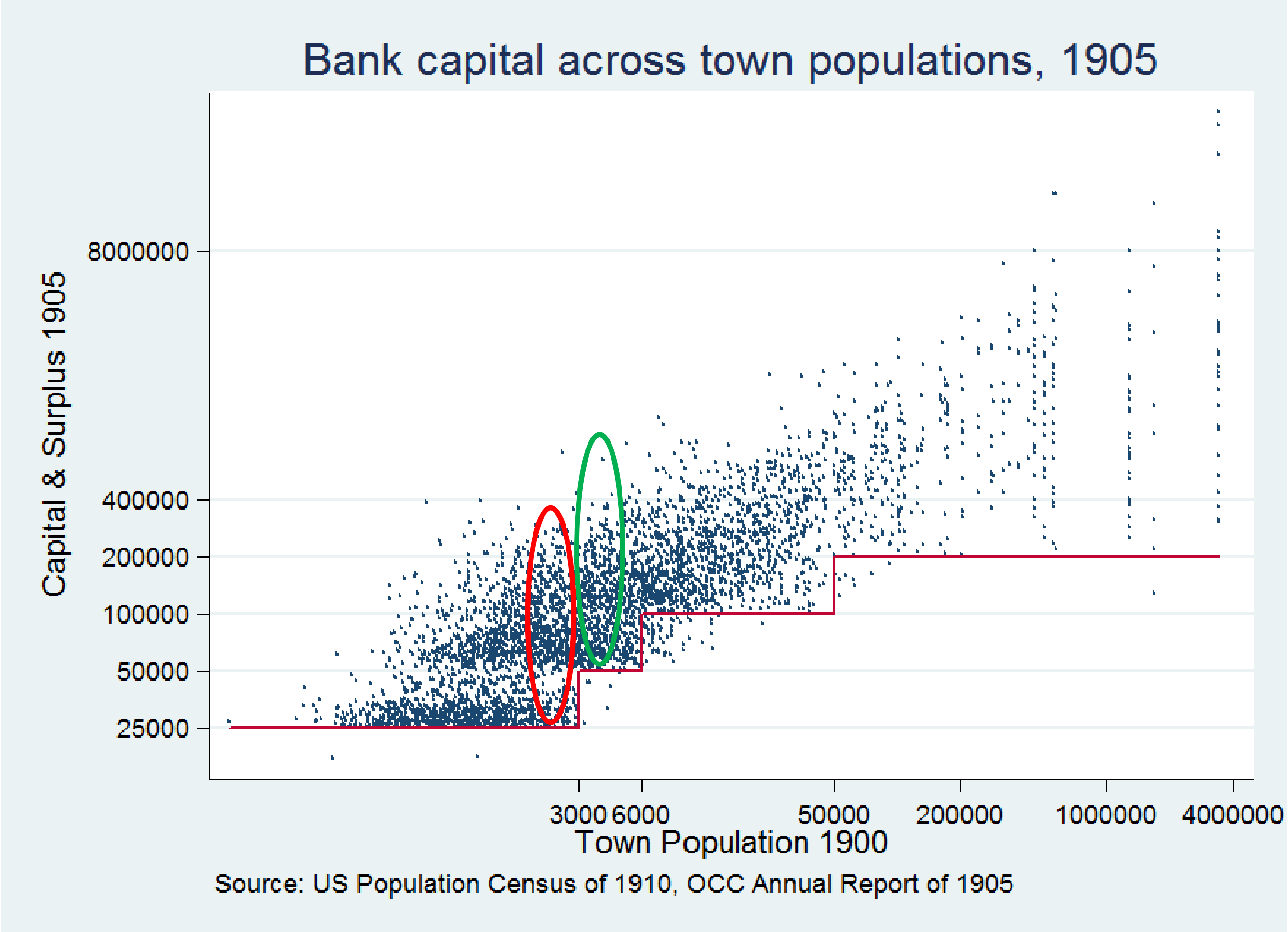
Bank capital across town populations, 1905
Capital & Surplus 1905
8000000
400000
200000
100000
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25000
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50000
200000
1000000
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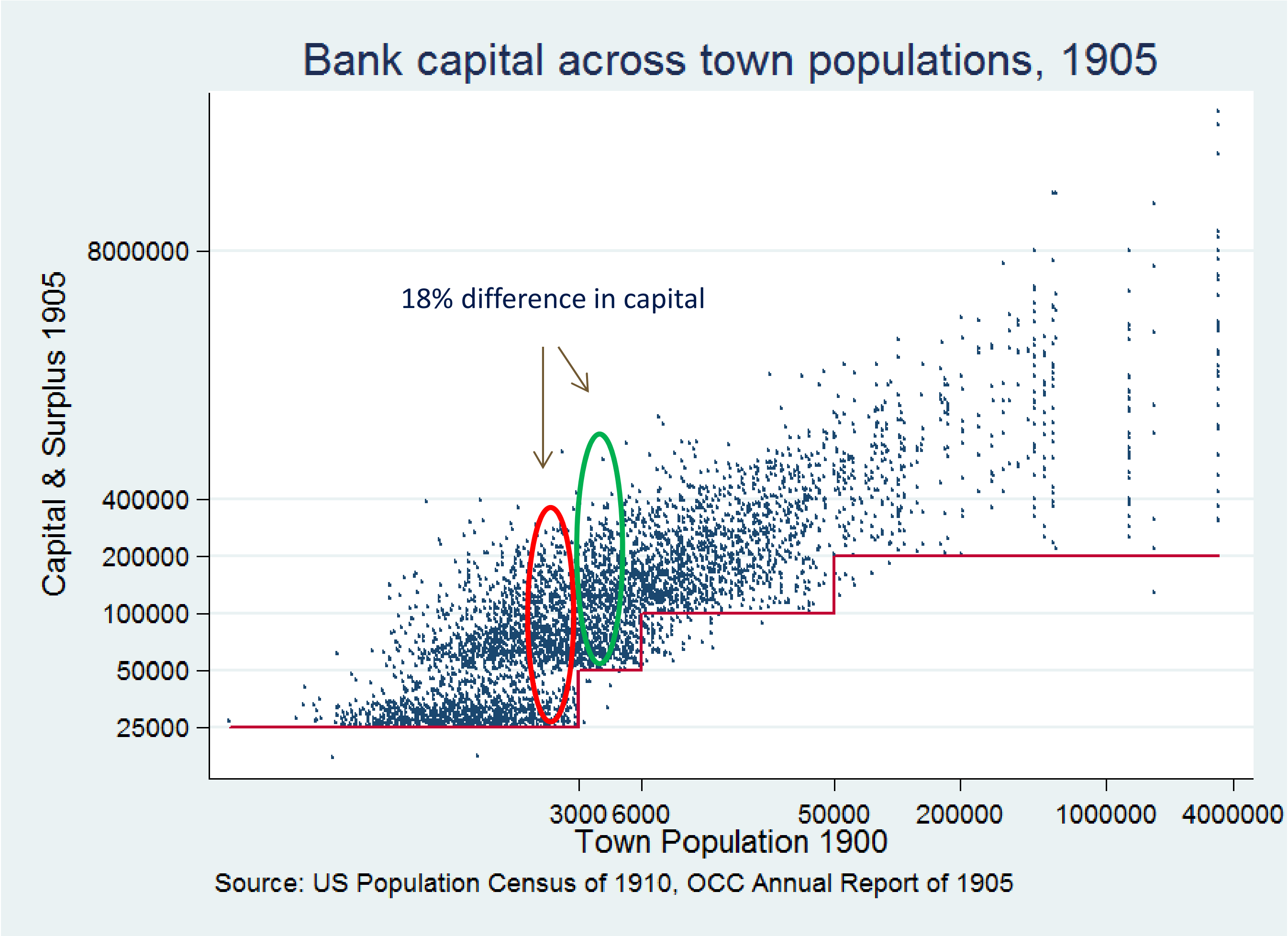
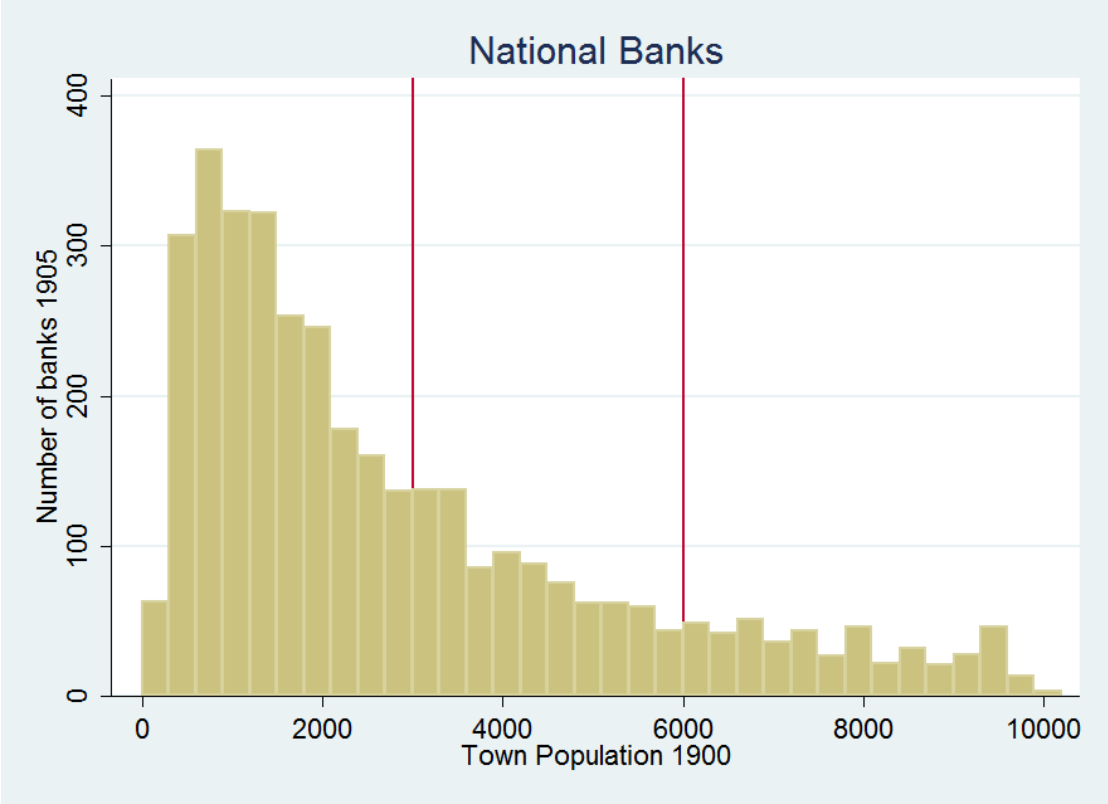

Bank capital across town populations, 1905
18% difference in capital
Capital & Surplus 1905
8000000
400000
200000
100000
50000
25000
3000
6000
50000
200000
1000000
4000000
Town Population 1900
Source: US Population Census of 1910, OCC Annual Report of 1905

Are banks choosing towns with lower capital requirements?



Methodology

- Estimate local polynomial regressions for bandwidth of ± 1000
  - Focus on lowest population cut-off of 3,000
    - "rural areas of the country" where "low population density required, numerous widely, dispersed banking offices" (White, 1983)
  - Data: Office of the Comptroller of the Currency, Rand McNally Bankers' Directory, US Population Census of 1910

$$BankOutcome_{bis} = \beta_0 + \beta_1 (Pop - 3000)_{bis} + \beta_2 1(Pop_{bis} \square 3000)_{bis} + \beta_3 Pop_{bis} 1(Pop_{bis} \square 3000)_{bis} + \varepsilon_{bis} \quad (1)$$

$$Pop_{bis} \in [2000, 4000]$$
$$b = bank, i = town, s = state$$

Results

Dependent Variable:	Log(Capital & Surplus)	Log(Assets)	Leverage	Loans/Assets	Suspension Rates
(Pop-3000)	0.0001	0.0002**	0.0001	9.72e-06	-0.000557*
	(8.42e-05)	(9.05e-05)	(0.0002)	(2.33e-05)	(0.000286)
1(Pop>3000)	0.18***	0.125*	-0.127	-0.0345	-0.108
	(0.068)	(0.074)	(0.199)	(0.0220)	(0.307)
(Pop-3000)*1(Pop>3000)	-2.06e-05	-7.06e-08	0.0002	2.32e-05	0.000726
	(0.0001)	(0.0001)	(0.0004)	(3.86e-05)	(0.000519)
Constant	11.11***	11.95***	3.597***	0.847***	-1.653***
	(0.081)	(0.086)	(0.286)	(0.0223)	(0.188)
State Effects	Yes	Yes	Yes	Yes	
Bandwidth	±1000	±1000	±1000	±1000	±1000
Observations	856	856	856	856	856
R-squared	0.242	0.203	0.18	0.267	

Notes: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Town Clustered Standard errors

Robustness checks and Extensions

- Observe impact for banks at lower end of capital distribution
- Different Bandwidths
- Falsification tests

Did minimum capital requirements promote bank stability?

- On average, banks subject to higher capital requirements hold 18% more capital
  - Results driven by banks operating at lower end of the capital distribution
    - Increase a bank's capital by 28% for banks operating in the bottom 10th percentile of capital distribution
- Find that banks subject to higher capital requirements did not experience lower leverage or suspension rates
  - Modest evidence of banks increasing their assets
- Minimum capital requirements did not prevent bank suspensions
  - Findings contribute to the explanation as to why the United States banking system was fragile and experienced more than 33 banking panics from 1863-1933 (Calomiris and Haber, 2014)

Policy Implications

- Minimum Capital Requirements
  - Require banks to be a certain size
  - Regulation too blunt and may not address the scope of risk a bank is engaging in
- Ratio Capital Requirements
  - Raising ratio requirements lead to asset shrinking instead of capital creation (Gropp et al, working paper)
    - Reduction in credit supply
- Need both types of capital regulation
  - Limit the scope of risk while maintaining the credit supply

Future Work

- Include State banks
  - State banks subject to different minimum capital requirements (among many other regulations)
    - Market concentration in towns close to population thresholds
    - Access to credit at the town level
  - Observe impact of capital requirements on economic growth