Regulation in Crisis: Bank Failures and Entry Barriers

Sarah Quincy

(Vanderbilt & NBER)

Chenzi Xu

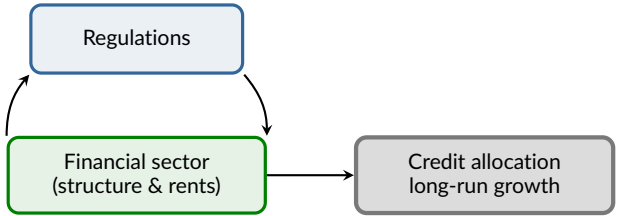
(UC Berkeley & NBER & CEPR)

May 2026

Motivation

- **Financial institutions** shape credit allocation and long-run development.

Motivation



- **Financial institutions** shape credit allocation and long-run development.
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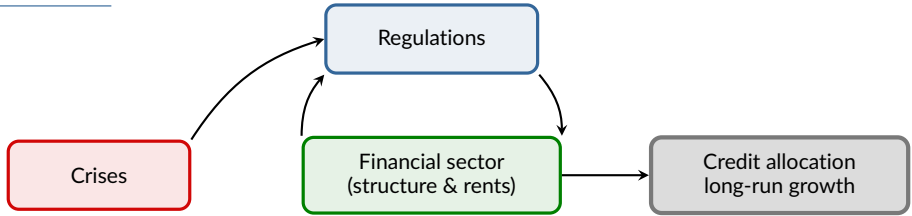

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  ⇒ Persistent: organized interests defend existing rules & reform requires costly recoordination
- **Crises** can disrupt this persistence:
  - *Counter-cyclical regulatory tightening*: demand for new, tighter rules (e.g., Polanyi 1944; Mian Sufi Trebbi 2014)
  - *Special interest entrenchment*: incumbents lock in advantage during disruptions (e.g., Calomiris Haber 2014)

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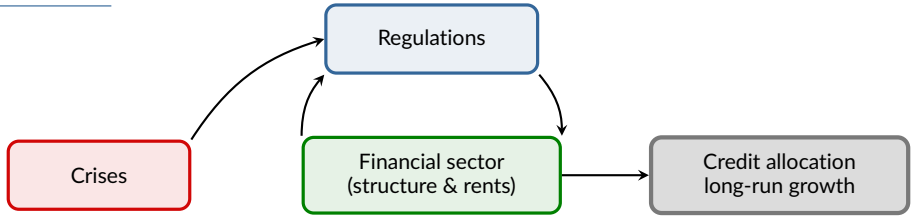

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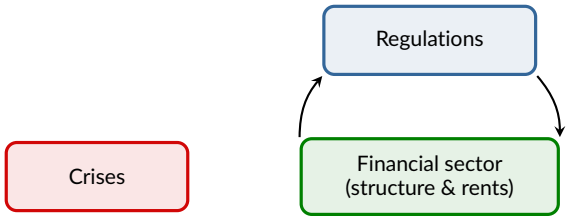
Crises are an exogenous shock to regulatory equilibria

This paper: Crisis severity & response endogenous to financial sector structure



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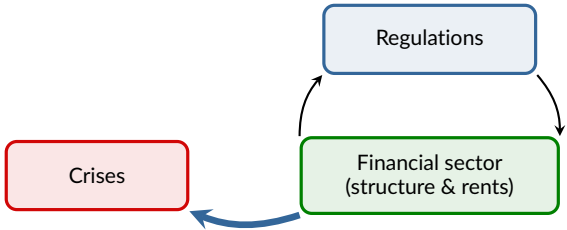

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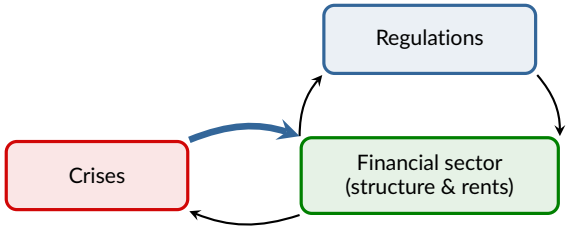

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2. Affects financial sector structure & rents

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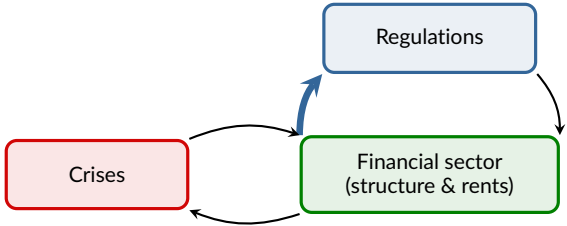

1. Financial sector structure impacts crisis severity
2. Affects financial sector structure & rents
3. Reshapes regulations

Empirical challenges

- Crises rare & affect entire countries
- Regulations complex so cross-country differences difficult to interpret

$\Rightarrow$ Macro-historical panel approaches may not identify how crises affect regulation

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1. **Pre-crisis variation in regulation** across otherwise similar political and economic environments
2. **Transparent** regulatory environment
3. **Direct measures** of regulatory preferences

Setting: U.S. around Great Depression

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Ideally:

1. **Pre-crisis variation in regulation** across otherwise similar political and economic environments $\rightarrow$ state-level governance
2. **Transparent** regulatory environment $\rightarrow$ few regulatory tools
3. **Direct measures** of regulatory preferences $\rightarrow$ Voter referendum on banking regulations

This paper

1. **Create new legal database to establish the key stylized facts**
   - Regulations on bank entry barriers **tightened** during 1920s boom and **loosened** after onset of Great Depression
     - ⇒ *not counter-cyclical regulatory tightening*
   - Largest changes in places with **more severe** crises (higher bank failure rates)
     - ⇒ *not special interest entrenchment*
   - Significant variation across & within states
     - ⇒ *local* market conditions shape regulatory outcomes

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2. **Develop a model where regulation shapes both the crisis and the interests behind regulation**
   - Local markets maximize welfare (credit access + banking sector profits) by choosing regulatory entry barriers
   - Crisis + entry barriers determine bank failure rates and sector profits
   - Profit erosion → regulatory reversal toward credit access.

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3. **Evaluate the mechanism in the Great Depression setting** with legislative, referendum, and household data

Related literature

1. **Determinants of regulation**:
   New theory with endogenous interest groups → rents' resilience determines regulation
   - **The regulatory cycle:** Abiad and Mody (2005); Coffee (2010); Dagher (2018)
   - **Trends in (de)regulation:** Stigler (1971), Peltzmann (1976, 1989), Kroszner and Strahan (1999, 2001, 2014); Rosen (2003); Abiad, Detragiache, and Tressell (2010); Benmelech and Moskowitz (2010); Mian, Sufi, and Trebbi (2010, 2014); Rajan and Ramcharan (2011, 2016)

2. **US state banking regulation in history**:
   Capital requirements ↑ → unit banking lobby ↓ → (incomplete + delayed) branching
   - **Determinants of regulation:** White (1982, 1985); Calomiris & Gorton (1991); Calomiris (2000); Calomiris & Haber (2014); Rajan & Ramcharan (2011, 2016); Jaremski & Fishback (2018)
   - **Crisis effects:** Wheelock (1992, 1993); Mitchener (2005, 2007); Carlson & Mitchener (2006, 2009); Das, Mitchener & Vossmeyer (2022); Quincy (2024)

3. **Economic effects of bank entry regulation**:
   Economic interests' realignment in crisis → regulatory response, recovery
   - **Branching:** Célérier & Matray (2019); Fonseca & Matray (2024); Quincy & Xu (2025)
   - **Capital requirements:** Carlson, Correia & Luck (2022); Xu & Yang (2024)

Outline

Background and data

Stylized Facts

Model of Bank Entry Regulation

Empirical Evidence

A brief primer on US banking entry regulation

States **regulate entry** with two tools:

1. Capital requirements: minimum equity to obtain a charter

2. Branching restrictions: geographic scope of bank entry

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   - *Credit access:* higher costs reduce number of banks
   - *Prudential:* higher costs create larger equity buffers that reduce failure risk
   - *Protectionist:* higher costs shield incumbents from competition

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2. Branching restrictions: geographic scope of bank entry

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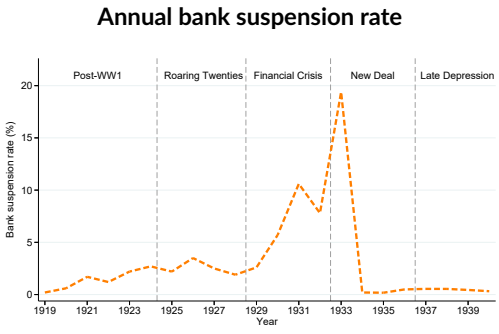
2. Branching restrictions: geographic scope of bank entry
   - 1920s: thousands of independent unit banks
   - McFadden Act (1927): still rare but discussed at state level

Eras of change in the 1920s and 1930s



Source: Bank counts and suspension rates via Correia, Luck, and Verner (2026) and FDIC.

Boom

1. Post-WW1 (1921–24)
2. Late Twenties (1925–Sept.1929)

Crisis

3. Financial crisis (Oct.1929–Feb.1933)
4. New Deal (Mar. 1933–1936)
5. Late Depression (1937–40)

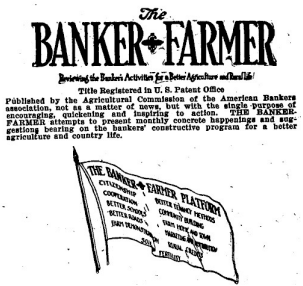
Two forces shape local banking regulation alliances, 1919–40

Ownership interests

+ **Boom:** Local rents — banks as community institutions, aligned with local wellbeing

Credit access

+ **Boom:** banks smooth local shocks — temporary disruption, credit restored


The
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THE BANKER-FARMER PLATFORM

Banker Farmer, 1921

LESS than a year ago the Comptroller of the Currency, in addressing the Maryland Bankers Association, said:

"If I were asked to pick out a single type of institution which has contributed most to local community independence and thereby to the foundation of our national development, I should choose the unit bank. It is the most representative of the genius of the American people."

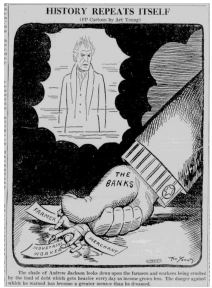
Bankers' Magazine, 1930

Two forces shape local banking regulation alliances, 1919–40

Ownership interests

+ **Boom:** Local rents — banks as community institutions, aligned with local wellbeing

– **Crisis:** rents erode — failures wipe out channeled wealth; locals turn on banks

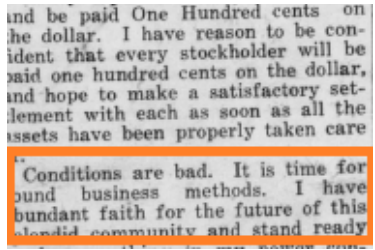


American Guardian (OK), 1933

Credit access

+ **Boom:** banks smooth local shocks — temporary disruption, credit restored

– **Crisis:** severs credit permanently — bank failure ends local lending



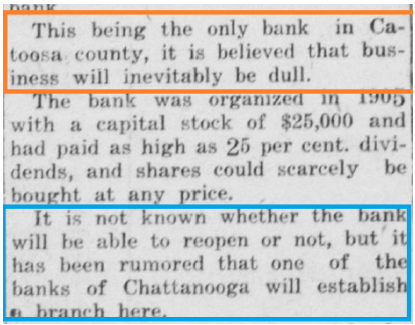
nd be paid One Hundred cents on
he dollar. I have reason to be con-
ident that every stockholder will be
aid one hundred cents on the dollar,
nd hope to make a satisfactory set-
lement with each as soon as all the
ssets have been properly taken care

Conditions are bad. It is time for
ound business methods. I have
undant faith for the future of this
lendid community and stand ready

Summerville (GA) News, 2/12/31

When credit becomes inaccessible, branching becomes an alternative

“Business will inevitably be dull"

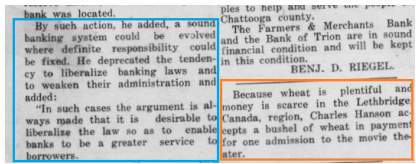


This being the only bank in Catoosa county, it is believed that business will inevitably be dull.

The bank was organized in 1905 with a capital stock of $25,000 and had paid as high as 25 per cent. dividends, and shares could scarcely be bought at any price.

It is not known whether the bank will be able to reopen or not, but it has been rumored that one of the banks of Chattanooga will establish a branch here.

“Wheat is plentiful but credit is scarce"



bank was located.

By such action, he added, a sound banking system could be evolved where definite responsibility could be fixed. He deprecated the tendency to liberalize banking laws and to weaken their administration and added:

"In such cases the argument is always made that it is desirable to liberalize the law so as to enable banks to be a greater service to borrowers.

ples to help and serve the people of Chattooga county.

The Farmers & Merchants Bank and the Bank of Trion are in sound financial condition and will be kept in this condition.

BENJ. D. RIEGEL.

Because wheat is plentiful and money is scarce in the Lethbridge Canada, region, Charles Hanson accepts a bushel of wheat in payment for one admission to the movie theater.

Sources: Newspaper clippings from *The Summerville (GA) News* 3/3/27, 2/12/31.

Data

- **Legal data**: New, granular coverage of all state banking laws in period
  - Capital: *all* capital amounts and thresholds from state session laws. 1910–onward
  - Branching: geographic, competition restrictions from state session laws, 1910–onward Example
  - All other banking laws: digitize, harmonize archival Library of Congress reports on all laws Process

Outline

Background and data

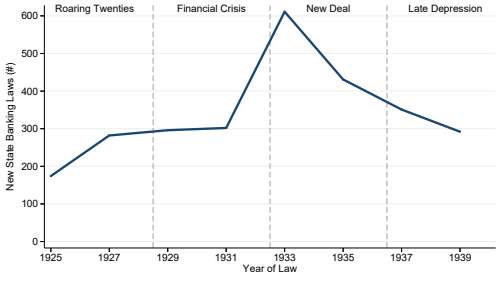
Stylized Facts

Model of Bank Entry Regulation

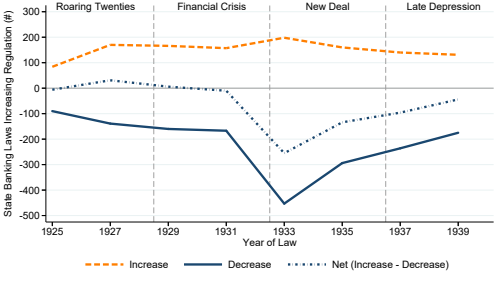
Empirical Evidence

1: Great Depression led to a lot of changes in financial regulation

Number of new banking laws

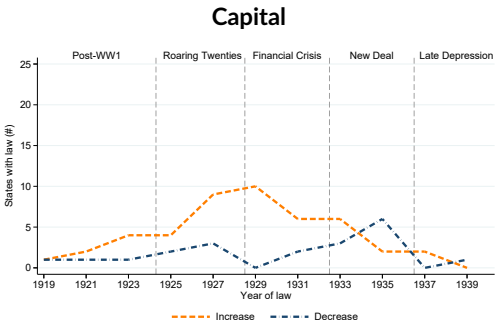


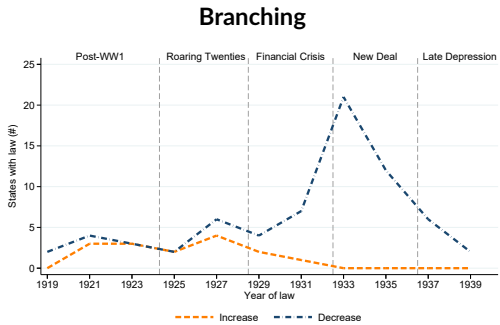
Number of law changes by direction



Sources: Library of Congress *State Law Index: An Index and Digest to the Legislation of the States of the United States Enacted During the Biennum*, 1925–1939. Laws decreasing regulation coded as $-1\times$ increase in regulation.

2: New state bank entry regulations vary by time and type





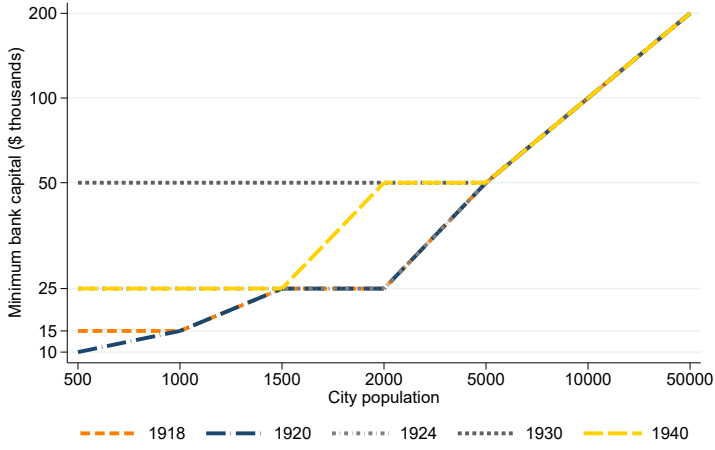
Sources: State session laws. Regulation refers to a rise in bank capital requirements or restriction on branching. Deregulation includes lowering capital requirements or relaxing branching restrictions.

Importance of *local* bank capital requirements

- Capital requirement laws specify minimum paid-in capital as a **step function of city population**
  - e.g., "communities of 3,000 or less: minimum $25,000" Full law
- Hand-collect *full* statutory schedules (all thresholds and amounts) for all states, 1910–1940
- Assign each incorporated place i its applicable requirement ($K\left(P_{i,}\right)$) using closest preceding census population P_i (crosswalks from Bleemer & Quincy 2026)
- Compute **minimum capital per capita** for each place; aggregate to county level c:
  $\text{median}_{i \in c}\left(\frac{K\left(P_{i,}\right)}{P_{i,}}\right)$

→ The same **state capital law** can imply very different **local entry costs** based on city-size distributions

Illinois example: five state laws, different local implications

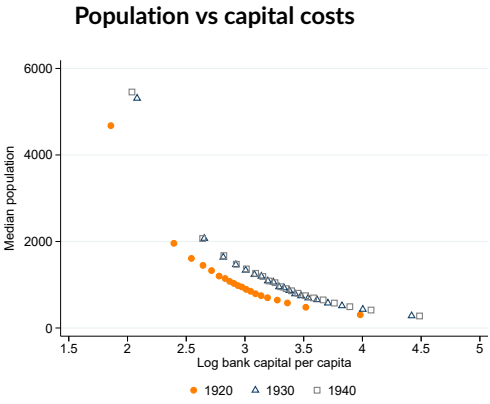


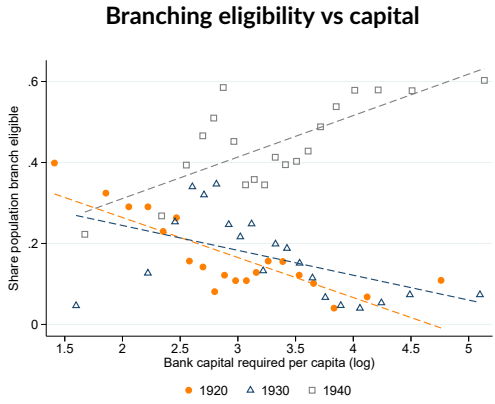
Sources: Illinois state session laws.

Colorado

Alabama

3: Regulatory equilibria changed **within states** during crisis





Sources: State session laws, IPUMS (2021), Bleemer and Quincy (2025), and Quincy and Xu (2025). Counties omitted if no incorporated places eligible for capital or if state lacked capital requirements (AZ, DE, NH, VT). Map Deposit Insurance Constant population

Recap of stylized facts

Financial regulation is discrete & decentralized$\rightarrow$ identify *how* crisis changes entry regulation:

- Both 1920s and 1930s are periods of heightened financial regulatory activity, but not always counter-cyclically
- In the 1930s, however, type of regulatory change shifts from capital to branching
- The largest swings occur in smaller, more locally concentrated markets

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Local market conditions predict **where, when, and how** regulatory equilibria change

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Empirical Evidence

Model set-up

Bank entry regulatory choices reflect market fundamentals and macro state:

1. Banking market *r* chooses bank entry policies: capital (e) and branching (b) to maximize expected welfare $\rightarrow$ different regulatory choices ($e \rightarrow \uparrow$ profit, not lending, $b \uparrow \rightarrow$ lending not profit)

Regulation $\times$ shock realization $\rightarrow$ **market**

survival

Model set-up

Bank entry regulatory choices reflect market fundamentals and macro state:

1. Banking market r chooses bank entry policies: capital (e) and branching (b) to maximize expected welfare
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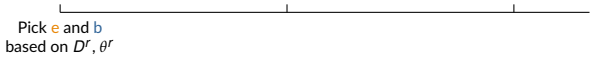

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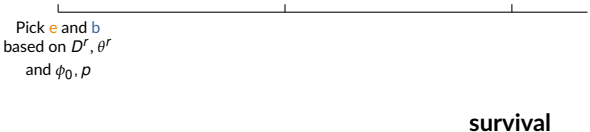

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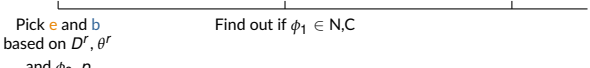

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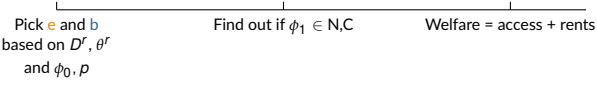

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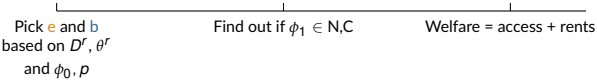

Regulation $\times$ shock realization $\rightarrow$ **market survival**

Note: we abstract from lobbying or the political process

Crisis policy changes vary by local fundamentals: example

R (R) = high θ^r, low D^r ; **Urban** (U) = low θ^r, high D^r

	Non-crisis (ϕ low)
Rural	**Rents dominate** Concentrated ownership + low credit demand + low failure risk $\rightarrow$ profits large, safe $\Rightarrow$ High capital, unit banking
Urban	**Access dominates** Diffuse ownership + high credit demand $\rightarrow$ markup costs outweigh ownership gains $\Rightarrow$ Low capital, branching

Crisis policy changes vary by local fundamentals: example

R (R) = high θ^r, low D^r ; **Urban** (U) = low θ^r, high D^r

	Non-crisis (ϕ low)	**Crisis** (ϕ high)
Rural	**Rents dominate** Concentrated ownership + low credit demand + low failure risk $\rightarrow$ profits large, safe $\Rightarrow$ High capital, unit banking	**Access dominates** Failure risk $\uparrow$ $\rightarrow$ rents discounted by survival; replacement blocked by high capital $\Rightarrow$ Support branching
Urban	**Access dominates** Diffuse ownership + high credit demand $\rightarrow$ markup costs outweigh ownership gains $\Rightarrow$ Low capital, branching	**Access dominates (reinforced)** Stability benefits of branching amplified — preference unchanged $\Rightarrow$ Branching, capital rises

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Rent-regulation feedback loop breaks if welfare from Δaccess > Δ rents in crisis

Four propositions to test empirically

1. **Prop 1 (Rent-regulation feedback loop raises entry barriers):**
   When crises are unlikely, high ownership + low demand → push capital above fragility optimum to deter entry

   → Rural coalitions raise capital requirements in the 1920s

2. **Prop 2 (Increasing entry barriers worsens credit shortages in crisis):**
   Where entry barriers had grown most, so had fragility and crises lead to banklessess

   → Counties with higher pre-crisis capital rises see larger banking declines

3. **Prop 3 (Losing credit and rents changes opinions about regulatory framework):** Branching stability gains are highest in the same regions once low bank survival probabilities discount ownership rents

   → Rural constituencies reverse in the 1930s, strongest where banking distress severe

4. **Prop 4 (Crises create new regulatory regime where rents collapsed the most):** Branching preferred to changing capital in crisis because lowers fragility and increases credit access

   → States respond via branching, not capital rollback

Assumption 1 Proofs

Outline

Background and data

Stylized Facts

Model of Bank Entry Regulation

Empirical Evidence

How do local interests affect financial regulation?

Goal: test how rents and credit access shape regulation **before** and **after** the crisis

Approach: Δ bank entry laws within a place, by ownership concentration & bank suspension rates

- **Local capital requirements** — vary across counties (city sizes $\times$ state laws) and within counties over time (state laws change)
- **Ownership concentration** — more *rural* markets concentrate bank ownership
- **Variation:** within-location, within-era

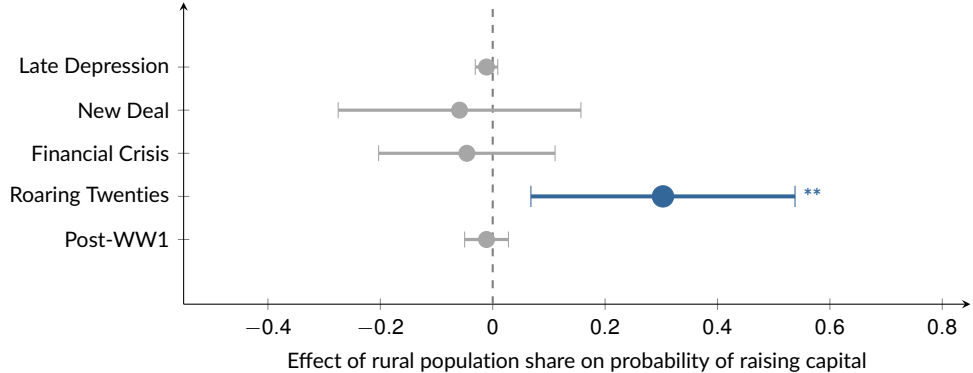
Data

Combine bank entry cost panel with data on **local support for banking laws**

- State- and county-level banking and economic characteristics, 1920–1940
  - Sources: FDIC (1991), Haines (2010)
- Illinois county-level voting returns on all bank entry laws, 1920–1940
  - Source: Illinois Blue Books

1. Rent-regulatory feedback loop → ↑ entry barriers in remote areas

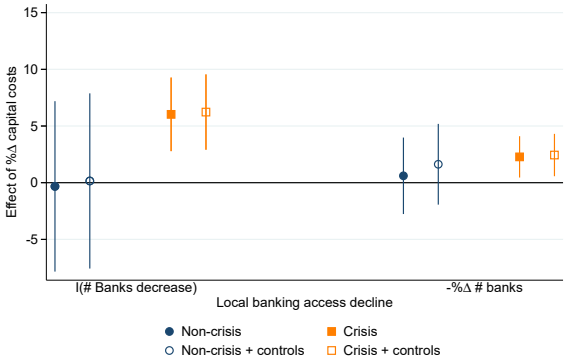
$$I\{\text{Capital Law}_{s,t}\} = \alpha_s + \alpha_t + \sum_t \beta_t \left(\text{Rural}_s \times I\{\text{Era}_t\}\right) + \Gamma' X_{s,t} + \varepsilon_{s,t}$$



Notes: Coefficients on rural population share (places under 2,500) from Table B.1, estimated separately by era. Horizontal lines show 95% confidence intervals. Effect is large and significant only during the Roaring Twenties boom. Sources: State session laws; Haines (2010); Bleemer & Quincy (2026). Model prediction

2. Rising capital requirements → ↑ replacement costs in crisis

$$\Delta Y_{c,t} = \alpha_c + \alpha_t + \beta_N T_{c,t-1} \times I\{\text{NonCrisis}_t\} + \beta_C T_{c,t-1} \times I\{\text{Crisis}_t\} + \varepsilon_{c,t}$$



Specification:

- c = county, t = era
- Outcome: bank closures and % decline in bank count (higher = worse access)
- Treatment $T_{c,t-1}$: indicator for county's median capital requirement *increasing* in prior period
- α_c, α_t: county and era fixed effects
- Plot shows $\hat{\beta}_N$ (blue) and $\hat{\beta}_C$ (orange) with 95% CI

Access costs of the protectionist equilibrium led to realignment

Model prediction

Direct evidence on voter preferences: Illinois banking referenda

- **The identification problem:** Most studies infer public support for regulation from legislator voting
  - Most state legislatures do not track votes on bills
  - Even where they do, unclear whether legislators respond to constituents or to lobbyists

  → Cannot distinguish public interest from private interest in regulatory outcomes

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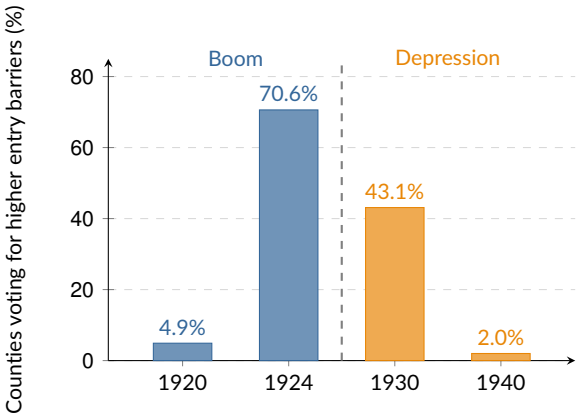
- **Illinois is different:** 1871–1940, all changes to bank capital laws ratified by **referendum**
  - Directly observes voter preferences — no inference from legislator behavior
  - Four capital referenda spanning both sides of the Depression: 1920, 1924, 1930, 1940
  - County-level yes/no returns digitized from Illinois Blue Books
  - Cross-county variation: each proposal affects different population bins, so exposure to higher costs varies by county's city size distribution Time series

3. Support for higher entry barriers grew in 1920s but fell in 1930s

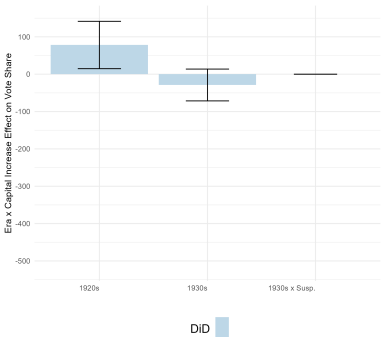


Rise and fall of support:

- Each bar = share of Illinois counties where a majority voted *in favor of* raising entry barriers
- **1924**: nearly three quarters of counties supported higher barriers at the peak of the boom
- **1940**: virtually no county supported higher barriers after a decade of Depression

3. Support for higher entry barriers **reverses**

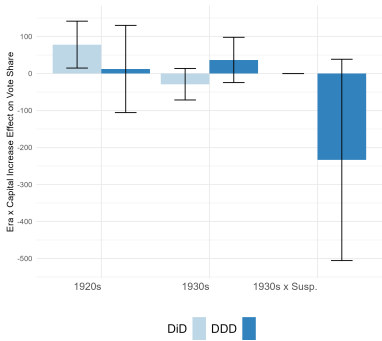
$$Support_{c,e} = \alpha_c + \alpha_e + \beta_{\text{Non-crisis}}\left(T_{c,e} \times \mathbb{I}\{\text{Non-crisis}_e\}\right) + \beta_{\text{Crisis}}\left(T_{c,e} \times \mathbb{I}\{\text{Crisis}_e\}\right) + \Gamma' Z_{c,e} + \varepsilon_{c,e}$$



- Counties *most exposed* to higher costs of capital support them in 1920s
- But not in the 1930s

3. Support for higher entry barriers **reverses** where there were disruptions

$$Support_{c,e} = \alpha_c + \alpha_e + \beta_{\text{Non-crisis}}\left(T_{c,e} \times \mathbb{I}\{\text{Non-crisis}_e\}\right) + \beta_{\text{Crisis}}\left(T_{c,e} \times \mathbb{I}\{\text{Crisis}_e\}\right) + \Gamma' Z_{c,e} + \varepsilon_{c,e}$$



- Counties *most exposed* to higher costs of capital support them in 1920s
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  - Driven by locations with bank suspensions in the past year
  - Where general elections scheduled regardless of current economic conditions

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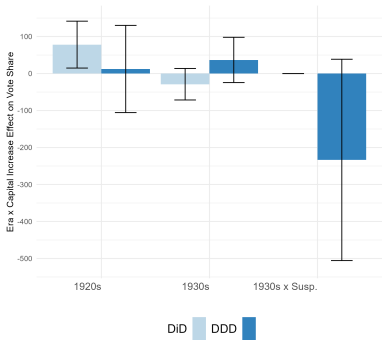

Model prediction

- Counties *most exposed* to higher costs of capital support them in 1920s
- But not in the 1930s
  - Driven by locations with bank suspensions in the past year
  - Where general elections scheduled regardless of current economic conditions

→ Same rural constituencies built and dismantled protectionism when credit access fell

4. Regulatory shifts arose where entry barriers and access **changed most**

	Share ↑ branching access		I(Branching access ↑)	
	(1)	(2)	(3)	(4)
A: Change in entry costs				
$\beta_{\text{Non-Crisis}} \times$ %ΔCapital$_t$	4.40***	4.54***	5.10***	5.25***
$\beta_{\text{Crisis}} \times$ %ΔCapital$_t$	22.68***	22.64***	29.02***	28.98***
B: Change in credit access				
$\beta_{\text{Non-Crisis}} \times$ I(Unbanked)$_t$	-15.77**	-15.91**	-13.60*	-13.74*
$\beta_{\text{Crisis}} \times$ I(Unbanked)$_t$	15.48***	15.32***	15.21***	15.05***
County FE	Y	Y	Y	Y
Era FE	Y	Y	Y	Y
Population		Y	Y	Y
Farm controls		Y		Y

Non-crisis effects **much smaller** throughout

Capital costs in 1920s explain ≈**50%** of branching expansion in 1930s

Bankless counties: **15pp** increase vs. **9.6 pp** baseline

Notes: Cols (1),(2): share of population gaining branching access. Cols (3),(4): indicator for any branching access. Standard errors clustered at county level. Sources: State session laws; Haines (2010); FDIC (1992); Ruggles et al. (2021); Bleemer & Quincy (2026).

Model prediction

Recap of equilibrium shift

1. **Rent-regulation feedback loop reinforced by increasing entry barriers**
   - Rural coalitions drove capital increases in the 1920s but not during/after broader financial crisis
2. **Protectionist equilibrium leads to lower credit access in the crisis**
   - Capital requirements blocked bank entry during the Depression worsening banking access collapse
3. **Losing credit in the crisis changes opinions about prior regulatory framework**
   - Voters reversed support for raising entry barriers most strongly when banks suspended in crisis
4. **New regulatory regime arises where credit access and entry barriers changed the most**
   - States responded via branching, not capital rollback in counties where feedback loop had been strongest

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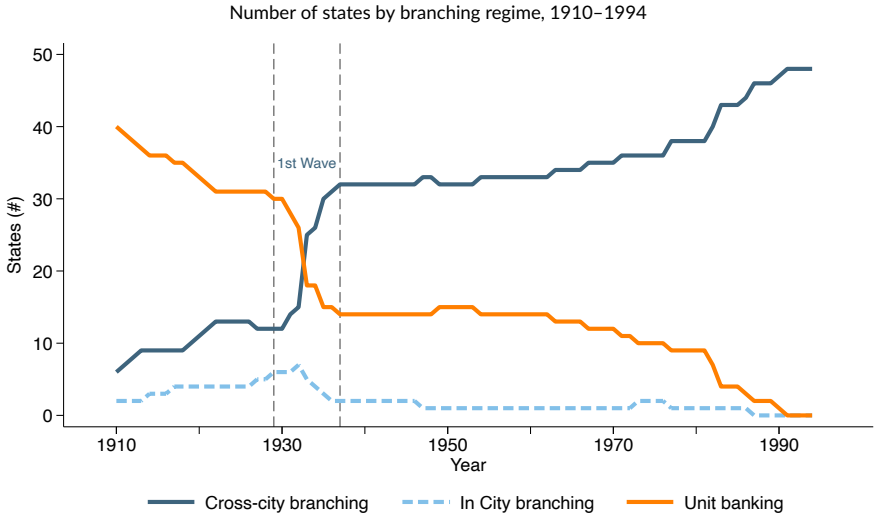
The Depression reconfigured regulation to protect credit access as other motives disappeared

Persistent new bank entry regimes→ cross-state divergence



Conclusion

- Great Depression pushed US states into two different regulatory equilibria:
  - Incomplete branching deregulation reflected local trade-off between credit access and protectionism
  - When banking access became sufficiently fragile, new banking forms emerged
- Taking a dynamic approach to rents and regulation clarifies when and how regulation changes:
  - Some financial crises $\rightarrow$ deregulation (1890s) while others $\rightarrow$ overhaul (Depression)
  - Key determinant of regulatory change: whether protectionism still provides credit access

Crises can disrupt regulators and special interests to create new legal framework

Thank you!

sarah.quincy@vanderbilt.edu

State branching laws contained many conditions for potential branches

Territorial limitations.

Sec. 66. Branch banks may be established within a radius of one hundred miles of the parent bank provided that no parent bank shall be permitted to establish more than fifteen branch banks; provided further that no parent bank shall be permitted to establish a branch bank in any town or city of less than 3,500 population where such town or city has one or more banks in operation.

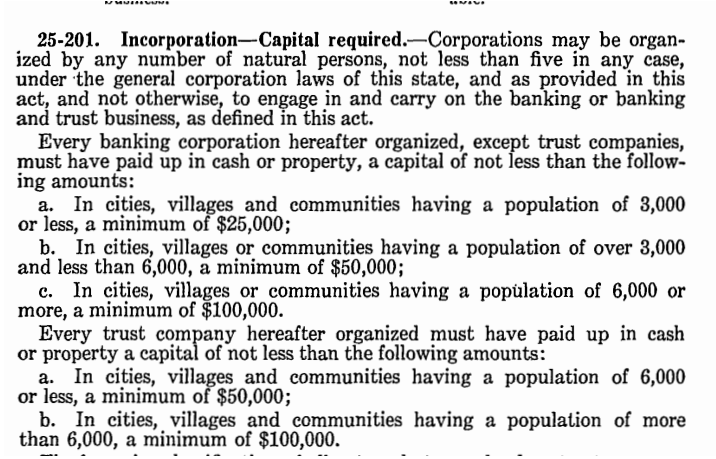
Capital requirements for branch banking systems.

Sec. 67. All parent banks permitted to establish branch banks shall have a paid-in, unimpaired capital (exclusive of reserves and undivided profits) of not less than $100,000.00, and such minimum required capital shall be increased for each branch bank estab-lished by an amount not less than the minimum required capital for a unit bank in the municipality in which the branch bank shall be established.

Source: Mississippi Session Laws 1934, ch. 134. These apply to all banks, except capital for Fed member branch networks, which was higher.

Back

Capital regulations contained variety of capital and population levels



25-201. Incorporation—Capital required.—Corporations may be organized by any number of natural persons, not less than five in any case, under the general corporation laws of this state, and as provided in this act, and not otherwise, to engage in and carry on the banking or banking and trust business, as defined in this act.

Every banking corporation hereafter organized, except trust companies, must have paid up in cash or property, a capital of not less than the following amounts:

a. In cities, villages and communities having a population of 3,000 or less, a minimum of $25,000;

b. In cities, villages or communities having a population of over 3,000 and less than 6,000, a minimum of $50,000;

c. In cities, villages or communities having a population of 6,000 or more, a minimum of $100,000.

Every trust company hereafter organized must have paid up in cash or property a capital of not less than the following amounts:

a. In cities, villages and communities having a population of 6,000 or less, a minimum of $50,000;

b. In cities, villages and communities having a population of more than 6,000, a minimum of $100,000.

Source: Idaho Session Laws 1925, ch. 133, section6. These apply to all state non-member banks, as Fed requirements were higher.

Back

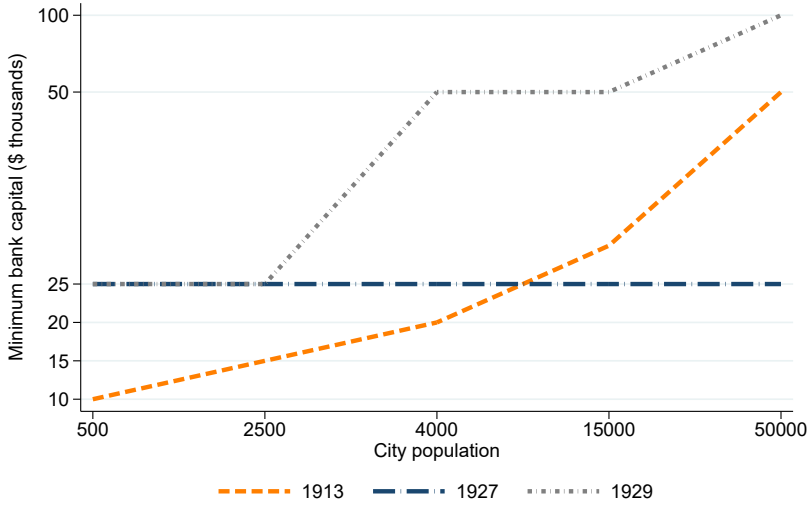
What is a law index and how does it describe state laws?

- Starting in 1925, the Library of Congress categorized all laws enacted by state legislatures in every biennium (matching the legislative session frequency)
- Each aspect of each law is categorized according to:
  - Area of law: here, all laws tagged as banking law
  - Broad description: organization, resolution, limitation, ...
  - Narrow description: number of officers, interest rate ceiling...
  - Where each aspect of a law, and therefore each law, appears as many times as the section is relevant
- We harmonize these descriptions across each biennium to capture changes in terms (e.g. broad descriptions bank resolution and bank insolvency cover same narrow descriptions)
- Then construct flags for different types of law by bundling together relevant description types
- We convert this to a law-level panel by matching conditions by state, law number, and date

Note: In effect, we rely on the Library of Congress to group laws by their actual text instead of using machine learning to do so.

Back

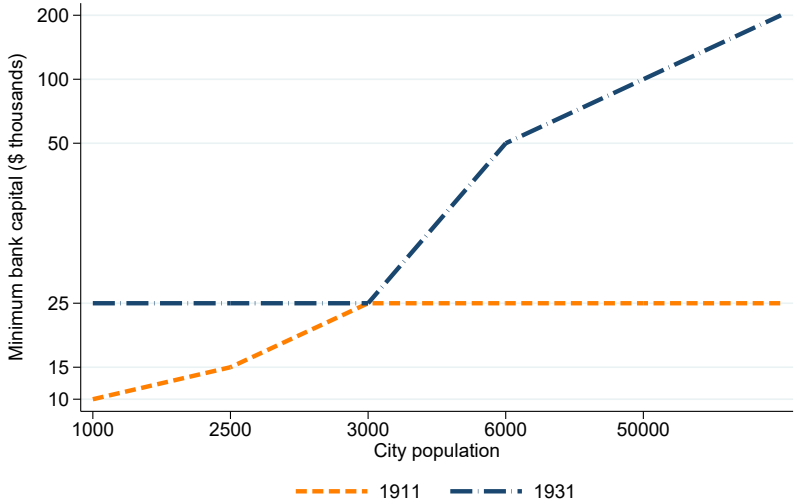
Ex: Changes in Colorado capital requirements, 1920–1940



Sources: Colorado state session laws.

Back

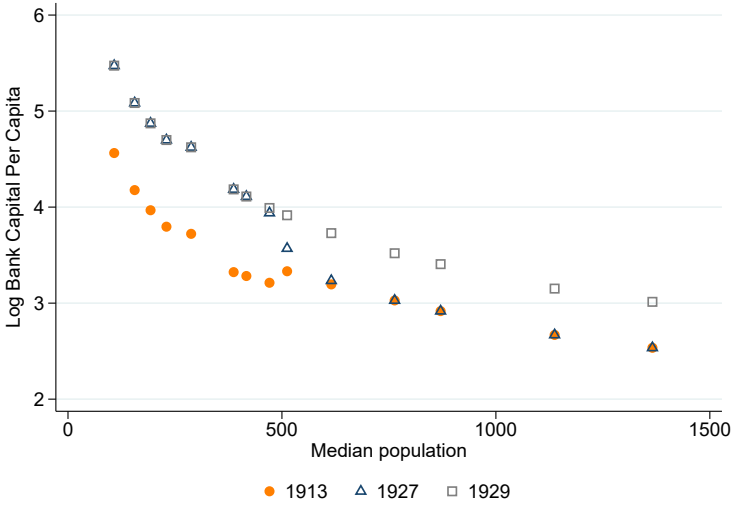
Ex: Changes in Alabama capital requirements, 1920–1940



Sources: Alabama state session laws.

Back

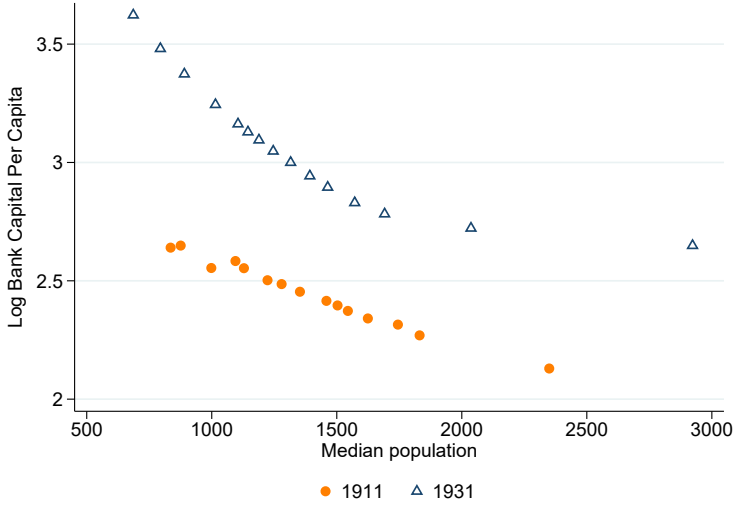
Ex: Changes in Colorado capital costs per capita, 1920–1940



Sources: Colorado state session laws, IPUMS (2021), Bleemer and Quincy (2025).

Back

Ex: Changes in Alabama capital costs per capita, 1920–1940



Sources: Alabama state session laws, IPUMS (2021), Bleemer and Quincy (2025).

Back

The banking sector (reduced form)

Bank profits in region r:

$$\pi^r(e, b) = m(e, b) \cdot D^r - F$$

- Markup $m(e, b)$: $m_e > 0$ (capital limits entry $\rightarrow$ raises markups); $m(e, 1) < m(e, 0)$ (branching brings in competitors)
- Regional loan demand D^r; fixed operating cost $F > 0$

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- Regional loan demand D^r; fixed operating cost $F > 0$

Market fragility: probability region loses local banking services under (e, b)

$$\Phi(e, b; \phi) = \phi \cdot f(e, b)$$

- ϕ: macro fragility (ϕ_N normal, ϕ_C crisis, $\phi_C > \phi_N$)
- $f(e, b)$: policy-dependent vulnerability $\rightarrow$ Assumption 1 (convex, min at $\hat{e}(b)$; $f(e, 1) < f(e, 0)$)

Back

Summary: the two instruments behave differently in crisis

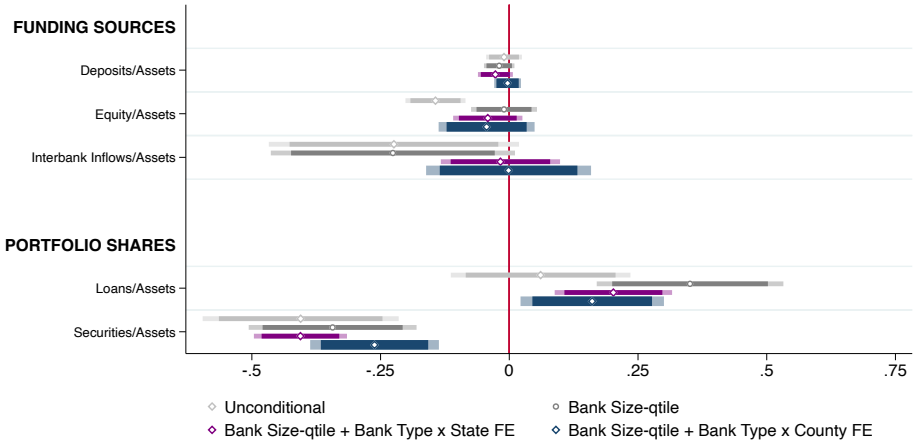
	Capital requirements $e \uparrow$	**Branching $b = 1$**
Deters new entry	✓	×
Protects ownership rents	✓	×
Reduces fragility	✓ only up to $\hat{e}(b)$	✓ at every e
Restores access after failures	×	✓
Effect once $e > \hat{e}(b)$	***Worsens*** fragility	(no such threshold)

- In **normal times**: both instruments lower fragility at low e, but only capital protects local rents
- In a **crisis**: regions above $\hat{e}(b)$ can't stabilize by tightening capital further — it deters replacement entry; branching lets surviving banks expand without weakening prudential standards

Back

Comparing branch and unit bank business models

$$y_i = \beta \mathbb{I}(BranchBank)_i + \gamma_{size-q} + \alpha_{\text{regulator x county}} + \varepsilon_b$$



Unit and branch banks of same size + same regulators + same location have **different portfolios**

Back

Constituency welfare

Voter welfare in region r weights access and locally valued profits by the probability the market survives:

$$W^r(e, b; \phi) = \underbrace{(1 - \phi f(e, b))}_{\text{survival prob.}} \Big[\underbrace{A(D^r, m(e, b))}_{\text{credit access}} + \underbrace{\theta_b^r \, \pi^r(e, b)}_{\text{ownership rents}} \Big]$$

Ownership shares:

- $\theta_0^r \geq \theta_1^r$: local ownership higher under unit banking (branching dilutes)
- $\theta_b^R > \theta_b^U$: ownership more concentrated in rural areas

Access technology $A(D, m)$: $A_D > 0$, $A_m < 0$; per-unit markup loss $-A_m / D$ rises in D — monopoly distortions costlier in thick markets

Back

Choosing policies

Period-1 objective: $V^r(e,b) = (1+\delta)\,(1-\bar{\phi} f(e,b))\,S^r(e,b)$, where $S^r \equiv A(D^r, m(e,b)) + \theta_b^r \pi^r(e,b)$ and $\bar{\phi}$ is time-weighted expected fragility.

FOC for capital e:

$$\frac{\partial W^r}{\partial e}(e,b;\phi) = \underbrace{(1-\phi f(e,b))\,\frac{\partial S^r}{\partial e}}_{\text{access–rent trade-off}} + \underbrace{(-\phi\, f_e(e,b))\,S^r(e,b)}_{\text{fragility effect}}$$

with $\dfrac{\partial S^r}{\partial e} = m_e(e,b)\left[\theta_b^r D^r + A_m(D^r, m(e,b))\right]$.

Fragility effect sign: $+$ for $e < \hat{e}(b)$ (capital stabilizes), $-$ for $e > \hat{e}(b)$ (capital destabilizes)

Branching decomposition (at fixed e):

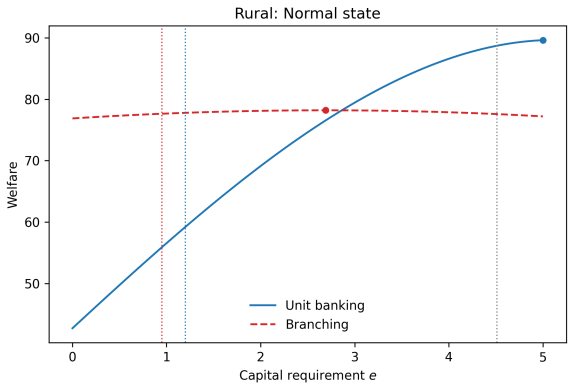
$$W^r(e,1;\phi) - W^r(e,0;\phi) = \Delta^{\text{stability}} + \Delta^{\text{access}} + \Delta^{\text{ownership}}$$

- $\Delta^{\text{stability}} = \phi\,[f(e,0) - f(e,1)]\,S^r(e,0)$ — rises with ϕ
- $\Delta^{\text{access}} = (1-\phi f(e,1))\,[A(D^r, m(e,1)) - A(D^r, m(e,0))]$ — larger in high-D regions
- $\Delta^{\text{ownership}} = (1-\phi f(e,1))\,[\theta_1^r \pi^r(e,1) - \theta_0^r \pi^r(e,0)]$ — discounted by ϕ

Back

Proposition 1: Rent-regulation feedback loop raises entry barriers

Statement: when p is low, high-θ / low-D regions prefer $e > \hat{e}(b)$ and unit banking



Vertical lines: red $= \hat{e}(1)$, blue $= \hat{e}(0)$, gray $=$ rural optimum e_1^R

Intuition: rent motive dominates fragility cost

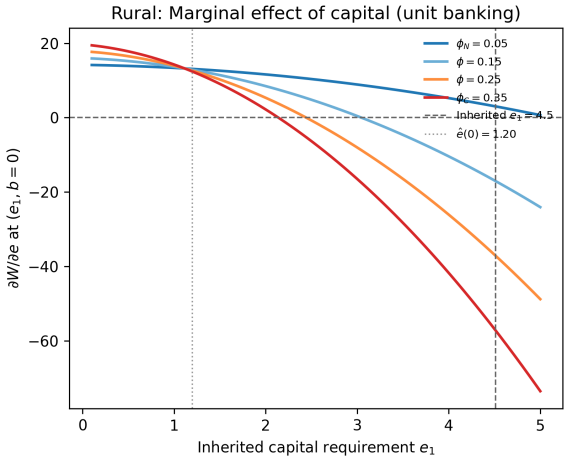
- Low $p \Rightarrow$ expected fragility $\bar{\phi}\, f(e, b)$ small; voters mostly optimize over rents
- Rural regions (high θ_b^r): concentrated ownership captures bank profits; raising e protects local rents
- Branching would dilute θ; rural voters lock in $b = 0$

$\Rightarrow$ Rural coalitions raise capital requirements in the 1920s boom

Back

Proposition 2: Increasing entry barriers worsens credit shortages in crisis

Statement: regions that inherit $e > \hat{e}(0)$ operate on the upward-sloping part of f; crisis hits harder



Rural $\partial W/\partial e$ at inherited e_1 under unit banking; curves by ϕ (blue $= \phi_N$, red $= \phi_C$)

Intuition: high capital hinders entry

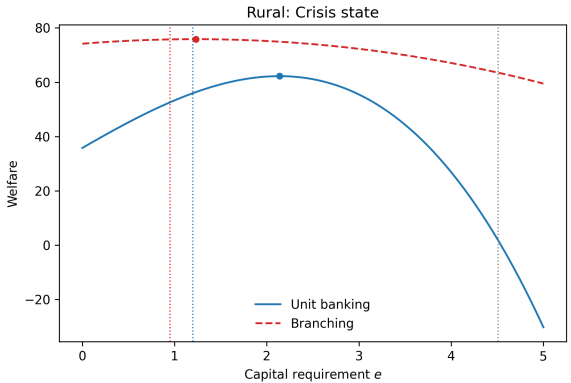
- At high inherited e_1, few new banks can enter to replace failures $\Rightarrow$ thin market
- Figure: at high e_1, $\partial W/\partial e < 0$, and effect intensifies as $\phi \uparrow$
- Rural inherited high e from the 1920s $\Rightarrow$ pre-exposed when ϕ_C realizes

$\Rightarrow$ Counties with higher pre-crisis capital see larger banking declines during crisis

Back

Proposition 3: Falling rents and credit access change opinions about regulation

Statement: at inherited e_1^r, branching's stability gain rises with $\phi \Rightarrow$ protectionist regions flip



Rural welfare in crisis ($\phi = \phi_C$); vertical lines: red $= \hat{e}(1)$, blue $= \hat{e}(0)$, gray $=$ inherited e_1^R

Intuition: stability gain dominates ownership loss in crisis

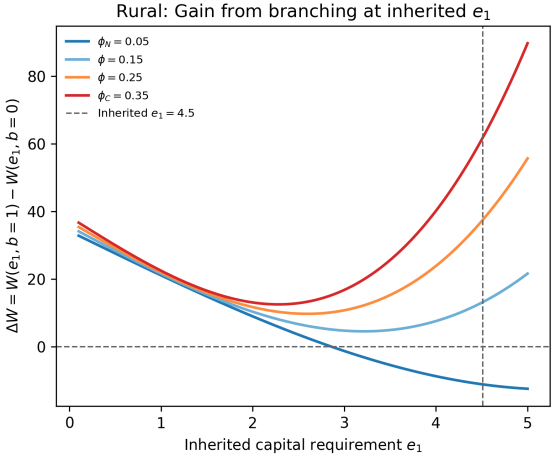
- In crisis, branching welfare (red) now exceeds unit banking (blue) across almost all e
- At inherited e_1^R, unit-banking welfare collapses but branching survives
- Ownership loss $\theta_1^r < \theta_0^r$ matters less when the unit market may not survive

$\Rightarrow$ Rural constituencies reverse in the 1930s, strongest where banking distress severe

Back

Proposition 4: Crises create new regulatory regime where rents collapsed the most

Statement: at $e_1^r > \hat{e}(b)$, raising capital makes f worse; branching shifts f down everywhere



Rural welfare gain from branching $\Delta W = W(e, 1) - W(e, 0)$ at inherited e_1; curves by ϕ (blue = ϕ_N, red = ϕ_C)

Intuition: branching now dominates capital as regulatory response

- At inherited $e > \hat{e}(b)$, $\partial f / \partial e > 0$ — raising capital further *worsens* fragility
- Switching to branching yields positive ΔW at every inherited e, growing sharply with ϕ

$\Rightarrow$ States respond via branching, not capital rollback

Same effects if look at all 1920s versus 1930s bank limitations

$$\mathbb{I}(BANKLIMITS_{s,e}) = \gamma_r + \beta X_{s,e} + \epsilon_t$$

	1925–29	1930–Feb. 1933	March 1933–1936	1937–39
Pop. share 2500-25K places	-0.075	-0.080	0.025	-0.187
	(0.08)	(0.06)	(0.16)	(0.14)
Pop. share under 2500 places	0.274**	-0.078	-0.369***	0.105
	(0.12)	(0.11)	(0.13)	(0.18)
Log average farm value	-0.023	-0.030	-0.079	-0.084
	(0.12)	(0.08)	(0.11)	(0.13)
Farm share under 100 acres	0.015	0.103	-0.114	0.103
	(0.19)	(0.14)	(0.23)	(0.19)
Farm land Gini	-0.088	-0.067	-0.004	-0.066
	(0.17)	(0.13)	(0.20)	(0.18)
Log mfg. output per estab.	-0.090	-0.061	-0.102	0.002
	(0.08)	(0.05)	(0.10)	(0.12)
Log population	0.194*	0.012	0.032	0.122
	(0.11)	(0.08)	(0.18)	(0.15)
Dep Var Mean	1.33	0.29	0.63	0.85
R-sq	0.35	0.20	0.22	0.25
N	48	48	48	48

Notes: The outcome is an indicator for raising capital requirements in each time period. Census region fixed effects not shown. Standard errors are robust. Standardized census covariates from 1920 in Columns 1 to 2 and 1930 in Columns 3 through 5. Sources: Library of Congress (1925–1939), Haines (2010), and authors' calculations.

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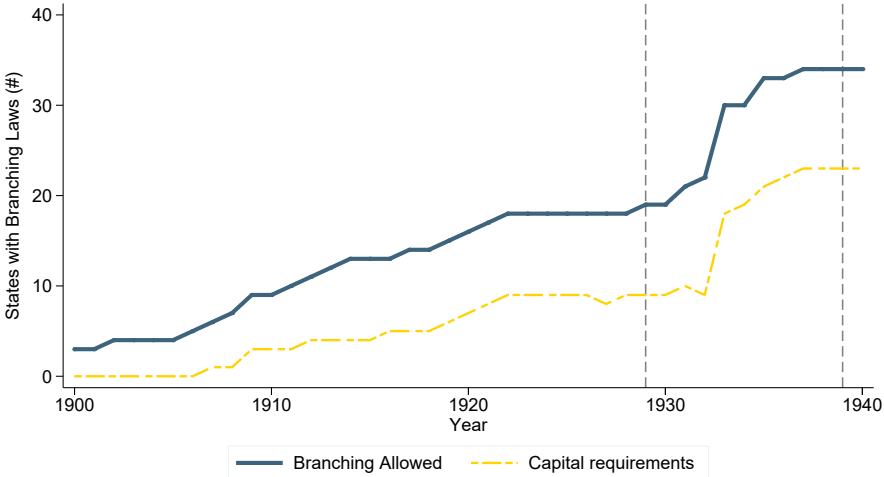
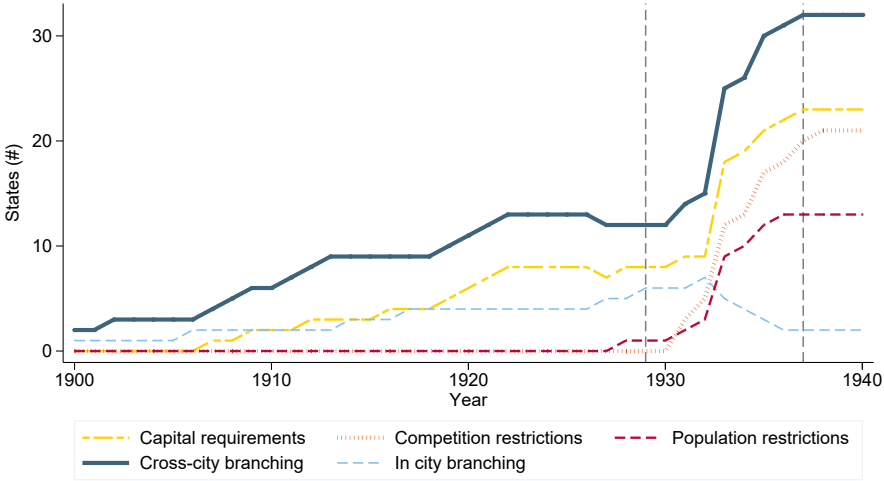
The laws created barriers to entry



The laws created barriers to entry ... except when areas underbanked



→ Expansion of branching where banking most scarce

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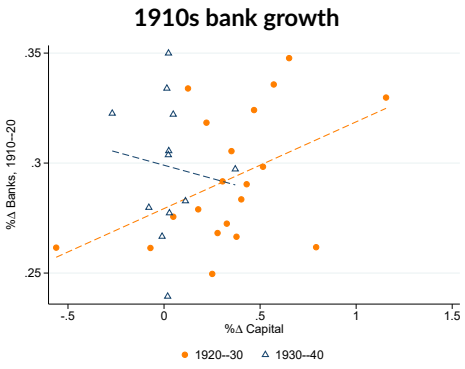
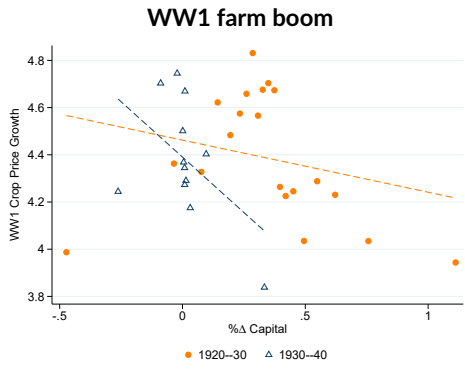
Little correlation between WW1 shocks and 1920s regulation

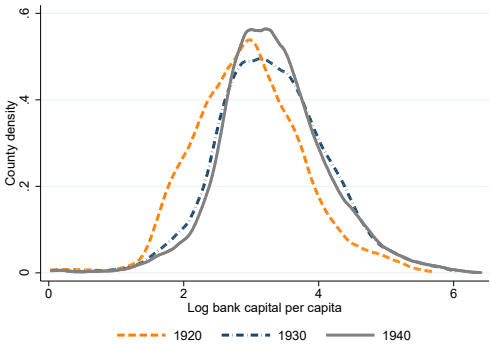




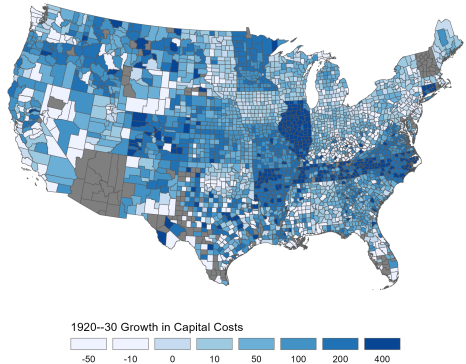
Notes: We correlate WW1-era bank growth or crop price growth from Rajan and Ramcharan (2014) with county capital cost growth within states. Back

3: **Local** bank entry costs grew over time

Capital costs over time



%Δ capital costs, 1920–30

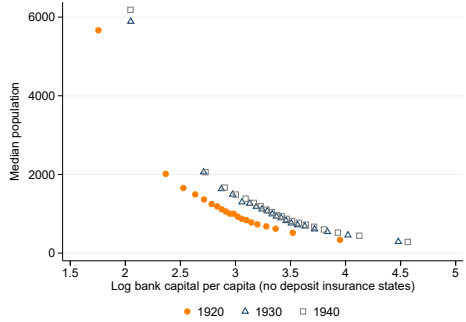


Sources: State session laws, IPUMS (2021), Bleemer and Quincy (2025), and NHGIS shape files. Counties omitted if no incorporated places eligible for capital or if state lacked capital requirements in 1920 (AZ, DE, NH, VT). WW1 Boom ◂ Back

States' deposit insurance programs do not determine where capital costs rise

States with deposit insurance

States without deposit insurance



Notes: State deposit insurance in the 1910s and 1920s via Wheelock (1994).

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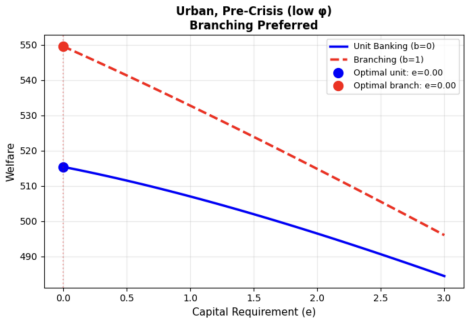
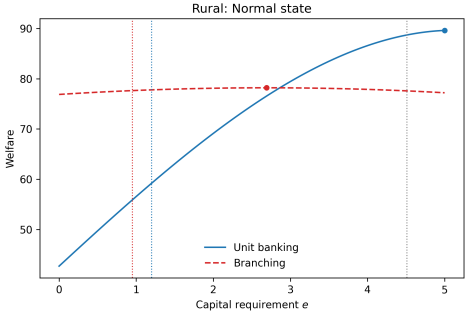
Policy choices in good times

Urban



Rural



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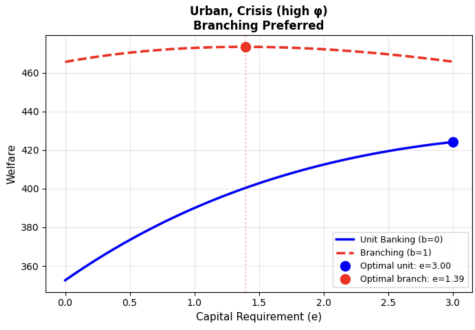
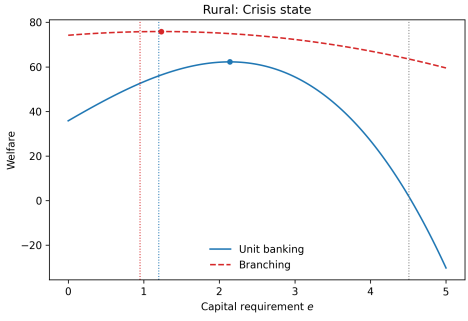
Policy choices in bad times

Urban



Rural



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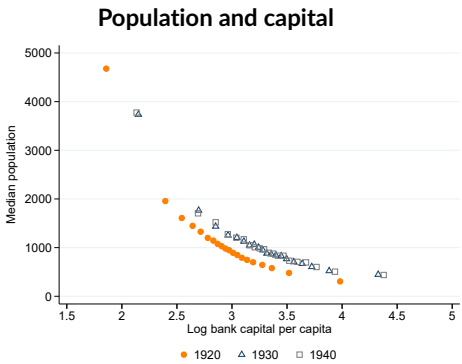
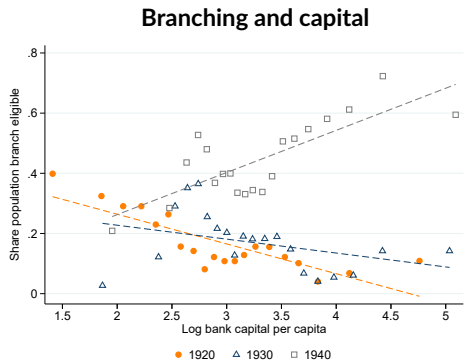
Fixing population in 1920 does not affect patterns





Notes: These charts fix places' population in 1920 so that capital only changes due to regulation.

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States' rural population shares predict **access-based** branch deregulation