Bank Capital Redux: Solvency, Liquidity, and Crisis

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Basel III in the context of the Macro-Prudential Approach
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A well-run bank needs no capital.
No amount of capital will rescue a badly run bank.

— Walter Bagehot

Background

- Regulatory response to financial crisis $\rightarrow$ increase bank capital
- But how much? Unweighted leverage ratio in Basel III is 3%
  Admati and Hellwig (2013) advocate more than 20%
- What is the interaction of capital ratios with financial instability and economic recovery?
- Long-run perspective important: rare events, different monetary, economic and regulatory environments

Questions

What trends in bank balance sheet ratios in the past 150 years?

What link between bank capital and financial stability?

What link between bank capital and recovery after crisis?

New data

Bank liabilities since 1870 for 17 advanced economies

1. (book) capital (market value since 1973)
2. deposits
3. non-core (wholesale highly runnable) liabilities

Preview of main take aways

Capital ratios declined globally before WW2

Non-traditional funding doubled between 1960 to 2008

No evidence bank capital reduces financial crisis risk

But, more capital $\rightarrow$ quicker recovery from crisis

New Dataset

Bank balance sheet data

Capital: common equity tier 1 in Basel III

- Common stock (including share premium)
- Retained earnings
- Disclosed reserves
- No adjustment for double liability

Deposits: Term and sight deposits, checking and saving accounts by non-financial residents

Non-core: Other liabilities such as bonds, repo and interbank funding

Common balance sheet ratios

Unweighted capital ratio - Basel III leverage ratio:

$$\text{Capital Ratio} = \frac{\text{Capital}}{\text{Total Assets}}$$

Loans-to-deposits ratio as illiquidity measure (maturity transformation):

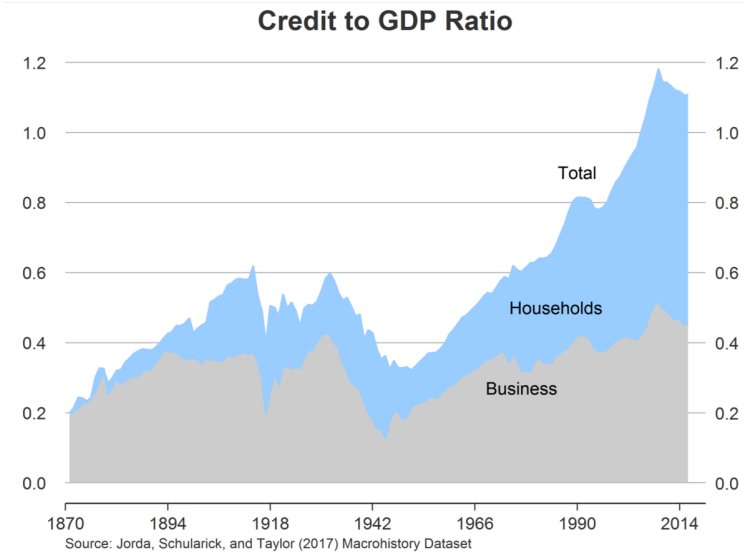
$$\text{LtD Ratio} = \frac{\text{Loans}}{\text{Deposits}}$$

The reliance on non-core debt funding:

$$\text{Noncore Share} = \frac{\text{Noncore liabilities}}{\text{Deposits+Noncore Liabilities}}$$

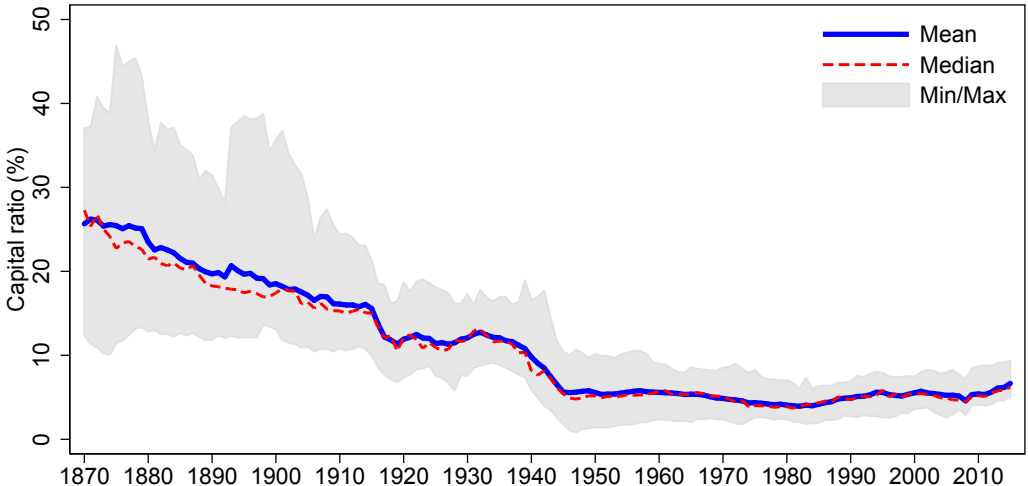
Trends on the asset side
1870–2015

The financial hockey stick and the great mortgaging

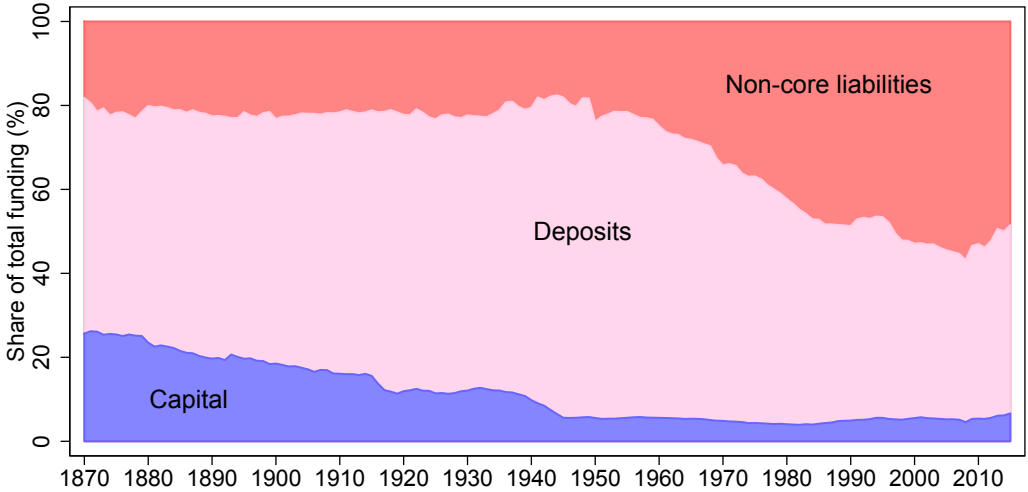


Trends on liabilities from new data
1870–2015

Aggregate capital ratio



Composition of funding



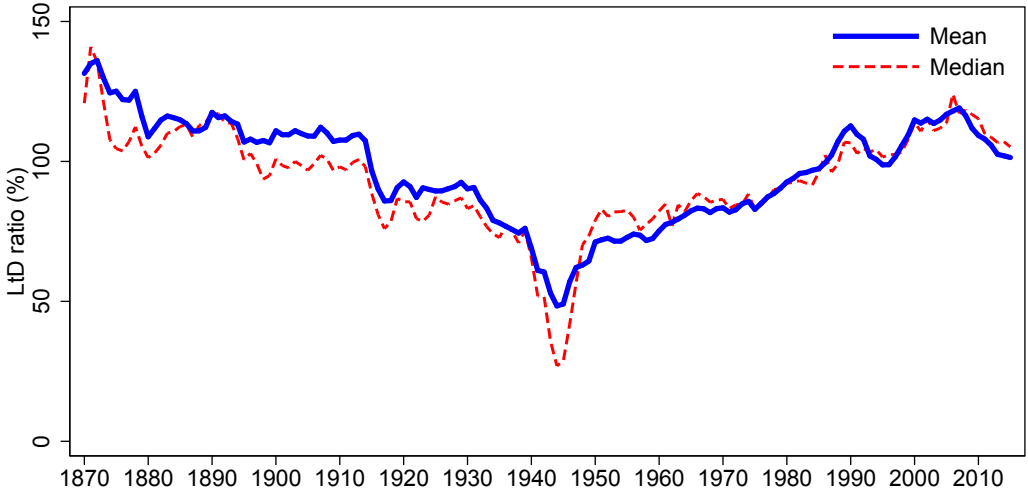
Why might the composition of funding matter?

The case of Northern Rock

Northern Rock was one of five largest mortgage issuers in January 2007

- January 2007:
  pre-tax profits up 27% relative to the previous year
- June 2007:
  repayment arrears are half of the industry average
- June 2007:
  wholesale funding (some from the U.S.) > 60%
- September 2007:
  first bank-run in the U.K. in 150 years!

Loans to Deposits ratio



Funding structure and financial crises

Two views on the origins of financial crisis

The capital view

- incentive and agency problems $\rightarrow$ excess risk-taking of rational agents
- "skin in the game" and riskiness $\leftrightarrow$ financial stability

The Minsky/Kindleberger view

- credit-fueled over-optimism, then asset price collapses:
- Repricing triggers bank runs $\rightarrow$ liquidity matters
- Crises unrelated to bank capital. But liquidity matters

Predicting crises

A first pass

	Full	Post	Full	Post	Full	Post	Full	Post
Δ Loans/GDP	0.7***	0.5***	0.7***	0.6***	0.5***	0.2***	0.7***	0.2*
Capital ratio	0.2***	0.1						
Δ_5 Capital ratio			0.0	1.3				
LtD ratio					0.04**	0.04***		
Non-core ratio							-0.01	0.08***
AUC	0.74	0.74	0.71	0.74	0.72	0.80	0.70	0.84
Observations	1735	1004	1720	998	1713	1004	1671	1004

Other checks

- Cap ratio endogeneity $\rightarrow$ use bank profits instrument $\rightarrow$ fix the sign, but still no crisis prediction
- Credit boom $\times$ cap ratio $\rightarrow$ same story
- Stratify by introduction of deposit insurance $\rightarrow$ same story
- Market based cap ratios $\rightarrow$ same story
- Cap ratio of largest banks $\rightarrow$ same story

Takeaways

- **Cap ratio:** "wrong" sign, though not significantly post-WW2 → endogeneity? Markets force increased equity on risky loan portfolios?
- **Loans to deposits:** like credit/GDP, more leverage, more risk
- **Noncore liabilities:** clearly a post-WW2 problem and increasingly so
- **Loans (Credit/GDP):** still enters significantly

The economy's overall leverage matters

No evidence capital reduces financial instability

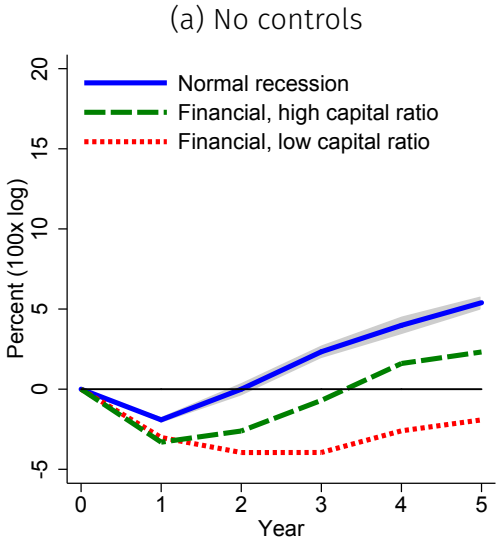
- Violent repricing of assets overwhelms capital buffers
- Asset growth, not financing, captures this dynamic best
- Banking crises also have a panic element: liquidity is a key concern (non-core financing key in 2008)
- Consistent with markets and regulators requiring higher capital buffers when observing high risk
- Crises are ”credit booms gone bust”, and bank profits during the boom tend to increase capital ratios

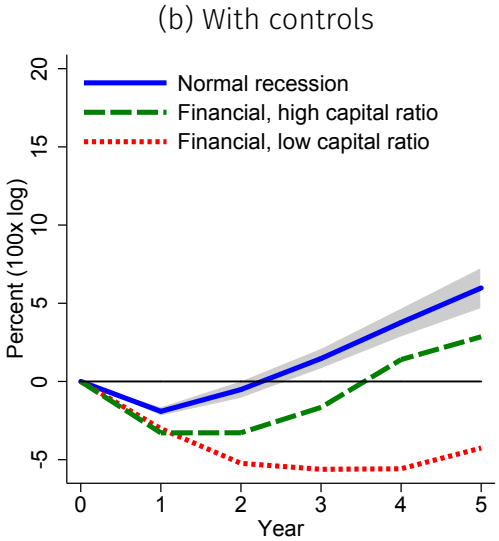
Capital and the economic cost of crises

Do capital ratios impact the cost of crises?

- Consider a country i coming out of a business cycle expansion p and entering a recession at time $t(p)$
- ... when there was a financial crisis in a window +/- 2 years
- ... hitting an economy with a banking sector that had a capital ratio lower than the average capital ratio at the start of all such financial recessions
- ... how does this change the expected path of the economy through recession and recovery $(y_{t(p)}, ..., y_{t(p)+h})$?

Slower recovery with low capital





Inspecting the mechanism

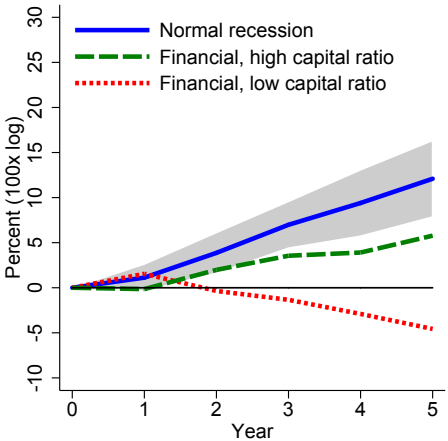
Some explanations for the results

- Is credit contraction coming from demand or supply of credit?
- Hence, do better capitalized banking sectors supply more credit after a financial recession?

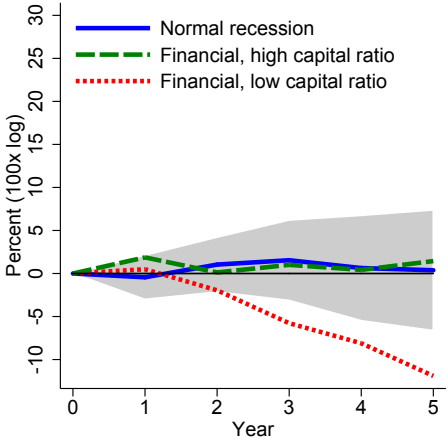
Faster credit recovery with more capital

Evolution of credit after the peak

(a) Full sample



(b) Post-WW2



Conclusions

- Bank balance sheet structure changed substantially between 1870 and today, but capital decline already before WW2, not afterwards
- Liability side ratios generally worse crisis signal than credit growth
- Notably, capital ratios poor signal of financial vulnerability
- But financial crisis recoveries helped by more capital
- **Message to policymakers:** more capital is good, but actively monitor credit for signs of financial fragility