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POLICY BRIEF

Fundamentals: Key Insights on Banks, Banking Crises, and Policy Solutions

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This policy brief presents one way of thinking about banks and banking crises in the United States. After using an accounting balance sheet to depict how individual banks work, I turn to history to shed light on the structure of the US banking system and show that the United States has historically had many banks and many banking crises. I close with a discussion of ways to make banks more resilient through simple, solvency-focused capital regulation, contingent liability, or both to lower the likelihood of crises before they might happen.

Understanding Risk Through a Balance-Sheet View of Banks

Banks are financial intermediaries that facilitate payments between their customers and counterparties. Banks also use a variety of funding sources, including the deposits people make into their bank accounts, to acquire different assets, including the loans they originate and hold.

The generic balance sheet in table 1 shows a way of thinking about banks that I will use to demonstrate the simple bank capital policy options discussed later. On the liabilities or funding side, a bank might use customer deposits—some FDIC insured, some uninsured—to acquire assets. These deposits can be prone to runs, in the sense that depositors, upon hearing negative news

TABLE 1. A generic bank balance sheet

ASSETS		LIABILITIES (OR FUNDING)	
Loans	$700	Deposits	$750
Treasuries	$100	Other Short-Term Debt	$50
Other Bonds	$150	Convertible Debt	$50
Reserves at Fed	$50	Equity	$150
Total Assets	$1000	Liabilities & Equity	$1000

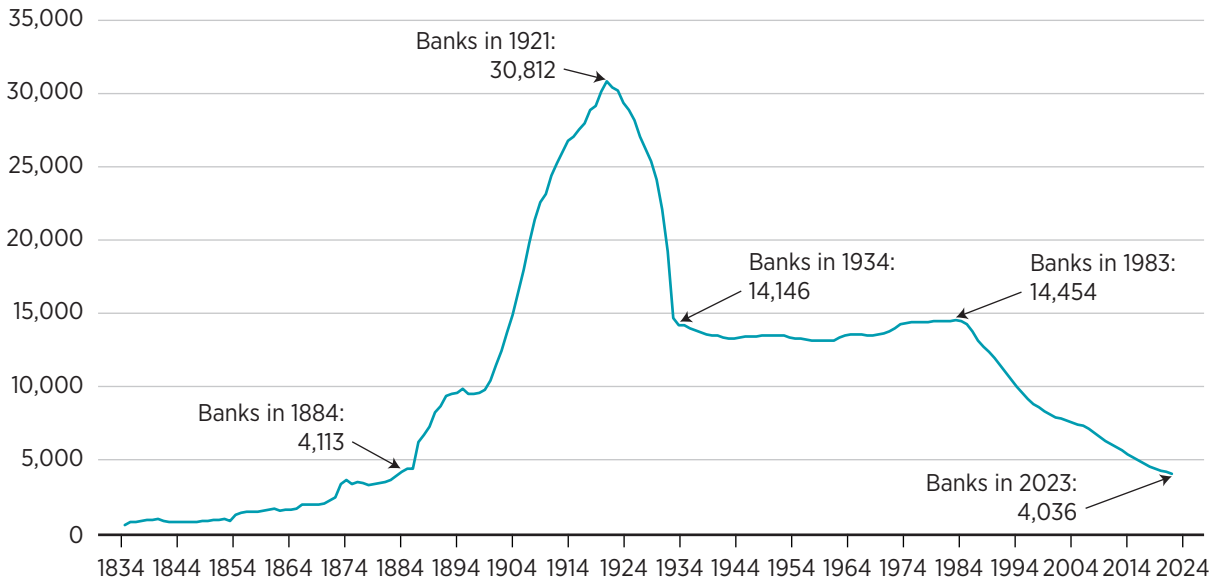
concerning their bank, may decide to withdraw simultaneously, which might cause the bank to fail. Banks can also use their capital to acquire assets. Capital includes convertible debt—debt that can be converted to equity if the bank experiences distress—and equity, which, unlike deposits, are not prone to runs. On the assets side, a bank might hold mostly illiquid loans as well as a variety of more liquid securities such as Treasuries, mortgage-backed securities (MBS) and municipal bonds, and reserves held at the Federal Reserve (Fed).

This balance sheet reveals the two primary sources of risk in banking: asset risk and funding risk. Credit risk arising from risk of default and severity of losses can affect loans and other assets that banks hold. Interest-rate risk and liquidity risk can also affect loans, Treasuries, and other assets that banks hold. Looking to the funding side, deposits and other short-term debt funding can become scarce, leading to funding-liquidity risk. Increased leverage, which occurs when the funding mix includes more debt—especially deposits and other forms of short-term debt—than equity, also puts a bank at greater risk of default. In the United States, banks generally have the lowest estimated asset volatility across all industries, but banks are also the most leveraged, due to their extremely high fraction of debt funding.[1]

Another Source of Risk: The Structure of the US Banking Industry

Beyond bank-specific asset risk and leverage, the US banking system's stability through the Great Depression was also adversely affected by its fragmented nature. Figure 1 depicts the number of

FIGURE 1. The number of commercial banks in the United States, 1834–2023



Sources: Data for 1834 to 1933: Census Bureau, Historical Abstract of the United States: 1789–1945, 1949, 262, series N 19. Data for 1934 to 2020: "BankFind Suite: Find Annual Historical Bank Data," Federal Deposit Insurance Corporation, accessed May 24, 2024, https://banks.data.fdic.gov/bankfind-suite/historical.

banks since 1834, showing the extent of fragmentation in the US banking system. It shows that the number of banks increased almost exponentially through 1921 and then declined. Figure 1 suggests that there has been a bias against large banks for most of US history. Prohibitions against interstate banking and branching in many states prevented the growth of large banks and led to the proliferation of many smaller banks as seen in the peak in 1921.[2]

The causes of fragmentation

The fragmentation of the US banking system and the rise in the number of banks through 1921 can be traced back to the US constitution, which prohibited states from issuing their own currency and taxing interstate commerce.[3] In response to the prohibition against states issuing their own currency, some states instead generated revenues from bank chartering (with more charters being more lucrative) and from investing in banks. In response to the prohibition on taxing interstate commerce, states instead prohibited out-of-state banks from operating in their jurisdiction. Competition with the Office of the Comptroller of the Currency (OCC), established in 1863 to increase state charters, also contributed to the rise through 1921.[4] The large decline in the number of banks after 1921 was the result of the large number of banking failures through the Great Depression years.

Fragmentation led to costly crises

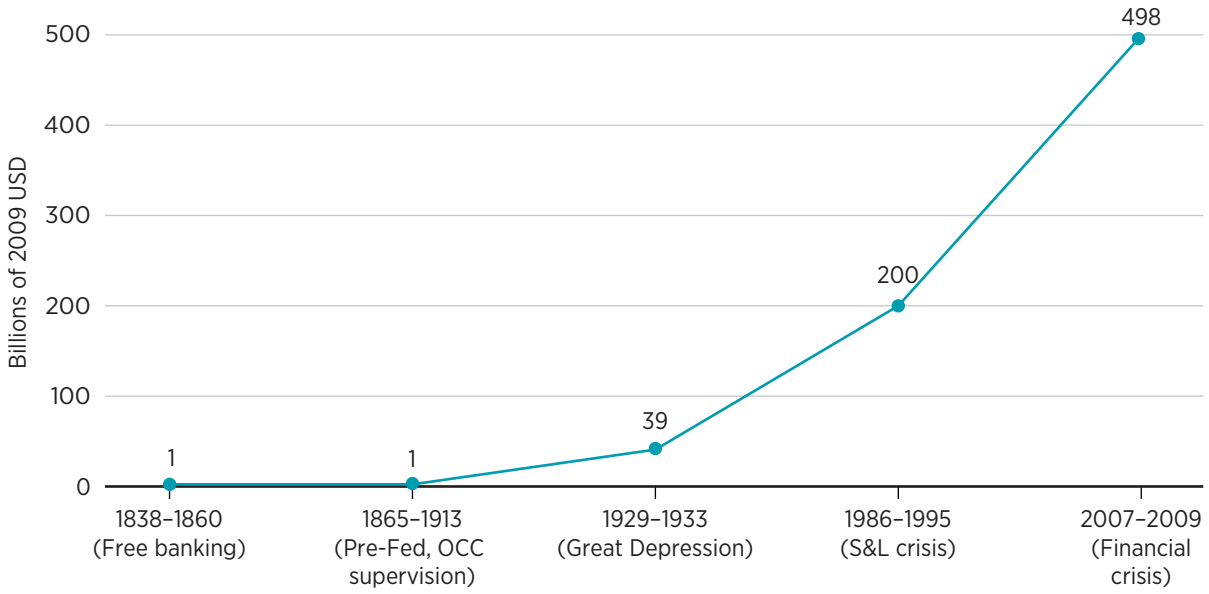
The fragmented nature of the US banking system helps illuminate why the United States had eleven major banking panics and crises. The first nine were in 1819, 1833, 1837, 1839, 1857, 1873, 1893, 1907, and 1930–33.[5] After the Great Depression, major crises, including the Savings and Loan Crisis and the 2007–09 Crisis, have occurred less frequently but have tended to be prolonged and costly.[6] Major crises have considerable costs, whether measured in terms of (1) the administrative costs, including the fiscal cost of resolving failed banks or the bailout costs from assisting distressed banks during a crisis, or (2) the economic costs, measured as forgone real GDP.[7]

Figure 2 shows how these costs have evolved throughout US history. The top figure shows that the fiscal costs of crises have increased exponentially since the 19th century. In terms of cumulative economic costs, the bottom figure shows that since the Panic of 1893, major banking crises have happened less frequently but have been more severe. Among these major crises, the banking crisis of 1930–33 during the Great Depression remains the costliest in US history, as the cumulative losses amounted to 41.3 percent of one year's real GDP.

Correctly assessing why banks have failed also has implications for the appropriate policy response, which I turn to next.

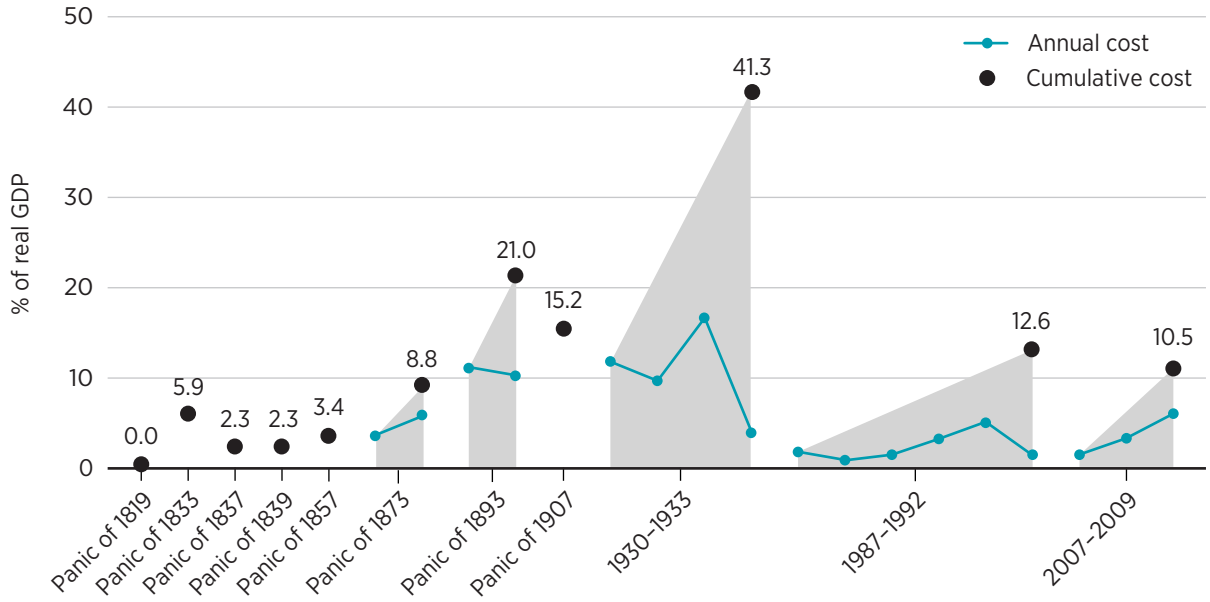
FIGURE 2. Administrative and economic costs of US banking crises

A. Administrative costs of bank failures according to eras



Sources: For the first four values: Eugene N. White, "To Establish a More Effective Supervision of Banking: How the Birth of the Fed Altered Bank Supervision," in *A Return to Jekyll Island: The Origins, History and Future of the Federal Reserve,* eds., Michael D. Bordo and William Robards (Cambridge University Press, 2013). For the last value: Deborah Lucas, "Measuring the Cost of Bailouts," *Annual Review of Financial Economics* 11 (2019): 85–108.

B. Annual and cumulative economic costs of major US crises



Sources: This is a revised version of the graph published in a revision of the author's graph in Stephen "Steph" Miller, "The Costs of Crises Revisited," *FinRegRag*, December 11, 2023. The data is from a paper the author coauthored: James Barth and Stephen Matteo Miller, "US Financial Crises and Growing Federal Oversight of Banking," in *Encyclopedia of Financial Crises*, ed. Sara Hsu Elgar (Edward Elgar Publishing, 2023), 463–72.

Policy Responses: Liquidity Views vs. Solvency Views

Policy debates concerning banking crises have for some time centered around the liquidity vs. the solvency views of banking crises.[8] The liquidity view focuses on liquidity as the source of the problem and calls for lender-of-last-resort programs that swap illiquid bank assets with safe assets or provide loans to shore up a bank's funding. The solvency view focuses on solvency as the source of the problem and calls for banks to add more non-run-prone sources of funding, such as equity, during a quiet period, so that they can remain resilient during periods of distress.

These two views can be used to classify a variety of federal government policies. For instance, in terms of liquidity policies, Section 13(3) of the Federal Reserve Act prohibits the Fed from lending to insolvent institutions.[9] If the Fed lends to a bank, it must be because the Fed deems the bank illiquid but not insolvent. There are also liquidity regulations. One such regulation is the Basel III Liquidity Coverage Ratio, which attempts to ensure banks have sufficient liquid assets over the next 30 days. Another liquidity regulation is the Net Stable Funding ratio, which aims to ensure a bank has sufficient non-run-prone funding for the next year.[10]

The solvency view focuses on banks having sufficient capital—convertible debt and equity—and here the debates concern how much equity funding is sufficient to ensure that banks remain solvent. Debates over the best way to formulate bank solvency regulation have been ongoing, especially since the Basel Capital Adequacy standards were unveiled after the 1988 Basel Accords. It has been debated how to measure bank capital (including equity and convertible debt), how much capital banks should fund with (10 percent, 15 percent or more), and relative to what (equity relative to assets, equity relative to liabilities, or something else).[11]

Another Simpler Policy Option: Synthetic Contingent Liability

One last policy option to consider relates to figure 2 and why the fiscal costs of crises were so low prior to the creation of the Federal Reserve. Historical research shows that before the Federal Deposit Insurance Corporation (FDIC) was created, banks were subjected to double, triple, and even unlimited liability.[12] That meant bank owner-shareholders could not only lose their entire investment—as owners of single-liability common-equity shares can today—but they could be made to pay additional penalties to creditors. This gave them an incentive to close a weak bank early, before it failed, which in turn dramatically reduced the fiscal costs of banking crises. With the creation of the Federal Reserve came the Federal Reserve's Discount Window, which gave weak banks reasons to stay open longer. This in turn explains the dramatic loss of banks between 1921 and 1934.

Fast forward to 2010. Section 956 of the Dodd–Frank Act calls for clawback regulation to avoid inappropriate risk-taking incentives in compensation and to introduce penalties for executives of failed banks. One way to do this could be to recreate contingent liability synthetically, in the sense of recreating the payoffs of contingent liability without having to change the liability of the underlying shares, and it could apply to options compensation as well.[13]

Concluding Thoughts

The focus on liquidity as a source of crises means policy tends to assume that banks during a crisis are not at risk of default, but instead just need ex post government assistance through a variety of costly government programs. If policy instead focused on making banks more resilient ex ante, through capital regulation or clawbacks by synthetic contingent liability, we might once again reduce the fiscal costs of banking crises, as well as their frequency and severity.

About the Author

Stephen Matteo Miller is a senior research fellow at the Mercatus Center at George Mason University. His research focuses on financial market crashes and crises and financial regulation. He has published his findings in academic journals such as the *Journal of Financial Stability*, the *Journal of Regulatory Economics*, *Quantitative Finance*, *Economic Record*, and the *Multinational Finance Journal*. After graduating from George Mason University with a PhD in economics, Miller worked as a World Bank consultant for several years before joining the department of economics at Monash University in Melbourne, Australia, as a research fellow. At the end of the first year of the research fellowship, he became a tenured lecturer and taught undergraduate and graduate classes in macroeconomics and financial economics for six years. He also administered the honors program and the PhD program. Before joining Mercatus, Miller was a visiting assistant professor in the department of economics at Bryn Mawr College in Bryn Mawr, PA.

Notes

1. For a comparison of asset volatility and risk across industries, see table 1 in Stephen Matteo Miller, "How Much Would It Cost to Guarantee Debt for All Publicly Traded US Corporations?" *Contemporary Economic Policy* 42 (2024): 604–22.
2. One estimate from 1990 suggested that if the US had a banking system like Canada's but scaled for population, there might be as few as 75 banks in the US, while if it were more like California's there might be 3,700, slightly below the current number (see David Mengle, "The Case for Interstate Branch Banking," *Federal Reserve Bank of Richmond Economic Review*, November/December 1990, 3–17.
3. For more background on state reactions to constitutional prohibitions see Richard Sylla, John Legler, and John J. Wallis, "Banks and State Public Finance in the New Republic: The United States, 1790–1860," *The Journal of Economic History* 47 (1987): 391–403.
4. For a discussion of the competition to create more bank charters, see James R. Barth and Stephen Matteo Miller, "Benefits and Costs of a Higher Bank 'Leverage Ratio,' " *Journal of Financial Stability* 38 (2018): 37–52.
5. I calculate the number of major and minor banking crises from several sources. For the Panic of 1819, see Hugh Rockoff, "Oh, How the Mighty Have Fallen: The Bank Failures and Near Failures That Started America's Greatest Financial Panics," *The Journal of Economic History* 81 (2021): 331–58. For a discussion of the 7 major crises and 20 minor crises between 1825 and 1929, see Andrew Jalil, "A New History of Banking Panics in the United States, 1825–1929: Construction and Implications," *American Economic Journal: Macroeconomics* 7, no. 3 (July 2015): 295–330. For the Great Depression, see Milton Friedman and Anna Schwartz, *A Monetary History of the United States* (Princeton University Press, 1963), 1867–1960.

6. For other major crises see the discussion in Barth and Miller, "Benefits and Costs of a Higher Bank 'Leverage Ratio.' " I do not include the three regional bank failures from Spring 2023 as a major crisis, given that the total assets of these banks made up only 2.4 percent of total banking assets (see Stephen "Steph" Miller, "Historical Perspectives On the Size of Recent Bank Failures," *FinRegRag*, May 8, 2023, https://www.finregrag.com/p/historical-perspective-on-the-size).

7. For a discussion and comparison of the costs of crises, see Stephen "Steph" Miller, "The Costs of Crises Revisited," *FinRegRag*, December 11, 2023, https://www.finregrag.com/p/the-costs-of-crises-revisited.

8. The distinction between "liquidity" and "solvency" views of banking crises derives from Fischer Black's distinction between the "economics" and "finance" views of banking (see Fisher Black, "[US Commercial Banking: Trends, Cycles, and Policy]: Comment," *NBER Macroeconomics Annual* 8 (1993): 368–71, available from: https://www.journals.uchicago.edu/doi/epdf/10.1086/654228). One hybrid view holds that crises reflect runs but also that more equity funding will reduce run risk (see John Cochrane, "Toward a Run-Free Financial System," in *Across the Great Divide*, eds., Martin Neil Bailey and John B. Taylor (Hoover Institution, 2014), 97–249 and John H. Cochrane and Amit Seru, "Ending Bailouts, At Last," *Journal of Law, Economics and Policy* 19 (2024): 169–93.

9. The origins of this amendment to the Federal Reserve Act date back to 1932. See Parinitha Sastry, "The Political Origins of Section 13(3) of the Federal Reserve Act," *Federal Reserve Bank of New York Economic Policy Review* 24, no. 1 (September, 2018): 1–33.

10. For a brief discussion of the distinction between the two ratios, see Marc Labonte, "The Liquidity Coverage Ratio and the Net Stable Funding Ratio," Focus, *Congressional Research Services*, March 22, 2021.

11. For discussions of how regulatory definitions of adequate capital have become increasingly complex see Richard Herring, "The Evolving Complexity of Capital Regulation," *Journal of Financial Services Research* 53 (2018), 183–205 and James R. Barth and Stephen Matteo Miller, "On the Rising Complexity of Bank Regulatory Capital Requirements: From Global Guidelines to their US Implementation," *Journal of Risk and Financial Management* 11 (2018): Article 77. For references to how much capital a bank should fund with see Barth and Miller, "Benefits and Costs of a Higher Bank 'Leverage Ratio.' " See also Anat Admati and Martin Hellwig, *The Bankers' New Clothes,* (Princeton University Press, 2024) and John Cochrane, "Toward a Run-Free Financial System."

12. For discussions of the effectiveness of contingent liability see Benjamin Esty, "The Impact of Contingent Liability on Commercial Bank Risk Taking," *Journal of Financial Economics* 47 (1998): 189–218 and Eugene N. White, "To Establish a More Effective Supervision of Banking: How the Birth of the Fed Altered Bank Supervision," in eds., Michael D. Bordo and William Robards, *A Return to Jekyll Island: The Origins, History and Future of the Federal Reserve* (Cambridge University Press, 2013).

13. For a discussion of how to recreate contingent liability synthetically, see Stephen "Steph" Miller, "A Simpler Way to Clawback and RECOUP Losses," *FinRegRag*, May 16, 2024, https://www.finregrag.com/p/a-simpler-way-to-clawback-and-recoup.