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Money, Private Law, and Macroeconomic Disasters

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MONEY, PRIVATE LAW, AND MACROECONOMIC DISASTERS

MORGAN RICKS*

I

INTRODUCTION

Last year, Ben Bernanke published a blockbuster paper whose importance to the emerging field of law and macroeconomics would be hard to overstate. Titled *The Real Effects of Disrupted Credit: Evidence from the Global Financial Crisis*,¹ the paper gets to a vital threshold question for financial stability policy: through what channel or channels do financial crises crush the real economy? Bernanke pits what he calls the “household leverage” narrative of the Great Recession of 2007 to 2009 against what he calls the “financial fragility” narrative. His empirical analysis comes down firmly on the side of the latter narrative.

In this Article, I use Bernanke’s blockbuster as a springboard to make several points that are germane to law and macroeconomics as a field of study. First, understanding acute macroeconomic disasters should be central to this field. It has been said that the Great Depression gave birth to macroeconomics.² Law and macroeconomics is likewise the product of a macroeconomic catastrophe: the Great Recession. Sharp contractions in output and employment are a source of incalculable human costs and are politically destabilizing.³ Better understanding their causes and cures remains as urgent as ever.

Second, Bernanke’s paper is a great example of what lawyers and legal scholars can learn from macroeconomists. If the legal and regulatory system is to respond effectively to macroeconomic calamities, it must be attuned to their inner workings. My focus here will be on using the legal and regulatory system to prevent acute macro disasters from happening in the first place rather than on using regulatory levers to apply macroeconomic stimulus once a crisis has already

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1. Ben S. Bernanke, *The Real Effects of Disrupted Credit: Evidence from the Global Financial Crisis*, 49 BROOKINGS PAPERS ON ECON. ACTIVITY 251 (2018).

2. Robert E. Lucas, Jr., *Macroeconomic Priorities*, 93 AM. ECON. REV. 1 (2003) (“Macroeconomics was born as a distinct field in the 1940s, as a part of the intellectual response to the Great Depression.”).

3. See Manuel Funke, Moritz Schularick & Christoph Trebesch, *Going to Extremes: Politics after Financial Crises, 1870–2014*, 88 EUR. ECON. REV. 227 (2016) (studying the political fallout from systemic financial crises over 140 years).

hit. It seems to me that both of these topics belong within law and macroeconomics.⁴

There can be no question that some legal and regulatory frameworks are better than others when it comes to preventing macroeconomic disasters. Gary Gorton has noted that the U.S. financial system and economy enjoyed a long Quiet Period from the early 1930s until 2007.⁵ This period was not free from financial crises in a generic sense; the bank and thrift debacle of the 1980s led to the failures of over 2,600 U.S. depository institutions holding over \$700 billion in combined assets.⁶ Bernanke's own famous early-career research on the Great Depression might have led one to expect the 1980s debacle to trigger a severe macroeconomic slump. He had posited that widespread bank failures destroy established information-rich credit relationships that can't be quickly replaced by alternative credit channels, leading to lower overall spending.⁷ Yet the bank and thrift debacle of the 1980s was followed by only a mild, garden-variety recession. Why was that crisis so benign, macroeconomically speaking? In my view, legal scholars have remained too agnostic on these matters—though there are exceptions. Different theories about how financial crises produce macro disasters point to very different lines of legal and regulatory analysis. Lawyers can learn a great deal from macroeconomists on these questions. I explore these issues in Part II.

Part III flips the script and asks what macroeconomists can learn from legal experts when it comes to preventing sharp macroeconomic contractions arising from the financial sector. Obviously, lawyers can help nonlawyers think about legal and regulatory design. But I want to say something more than this banal observation. I argue that legal experts might help macroeconomists think about the problem of acute macro disasters more from the standpoint of legal-institutional engineering. Bernanke's paper adds to a large and convincing body of literature identifying systemic runs or "panics"—widespread redemptions of the financial sector's very short-term or demandable debt—as a crucial cause or amplifier of acute macroeconomic contractions. Here is where legal thinkers can come in. Anglo-American banking law has almost always sought to *confine* this distinctive funding model to one or more specially chartered "banks." In other words, banking law has always attempted—with varying degrees of success over time—to restrict entry into money augmentation.⁸ This is a structural rule. It's

4. Listokin focuses on the stimulus question. See generally YAIR LISTOKIN, *LAW AND MACROECONOMICS: LEGAL REMEDIES TO RECESSIONS* (2019).

5. GARY B. GORTON, *SLAPPED BY THE INVISIBLE HAND: THE PANIC OF 2007*, at 11 (2010).

6. Bank failure data are from George Hanc, *The Banking Crises of the 1980s and Early 1990s: Summary and Implications*, in 1 *HISTORY OF THE EIGHTIES: LESSONS FOR THE FUTURE* 3, 14–15 (1997). Thrift failure data are from Timothy Curry & Lynn Shibut, *The Cost of the Savings and Loan Crisis: Truth and Consequences*, 13 *FDIC BANKING REV.* 26, 27 (2000).

7. Ben S. Bernanke, *Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression*, 73 *AM. ECON. REV.* 257 (1983).

8. See generally Morgan Ricks, *Entry Restriction, Shadow Banking, and the Structure of Monetary Institutions*, 2 *J. FIN. REG.* 291 (2016).

what stands in the way of the anarchy of free banking, as I describe below. And this feature of banking law necessarily involves interfering with private law—the background rights and duties of individuals and private entities in relation to one another. I have argued elsewhere that modernizing this longstanding structural legal tool is a prerequisite to effective macro disaster-prevention.⁹ Legal experts, I submit, can help macroeconomists and others expand their vision to this possibility because they are accustomed to crafting legal systems that override the background rules of private law. To take one example, bankruptcy law rests on abrogating creditors’ existing private-law entitlements. The basic point is that the funding model in question need not be taken as an immutable given; it can be structurally confined to a dedicated institutional apparatus. Legal experts might be able to see this more clearly than others.

Part IV concludes with some final thoughts on monetary system design. Money is central to macroeconomics, so it stands to reason that the law of money should be central to law and macroeconomics.

II

SYSTEMIC RUNS AND MACRO DISASTERS (WHAT LAW CAN LEARN FROM MACRO)

Bernanke’s blockbuster paper focuses on the Great Recession in the United States. He describes two main contending narratives.¹⁰ One of them is the household leverage narrative, which focuses on the buildup of household debt during the real estate boom of the early 2000s.¹¹ When the real estate boom went bust, household wealth took a hit, leading to declines in consumer spending and

9. See MORGAN RICKS, *THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION* 230–37 (2016) (discussing entry restriction into money augmentation).

10. Some experts subscribe to neither narrative. Economists of a neoclassical persuasion have doubted that financial factors had much if anything to do with the Great Recession. For example, in late 2008 several neoclassical economists, harshly critical of the government’s financial stabilization program then underway, wrote that “[i]t is difficult to see how disruptions in financial markets will directly affect investment decisions by a typical firm.” V.V. Chari, Lawrence Christiano & Patrick J. Kehoe, *Facts and Myths about the Financial Crisis of 2008* (Fed. Reserve Bank of Minneapolis, Working Paper No. 666, 2008). A few months later, as output was plummeting, Nobel Prize winner Edward Prescott suggested that governmental intervention was to blame: “I think the financial crisis has been greatly overstated as a problem. [It has] had virtually no consequences for the real economy With benign neglect the economy would have come roaring back quite quickly.” Interview by Tom Keene, Bloomberg, with Edward C. Prescott (Mar. 30, 2009), *quoted in* Brad DeLong, *Do Chicago Economics Nobel-Prize Winners Live in the Consensus Reality?*, BRAD DELONG’S GRASPING REALITY (Sept. 27, 2009), <https://www.bradford-delong.com/2009/09/do-chicago-economics-nobel-prize-winners-live-in-the-consensus-reality.html> [<https://perma.cc/6RMG-EHU2>]. See also CASEY MULLIGAN, *THE REDISTRIBUTION RECESSION: HOW LABOR MARKET DISTORTIONS CONTRACTED THE ECONOMY* (2012) (arguing that redistributive public policy was the main culprit behind the Great Recession); Lee Ohanian, *The Economic Crisis from a Neoclassical Perspective*, 24 J. ECON. PERSP., no. 4, Fall 2010, at 45, 55–61 (questioning whether financial factors played much of a role in either the Great Recession or the Great Depression).

11. Bernanke, *supra* note 2, at 254.

lower aggregate demand.¹² In this narrative, the residential real estate boom and bust coupled with high household debt loads were the proximate causes of the macroeconomic contraction known as the Great Recession.¹³

The other narrative is what Bernanke calls the financial fragility narrative.¹⁴ This narrative focuses on the systemic run or panic in wholesale funding markets, and resulting fire sales of financial assets, in the 2007 to 2009 period.¹⁵ Unlike the household leverage narrative, it focuses on the financial crisis proper.¹⁶ Runs and fire sales choked off the supply of new external financing throughout the economy, leading to a sharp contraction in output.¹⁷

Bernanke acknowledges that the two narratives are not mutually exclusive. And they overlap to some degree; events in the real estate and mortgage markets clearly triggered the systemic run.¹⁸ Still, they are distinct stories. The household leverage narrative omits the financial crisis proper as a driver of the macroeconomic contraction. It is a story about decreased consumer spending due to a wealth effect. It implies that the macroeconomic contraction would have been just as bad, or nearly so, even if the systemic run had somehow been avoided.¹⁹ The financial fragility narrative is very different. It's about a disruption in the supply of external financing occasioned by the systemic run. Lack of financing torpedoed the economy. This is not a story about wealth effects. Rather, the financial fragility narrative posits that the systemic run *itself* was a crucial driver of the contraction; had the systemic run somehow been avoided, the recession would have been far milder.

Bernanke contends that the financial fragility narrative explains the Great Recession much better than does the household leverage narrative.²⁰ His argument is basically about timing. He compares the ability of balance sheet factors (such as ABX indexes, real estate investment trust stock prices, bank credit default swap spreads) versus panic factors (such as London Interbank Offered Rate-Overnight Indexed Swap spreads, asset-backed commercial paper

12. *Id.*

13. *Id.*

14. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

18. *Id.* at 254-55.

19. See Dean Baker, Opinion, *Blame It On the Bubble*, THE GUARDIAN (Mar. 8, 2010), <https://www.theguardian.com/commentisfree/cifamerica/2010/mar/08/financial-crisis-subprimecrisis> [<https://perma.cc/E6JK-PGRA>] (stating that losses of housing wealth caused the slump; the financial crisis and rescue were “all sideshow”); Dean Baker, *What Krugman Said, with a Not So Small Addendum*, CTR. ECON. POL’Y RES.: BEAT THE PRESS (Oct. 20, 2012), <http://cepr.net/blogs/beat-the-press/what-krugman-said-with-a-not-so-small-addendum> [<https://perma.cc/NF77-PK22>] (“We would be in pretty much the same place today even if the financial crisis had not happened.”). Cf. PETER TEMIN, DID MONETARY FORCES CAUSE THE GREAT DEPRESSION 9-10, 11, 83 (1976) (stating that the banking panics were results of the Depression rather than causes, and that “[h]ad [the banking panics] not taken place . . . the overall story of the Depression would not have been much different”).

20. Bernanke, *supra* note 1, at 255.

(ABCP) spreads, corporate bond spreads) to forecast monthly macroeconomic indicators over the period 2006 to 2012. Bernanke writes:

I find that factors most strongly associated with the financial panic—the run on short-term funding and the panic in securitization markets—are also by far the best predictors of adverse economic changes in a range of [monthly] macroeconomic indicators, and that ending the panic is likewise associated with relative economic improvement. The macroeconomic forecasting ability of factors associated with housing and mortgage quality is much more modest.²¹

In other words, *the systemic run was what made the Great Recession great*: “The finding of the centrality of the panic helps to explain why the recession, which looked moderate in its early stages, became so deep.”²²

Bernanke devotes a portion of the paper to describing the mechanism by which he thinks systemic runs affect the real economy. Runs on the financial sector’s short-term debt require financial institutions to dump financial assets in fire sales.²³ The market becomes saturated with these assets, whose prices become depressed. The important thing to understand is that these fire sales lead to reduced supply, and spiking cost, of *new* credit. Elevated yields on secondary market assets become the hurdle rate for newly-originated financing in the primary credit markets. New credit becomes very hard to get for consumers and businesses alike. In a separate blog post about the paper, Bernanke calls this a “panic-induced credit crunch.”²⁴ The dearth of new credit causes a contraction in overall economic activity: for a time, individuals and businesses can’t get new financing for consumption or investment. Other economists have sketched versions of this causal mechanism before.²⁵

Pioneering empirical studies by Atif Mian and Amir Sufi lend support to the other narrative, the household leverage narrative. “The dramatic loss in wealth of indebted home owners is the key driver of severe recessions,” they write.²⁶ With respect to the Great Recession, the heart of their case rests on a zip code-level analysis of household leverage, spending, and employment.²⁷ They find that in 2008 and 2009, spending fell more in counties with larger declines in housing

21. *Id.*

22. *Id.* at 295.

23. See WALTER BAGEHOT, *LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET* 60–61 (1873) (“According to the saying, you ‘can sell Consols on a Sunday.’ . . . But not so in a general panic All ordinary bankers are wanting to sell, or thinking they may have to sell.”).

24. Ben S. Bernanke, *How important was the financial panic as a cause of the Great Recession?*, AM. ECON. ASS’N (2018), <https://www.aeaweb.org/forum/400/how-important-was-the-financial-panic-cause-great-recession> [<https://perma.cc/X9WT-YJG8>]. I used the term “panic-induced financing crunch” in my own work describing this mechanism. See RICKS, *supra* note 9, at 111.

25. The elements of this theory appear in Andrei Shleifer & Robert Vishny, *Fire Sales in Finance and Macroeconomics*, 25 J. ECON. PERSP., no. 1, Winter 2011, at 29, 29–35; Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 Q.J. ECON. 57, 57–61 (2012). This mechanism is quite different from the purely monetary mechanism described in Friedman and Schwartz as well as from the mechanism Bernanke outlined in his famous 1983 paper. See generally Bernanke, *supra* note 7.

26. ATIF MIAN & AMIR SUFI, *HOUSE OF DEBT: HOW THEY (AND YOU) CAUSED THE GREAT RECESSION, AND HOW WE CAN PREVENT IT FROM HAPPENING AGAIN* 133 (2014).

27. Atif Mian & Amir Sufi, *What Explains the 2007–2009 Drop in Employment?*, 82 ECONOMETRICA 2197, 2199–2200 (2014).

net worth than in counties with smaller declines.²⁸ Further, the decline in jobs catering to *local* demand was larger in counties with larger declines in housing net worth; by contrast, the decline in jobs catering to *national* demand was spread evenly across counties.²⁹

It remains an open question, however, just how responsible the housing net worth channel was for the decline in aggregate employment in the Great Recession.³⁰ Mark Gertler and Simon Gilchrist, prefiguring Bernanke's paper to some degree, note that the common slowdown in nonconstruction employment growth across regions in late 2007, as well as the dramatic acceleration in employment decline across regions right when Lehman failed, are not easily explained by the pattern of house price declines but match up very well with broad indicators of financial distress.³¹ The authors then use both cross-sectional and time series analyses to "disentangle the relative contributions" of the household balance sheet channel and the financial disruption channel to the decline in employment in the Great Recession.³² They conclude that the financial disruption channel had a significantly larger impact and that "the recession would have been far milder in the absence of the financial turmoil."³³

Although he doesn't mention it in his paper, Bernanke's argument about the singular importance of the systemic run or panic in driving the macroeconomic downturn of 2007 to 2009 links up with a longstanding theme in macroeconomic scholarship. Walter Bagehot wrote in 1873 that panics pose a "great danger" to the "industrial system."³⁴ He distinguished panics from speculative booms and busts in asset prices (the "inevitable vicissitudes of the market") which he viewed as more benign.³⁵ Milton Friedman and Anna Schwartz sounded a similar note in their seminal study of nearly a century of U.S. monetary history. "Banking panics," they concluded, "have occurred only during severe contractions and have greatly intensified such contractions, if indeed they have not been the primary factor converting what would otherwise have been mild contractions into severe ones."³⁶ Schwartz later said systemic runs or panics are what distinguish "real" from "pseudo" financial crises.³⁷ In her typology, the collapse of a debt-fueled bubble, standing alone, would fall in the pseudo category. Gary Gorton similarly equated financial crises with panics, or situations in which "holders of

28. Atif Mian, Kamalesh Rao & Amir Sufi, *Household Balance Sheets, Consumption, and the Economic Slump*, 128 Q.J. ECON. 1687, 1690 (2013).

29. Mian & Sufi, *supra* note 27, at 2216–2219.

30. Mian and Sufi don't supply an estimate in the paper. See Mian & Sufi, *supra* note 28.

31. Mark Gertler & Simon Gilchrist, *What Happened: Financial Factors in the Great Recession*, 32 J. ECON. PERSP., no. 3, Summer 2018, at 3, 26. I made a similar note in RICKS, *supra* note 9, at 102.

32. Gertler & Gilchrist, *supra* note 31, at 20.

33. *Id.* at 26.

34. BAGEHOT, *supra* note 23, at 17.

35. *Id.* at 158–59.

36. MILTON FRIEDMAN & ANNA J. SCHWARTZ, A MONETARY HISTORY OF THE UNITED STATES, 1867–1960, 463 (1963).

37. Anna J. Schwartz, *Real and Pseudo Financial Crises*, in MONEY IN HISTORICAL PERSPECTIVE 271, 283 (Anna J. Schwartz ed., 1987).

short-term liabilities . . . [refuse] to fund ‘banks.’”³⁸ He was critical of more generic concepts of financial crisis or “systemic event,” which he viewed as too vague.³⁹ He suggested that the absence of panics in the United States from 1934 until 2007 largely explains the absence of true macroeconomic disasters in that period.⁴⁰

In a painstaking empirical study, Andrew Jalil analyzed U.S. banking panics—“run[s] to convert deposits into currency”—prior to the Great Depression and found that major banking panics had large, rapid, and highly persistent negative effects on output.⁴¹ Jalil estimated that output declines by roughly ten percent in the year following a major banking panic.⁴² Systemic runs, he concluded, have been “a primary source of business-cycle fluctuations throughout US history.”⁴³

The role of banking panics in propagating the Great Depression remains a subject of debate. Friedman and Schwartz argued that the banking panics of the early 1930s bore primary responsibility for the Great Depression in the United States. Subsequent research on the Depression has stressed the causal role of the international gold standard, but these two explanations are complementary,⁴⁴ and they both implicate monetary system design. Bernanke in 2002 described Friedman and Schwartz’s achievement as “nothing less than to provide what has become the leading and most persuasive explanation of the worst economic disaster in American history.”⁴⁵ Banking panics may also bear substantial responsibility for the Great Depression in other countries. Recent research suggests that banking panics in France in 1930 and 1931 led to a massive credit crunch and were major drivers of its Great Depression.⁴⁶ The close association between systemic runs or panics and acute macroeconomic disasters can also be seen in the experience of Sweden and Finland in the early 1990s. Both countries experienced systemic runs on their financial sectors, which had become heavily reliant on money-market, short-term, debt.⁴⁷ The systemic run on these firms was a proto-shadow banking panic. The Swedish run involved “*marknadsbevis*,”

38. GORTON, *supra* note 5, at 62.

39. *Id.* at 15.

40. *See id.* at 2.

41. Andrew J. Jalil, *A New History of Banking Panics in the United States, 1825–1929: Construction and Implications*, 7 AM. ECON. J.: MACROECONOMICS 295, 328 (2015).

42. *Id.*

43. *Id.*

44. *See* BARRY EICHENGREEN, *GOLDEN FETTERS: THE GOLD STANDARD AND THE GREAT DEPRESSION, 1919–1939*, 18 (1992).

45. Ben S. Bernanke, Remarks On Milton Friedman’s Ninetieth Birthday at the Conference to Honor Milton Friedman (Nov. 8, 2002), <https://www.federalreserve.gov/BOARDDOCS/SPEECHES/2002/20021108/> [<https://perma.cc/MSK4-4ZCB>].

46. Patrice Baubeau, Eric Monnet, Angelo Riva & Stefano Ungaro, *Flight-to-Safety and the Credit Crunch: A New History of the Banking Crisis in France During the Great Depression 2–5* (Banque de France, Working Paper No. 698, 2018).

47. Peter Englund & Vesa Vihriala, *Financial Crisis in Finland and Sweden: Similar But Not Quite the Same*, in *THE GREAT FINANCIAL CRISIS IN FINLAND AND SWEDEN: THE NORDIC EXPERIENCE OF FINANCIAL LIBERALIZATION* 77, 87 (Lars Jonung, Jaakko Kiander & Pentti Vartia eds., 2009).

essentially ABCP.⁴⁸ A credit crunch ensued—apparently another example of a panic-induced credit crunch.⁴⁹ Both countries' economies promptly tanked, with falling real income and soaring unemployment. The non-employment rate rose by ten percentage points in Sweden and fifteen percentage points in Finland.⁵⁰

I have argued before that Japan's experience in the 1990s may provide yet another powerful, and somewhat neglected, example of a panic-induced credit crunch slamming the real economy.⁵¹ Japan's economic slump starting in the 1990s is typically seen through a balance sheet lens: a collapsed asset-price bubble coupled with high debt loads led to lower spending.⁵² However, while Japan's massive bubble in stocks and real estate burst in 1990, the economy didn't fare too badly in its aftermath. As Adam Posen has noted, Japan's problems in the early part of the 1990s were "far milder than is commonly recognized."⁵³ It was not until late 1997 that Japan's economy took an abrupt turn for the worse. A confluence of events likely precipitated the 1997 downturn. A number of analysts have pointed to contractionary fiscal policy, which no doubt played a role.⁵⁴ But the broader Asian financial crisis—which was orthogonal to Japan's debt-fueled bubble—also hit Japan at that time, and it precipitated a severe shadow banking panic.⁵⁵ When a small securities firm failed in late 1997, it was "the first default ever in Japan's money market" and led to a systemic run that "radically reduced the provision of credit to market participants and shrank liquidity throughout the financial system."⁵⁶ The default "paralysed the entire interbank market" and in short order "it was as though the financial system was starting to melt down."⁵⁷

48. See *id.* at 90 ("This was a sort of 'run'; rather than actively running to the bank to withdraw deposits the holders of maturing *marknadsbevis*, otherwise routinely reinvesting, now refused renewed funding in the face of an imminent bankruptcy risk. The crisis spread to the whole market for *marknadsbevis*, which dried up in a couple of days The crisis also spread to other segments of the money market with sharply increasing spreads between t-bills and certificates of deposit."). See also Stefan Ingves & Göran Lind, *Stockholm Solutions*, 45 FIN. & DEV. 21, 22 (2008) ("In the Swedish crisis, finance companies played a role similar to that of [Structured Investment Vehicles].").

49. Englund & Vihriala, *supra* note 47, at 112.

50. Klas Fregert & Jaakko Pehkonen, *The Crisis of the 1990s and Unemployment in Finland and Sweden*, in *THE GREAT FINANCIAL CRISIS IN FINLAND AND SWEDEN: THE NORDIC EXPERIENCE OF FINANCIAL LIBERALIZATION*, 133 (Lars Jonung, Jaakko Kiander & Pentti Vartia eds., 2009).

51. See RICKS, *supra* note 9, at 133–35.

52. See generally RICHARD C. KOO, *BALANCE SHEET RECESSION: JAPAN'S STRUGGLE WITH UNCHARTED ECONOMICS AND ITS GLOBAL IMPLICATIONS* (2003).

53. Adam Posen, *It Takes More Than a Bubble to Become Japan*, in *ASSET PRICES AND MONETARY POLICY* 203, 205 (Anthony Richards & Tim Robinson eds., 2003). Cf. Tamim Bayoumi, *The Morning After: Explaining the Slowdown in Japanese Growth in the 1990s*, 53 J. INT'L ECON. 241, 242 (2001) ("[I]n 1997 the economy entered into its first recession since the early 1970s.").

54. PAUL KRUGMAN, *THE RETURN OF DEPRESSION ECONOMICS AND THE CRISIS OF 2008* 72 (2009); RICHARD C. KOO, *THE HOLY GRAIL OF MACROECONOMICS* 152 (2011).

55. Hiroshi Nakaso, *The Financial Crisis in Japan during the 1990s: How the Bank of Japan Responded and the Lessons Learnt*, 6 BANK FOR INT'L SETTLEMENTS PAPERS 1, 9, 11 (2001).

56. Yasuyuki Fuchita & Kei Kodachi, *Managing Systemwide Financial Crises: Some Lessons from Japan since 1990*, in *ROCKY TIMES: NEW PERSPECTIVES ON FINANCIAL STABILITY* 11, 28, 29 (Yasuyuki Fuchita, Richard Herring & Robert Litan eds., 2012).

57. Nakaso, *supra* note 55, at 11.

Financial sector short-term funding spreads spiked sharply, as did corporate bond spreads.⁵⁸ This was no minor event; Romer and Romer recently constructed a new series on financial distress in twenty-four Organisation for Economic Co-operation and Development countries for the 1967 to 2007 period and found that Japan's 1997 to 1999 experience was by far the worst episode of financial distress—and the only extreme crisis—in their entire sample before 2007.⁵⁹ True to form, Japan's shadow banking panic set off a severe credit crunch, and macroeconomic contraction immediately followed. Quite possibly, Japan's experience in the 1990s was as much a panic story as a balance sheet story!

Some analysts have doubted that systemic runs or panics, which are brief events, can explain *protracted* macroeconomic slumps.⁶⁰ But why shouldn't we expect severe negative shocks to have long-lasting or even permanent effects on the economy? When the economy gets pushed into a deep enough ditch, it may have trouble climbing out, and monetary and fiscal stimulus may not offer an easy escape. There is no assurance that the economy will return to its previous trendline when the panic subsides. James Tobin followed John Maynard Keynes in questioning "the efficacy of the economy's natural market adjustment mechanisms in restoring full employment equilibrium, once a negative real demand shock had pushed the economy off that equilibrium."⁶¹ Tobin conceived of the problem as a kind of economy-wide coordination failure: output is constrained by demand for goods and services; demand for goods and services is constrained by employment; and employment is constrained by output.⁶² So an economy can get stuck on a lower trajectory after a big negative shock.⁶³

58. Masazumi Hattori, Koji Koyama & Tatsuya Yonetani, *Analysis of Credit Spread in Japan's Corporate Bond Market*, 5 BANK FOR INT'L SETTLEMENTS PAPERS 113 (2001).

59. Christina D. Romer & David H. Romer, *New Evidence on the Aftermath of Financial Crises in Advanced Countries*, 107 AM. ECON. REV. 3072, 3080 (2017).

60. See, e.g., Paul Krugman, Opinion, *Steeper Versus Deeper (Wonkish)*, N.Y. TIMES (Sept. 22, 2018), <https://www.nytimes.com/2018/09/22/opinion/steeper-versus-deeper-wonkish.html> [<https://perma.cc/5274-699D>] ("How much did the financial crisis contribute to these extremely high levels of economic slack, long after the disruption had ended? I still don't see how to make it the main story."); Paul Krugman, Opinion, *Botching the Great Recession*, N.Y. TIMES (Sept. 12, 2018), <https://www.nytimes.com/2018/09/12/opinion/botching-the-great-recession.html> [<https://perma.cc/NF5Y-FSUW>] ("Why didn't financial stability bring a rapid bounceback? Because financial disruption wasn't at the heart of the slump. The really big factor was the bursting of the housing bubble—of which the banking crisis was a symptom.").

61. James Tobin, *Price Flexibility and Output Stability: An Old Keynesian View*, 7 J. ECON. PERSP., no. 1, Winter 1993, at 45, 47–48. See also JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY 27 (1936) ("The economic system may find itself in stable equilibrium with [employment] at a level below full employment."); John Maynard Keynes, *A Self-Adjusting Economic System?*, NEW REPUBLIC (Feb. 20, 1935) (doubting that the economic system has any "inherent tendency towards self-adjustment").

62. Tobin, *supra* note 61, at 47, 50.

63. Cf. ROGER E. A. FARMER, HOW THE ECONOMY WORKS: CONFIDENCE, CRASHES AND SELF-FULFILLING PROPHECIES (2010); Russell Cooper & Andrew John, *Coordinating Coordination Failures in Keynesian Models*, 103 Q.J. ECON. 441, 442 (1988) (describing models that exhibit "underemployment equilibria" owing to "the inability of agents to coordinate their actions successfully in a many-person, decentralized economy" rather than to "the usual Keynesian assumptions" of wage or price rigidities); Peter A. Diamond, *Aggregate Demand Management in Search Equilibrium*, 90 J. POL. ECON. 881, 886

This is not to say that high household debt loads might not be an obstacle to recovery after a deep contraction, just that there are other possible obstacles: intrinsic features of the economic system may hinder a return to full employment, even with the aid of stimulative public policy. In that case, preventing severe negative shocks in the first place becomes even more important. As noted above, Andrew Jalil's research on nineteenth century U.S. banking panics shows that severe panics invariably set off prolonged slumps.⁶⁴ In some cases, trend output growth was slower after the panic-induced recession than before, suggesting permanent damage.⁶⁵ Given the primitive state of consumer credit markets in that era, it seems unlikely that household debt loads were to blame.

The propensity of financial crises to produce macroeconomic calamities is the main reason we care about financial crises in the first place. And if preventing macroeconomic disasters is the *raison d'être* for financial stability regulation, understanding the transmission channels that are the focus of Bernanke's blockbuster paper is paramount. This means deconstructing crises into their component parts and asking where most of the damage comes from. Too often, analysts lump various phenomena into a broad and generic conception of financial crisis. The financial crisis, taken as a whole, then becomes the unit of analysis and the thing to be prevented. This inevitably draws attention away from the systemic run or panic and toward the various excesses that preceded it. I think legal analysts are especially prone to this error. Bernanke—like Bagehot, Friedman and Schwartz, Gorton, and others—instead asks us to disaggregate, to treat the panic itself as a distinct event.

One final point on what legal professionals and scholars can learn from macroeconomists: we can learn to think more clearly about what types of instruments or claims function as money—and what it *means* for something to function as money. Assets that are readily used for payments are obviously money, but many macroeconomists have favored a somewhat broader definition. Friedman and Schwartz declined to limit their conception of money based on what they called “a priori considerations,” such as use in payments.⁶⁶ Instead they saw varying degrees of what they called “moneyness” in different assets.⁶⁷ John Hicks said the same thing a quarter century earlier: “Bills of short maturity . . . [are] not quite perfect money, but still very close substitutes for it,” he wrote.⁶⁸ “The rate of interest on these securities is a measure . . . of their imperfect ‘moneyness.’”⁶⁹ Henry Simons opined that “short-term debts . . . are . . . closely

(1982) (“[T]he presence of multiple steady-state equilibria implies that the economy can get stuck at the ‘wrong’ steady-state equilibrium after the shock has gone away.”).

64. See Jalil, *supra* note 41, at 328 (finding that panics had large effects on output and that panic-induced downturns “differed substantially” from other downturns).

65. *Id.* at 326–27.

66. MILTON FRIEDMAN & ANNA JACOBSON SCHWARTZ, *MONETARY STATISTICS OF THE UNITED STATES: ESTIMATES, SOURCES, METHODS*, 104 (1970).

67. *Id.* at 111.

68. JOHN HICKS, *VALUE AND CAPITAL* 163 (2d ed. 1946).

69. *Id.*

akin to money and demand deposits.”⁷⁰ And Keynes suggested we “treat as *money*” debt instruments with a maturity not “in excess of three months.”⁷¹

More recently, a number of top economists and other experts have emphasized that the financial sector’s short-term debt has a distinctly monetary character. Gary Gorton refers to various types of financial sector short-term debt as “forms of money” and “private money.”⁷² Jeremy Stein says that the financial sector’s short-term debt obligations are “private money” and offer “monetary services” and that they have “money-ness.”⁷³ John Cochrane says “short-term debt *is* money.”⁷⁴ In a 2016 speech, the Federal Reserve’s Daniel Tarullo observed that such short-term debt instruments exhibit “features sometimes characterized as ‘money-like.’”⁷⁵ Their “private creation,” he said, “is, at least to some degree, the creation of money outside of the operations of central banks or of depository institutions subject to reserve requirements and other regulations.”⁷⁶

Is this stuff really money?⁷⁷ In one sense the debate is semantic, but the conceptual stakes are still high. I recently learned that matter can occupy an intermediate phase between liquid and gas, called a supercritical fluid. It is neither liquid nor gas, or both liquid and gas, depending on how you look at it. A supercritical fluid has density and solvating properties resembling those of a liquid, but its diffusivity and absence of surface tension are characteristic of gases. Supercritical fluids can also be tuned to be more liquid-like or more gas-like by altering temperature and pressure. Cash equivalents, I submit, are the supercritical fluid of financial instruments, sitting between bonds and cash. They are not a medium of exchange, but owing to their extremely low credit risk *and* extremely low interest-rate risk, they have a very stable value in relation to the medium of exchange. In a world where prices are sticky in the short run, this

70. Henry C. Simons, *A Positive Program for Laissez Faire: Some Proposals for a Liberal Economic Policy (1934)*, in *ECONOMIC POLICY FOR A FREE SOCIETY* 320 n.7 (1948).

71. JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY* 167 n.1 (1936).

72. GARY B. GORTON, *MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON’T SEE THEM COMING* 5 (2012); Gary B. Gorton & Guillermo Ordoñez, *Collateral Crises*, 104 *AM. ECON. REV.* 343, 344 (2014).

73. Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 *Q.J. ECON.* 57, 58 (2012).

74. John H. Cochrane, *Toward a Run-Free Financial System*, in *ACROSS THE GREAT DIVIDE: NEW PERSPECTIVES ON THE FINANCIAL CRISIS* 197, 224 (Martin Neil Bailly & John B. Taylor eds., 2014) (emphasis in original).

75. Daniel K. Tarullo, Governor, Fed. Reserve Sys., *Opening Remarks at the Center for American Progress and Americans for Financial Reform Conference on Exploring Shadow Banking: Can the Nation Avoid the Next Crisis?* (July 12, 2016), <https://www.federalreserve.gov/newsevents/speech/tarullo20160712a.htm> [<https://perma.cc/JF9J-S87F>].

76. *Id.*

77. Admati and Hellwig have said that the notion that banks “produce (or create) money . . . rests on an abuse of the word ‘money.’” Anat R. Admati & Martin F. Hellwig, *The Parade of Bankers’ New Clothes Continues: 23 Flawed Claims Debunked* 6 (Rock Ctr. for Corp. Governance at Stanford Univ., Working Paper No. 143, 2013).

stable-price feature of cash equivalents imparts “moneyness” to them.⁷⁸ And this moneyness is empirically visible at the very short end of the yield curve.⁷⁹ Recognizing this, accounting standards classify high quality debt instruments with maturities of three months or less as “cash equivalents,”⁸⁰ and central banks have long grouped many of these instruments in their broad measures of the money stock.

Cash equivalents are always very simple: they are basically zero-coupon IOUs, the most primitive financial instruments in existence. Simplicity may actually be essential to moneyness. Otherwise these instruments would need to be carefully investigated, which would defeat the purpose. Fortunately, this inherent simplicity may ease the task of institutional engineering, which I discuss next.

III

INSTITUTIONAL ENGINEERING (WHAT MACRO CAN LEARN FROM LAW)

Bernanke concludes that his analysis provides retrospective justification for the U.S. government’s unpopular financial rescue in the 2007 to 2009 period,⁸¹ which he played a big role in executing. He contends, correctly I think, that the rescue forestalled an even bigger macroeconomic catastrophe.⁸² Prospectively, he stresses the need to maintain the government’s “firefighting tools” to equip future Ben Bernankes to do it again.⁸³ Apart from that, he offers a somewhat bland call for “continued vigilance in ensuring financial stability.”⁸⁴

This is a missed opportunity — and an area where legal thinkers might be able to offer some insights. Suppose it’s true that systemic runs or panics are a major source of macroeconomic catastrophes: they are the main danger the financial system poses to the broader economy. Suppose also that systemic runs or panics are specific to private money — “[f]inancial crises are everywhere and always about short-term debt,” Douglas Diamond has said.⁸⁵ Combining these premises leads to the conclusion that financial instability is, and always has been, mostly about private sector money creation. The problem is therefore one of monetary system design. This recognition is liberating: it suggests we are dealing with a discrete task of institutional engineering rather than an open-ended search for

78. Or so I have argued. See RICKS, *supra* note 9, at 4.

79. Robin Greenwood, Samuel G. Hanson & Jeremy C. Stein, *A Comparative Advantage Approach to Government Debt Maturity*, 70 J. FIN. 1683, 1688 (2015) (finding a money premium of up to sixty basis points in short-term Treasury bills).

80. FIN. ACCOUNTING STANDARDS BD., SUMMARY OF STATEMENT NO. 95: STATEMENT OF CASH FLOWS 6 (1987), <https://www.fasb.org/summary/stsum95.shtml> [<https://perma.cc/4MRD-PU9N>].

81. Bernanke, *supra* note 1, at 256.

82. *Id.*

83. *Id.* at 309.

84. *Id.* at 308.

85. See Douglas W. Diamond, Remarks at the Panel Discussion on Financial Regulation at the University of Chicago’s Becker Friedman Institute (Nov. 6, 2010) (explaining that short-term debt or “private money” are drivers of financial crises) (comment appears at the eight-minute mark).

endless sources of financial instability. In fact maybe the term “financial instability” is too vague and amorphous to be useful, suggesting as it does something beyond the very particular phenomenon of runs on defaultable money-claims.

Here is one way of restating the problem in legal-institutional terms. Given some established medium of exchange, entrepreneurs can set up money-augmentation firms that hold reserves of established money and then issue larger quantities of IOUs redeemable on demand or in the very near term for that existing money. These firms’ asset portfolios typically consist mostly of nonmonetary financial assets like loans and bonds. This business model can be established using the ordinary background rules of what lawyers call “private law”—in this case, property, contract, business organizations, and, in some instances, the law of security interests.⁸⁶ No other legal technologies are required. A pivotal threshold question for the state is whether and, if so, under what terms and conditions, to allow this business model to exist.

Anglo-American banking law has consistently answered this question with entry restriction. That is, it has sought to legally confine the activity of money augmentation to one or more specially chartered entities called banks, which are then forced to inhabit a unique institutional environment, operating essentially as franchisees of the state.⁸⁷ Restricting entry in this way necessitates a general prohibition—the law must specify what it is that chartered banks are permitted to do, liability-wise, that is off-limits to everyone else—which has meant overriding the background rules of private law mentioned above.

Both conceptually and practically, this requires a legal definition. Just as securities law starts by defining “security,”⁸⁸ investment company law starts by defining “investment company,”⁸⁹ and insurance law starts by defining “insurance,”⁹⁰ the law governing money-augmentation firms must start by defining what exactly a “money” claim is. Congress in the 1860s sought to assert federal control over money augmentation by effectively prohibiting “every

86. See KATHARINA PISTOR, *THE CODE OF CAPITAL: HOW THE LAW CREATES WEALTH AND INEQUALITY* 1–22 (2019) (explaining the various ways capital is “coded” into law).

87. Cf. MILTON FRIEDMAN, *A PROGRAM FOR MONETARY STABILITY* 74 (1960) (“[The government] has a monopoly on the issuance of money, though it has chosen to give up part of its monopoly powers by permitting commercial banks to operate with fractional required reserves.”); *id.* at 8 (describing commercial banks as “issuers of money”); IRVING FISHER, *100% MONEY* 44 (3d ed. 1945) (“[B]anks are virtually private mints.”); Frank D. Graham, *Partial Reserve Money and the 100 Per Cent Proposal*, 26 *AM. ECON. REV.* 428 (1936). The apt “franchise” descriptor comes from Robert C. Hockett & Saule T. Omarova, *The Finance Franchise*, 102 *CORNELL L. REV.* 1143, 1147 (2017). They use it much more broadly to encompass much of the financial sector, however, whereas I confine it to banks’ role in the monetary framework. I had previously used the phrase “public-private partnership,” see RICKS, *supra* note 9, but franchise is much better since it correctly implies hierarchy rather than coequal status.

88. See 15 U.S.C. § 77b(a)(1) (2012).

89. See 15 U.S.C. § 80a-3(a)(1) (2012).

90. See TOM BAKER & KYLE D. LOGUE, *INSURANCE LAW AND POLICY* 622 (4th ed. 2017) (“Whatever the content of insurance regulation, there is a need to determine the range of economic activity to which that regulation applies [T]he definition of the term ‘insurance’ is central to determining the jurisdiction of state ‘insurance’ departments.”).

person, firm, association . . . [or] corporation” apart from federally chartered banks from issuing “their own notes used for circulation.”⁹¹ At the time, bank notes were viewed as money but deposit accounts generally were not.⁹² This was a consequential oversight: deposit banking flourished and money augmentation therefore persisted outside the carefully engineered federal apparatus. Since the New Deal, U.S. federal law has said (more or less) that you need a banking charter to maintain “deposit” liabilities⁹³—but, amazingly, “deposit” is not defined.⁹⁴

This formalistic (as opposed to functional) approach has made our entry restriction law very easy to sidestep. When the money market mutual fund (MMF) industry arose in the late 1970s, the Securities and Exchange Commission (SEC) was faced with the question of whether claims on MMFs were “deposits” and thus whether MMFs were engaged in unauthorized banking. The SEC asked the Department of Justice for a legal opinion on the matter. The Department of Justice opined in essence that MMF shares are not deposits because they are equity, not debt—a formalistic and superficial analysis.⁹⁵ The Department of Justice failed to recognize that MMFs arose precisely to create deposit substitutes. MMFs of course would later prove just as unstable as uninsured bank deposits. At the peak of the 2008 financial crisis, prime institutional money funds suffered a massive run, prompting the U.S. government’s single largest rescue commitment of the crisis—\$3 trillion.⁹⁶

I have argued elsewhere that it is hard to see how financial stability policy can be effective without modernizing and fortifying entry restriction into the business of money augmentation.⁹⁷ The alternative is free banking or free entry into

91. Act of March 3, 1865, ch. 78, § 6, 13 Stat. 469, 484 (as amended by Act of February 8, 1875, ch. 36, § 19, 18 Stat. 307, 311).

92. Charles F. Dunbar, *Deposits as Currency*, 1 Q.J. ECON. 401, 402 (1887) (“The ease with which we ignore deposits as a part of the currency seems the more remarkable, when we consider that . . . it is a circulating medium in as true a sense and in the same sense as the bank-note, and that, like the bank-note, it is created by the bank and for the same purposes.”). Fast-forward a century and you find smart analysts coming to the same realization about nondeposit cash equivalents. See, e.g., Jonathan R. Macey & Geoffrey P. Miller, *Nondeposit Deposits and the Future of Bank Regulation*, 91 MICH. L. REV. 237, 237 (1992).

93. 12 U.S.C. § 378(a)(2) (2012).

94. “Deposit” is statutorily defined for deposit insurance purposes but not entry restriction purposes. See 12 U.S.C. § 1813(l) (2012) (providing the current statutory definition for a deposit). That definition would not help for entry restriction anyway, because it defines deposit as “money or its equivalent received or held by a bank.” § 1813(l)(1). It would be a legal circle to say that only banks can maintain deposit liabilities and to simultaneously define “deposit” as a liability of a bank.

95. See Letter from Philip B. Heymann & Lawrence Lippe, Criminal Div., U.S. Dep’t of Justice, to Martin Lybecker, Assoc. Dir., Div. of Mktg. Mgmt., U.S. Sec. & Exch. Comm’n (Dec. 18, 1979) (on file with author).

96. See Press Release, U.S. Dep’t of the Treasury, Treasury Announces Temporary Guarantee Program for Money Market Funds (Sept. 29, 2008), <https://www.treasury.gov/press-center/press-releases/Pages/hp1161.aspx> [<https://perma.cc/X3H5-TC95>] (summarizing the terms of the federal guarantee program).

97. See RICKS, *supra* note 9, at 230–37; Morgan Ricks, *Entry Restriction, Shadow Banking, and the Structure of Monetary Institutions*, 2 J. FIN. REG. 291–95 (2016).

money augmentation. This is the system we have today. Cash equivalents have no legal status as such under U.S. law. This makes the task of regulation and supervision all but impossible; there is no compartmentalization, no structural barrier. We have effectively decided that unrestricted private money creation is a good thing. “We have regulation about the government having monopoly over currency, but we allow these very close substitutes, we think it’s good,” Ken Rogoff said a few years ago. “But maybe . . . it’s not so good.”⁹⁸

Banking law cannot serve a useful economic purpose if its application is not coextensive with the activity it is designed to deal with. In the last several decades, dollar-denominated money augmentation has seeped, on a massive scale, outside our system of chartered banks.⁹⁹ Short-term repo and Eurodollar instruments are the biggest categories, in addition to MMF shares.¹⁰⁰ In response, lawmakers have taken regulatory and supervisory tools originally developed for banks and applied them to myriad other types of financial institutions. The implicit justification for this expansion has been that banks are not special, that shadow banks pose the same sorts of problems that banks pose. Fair enough, but the specialness of banks is *itself a policy choice*—and entry restriction is the legal means through which that choice is made. If banks alone were permitted to engage in money augmentation, banks would be special!¹⁰¹ And there is more at stake here than systemic runs and macroeconomic disasters. The business of money augmentation also implicates issues of monetary control as well as the prospect of private capture of seigniorage.¹⁰²

Legally restricting entry into money augmentation, on a functional basis, would require overriding the background rules of private law. The funding model in question—the use of large quantities of short-term or demandable debt, continuously rolled over, to fund portfolios of financial assets—would need to be legally prohibited outside the chartered banking system. But lawyers should be comfortable with this sort of structural rule. All sorts of bedrock legal institutions override the standard rules of property and contract. I mentioned one above: bankruptcy law vetoes the operation of standard creditor remedies that would otherwise be available under commercial law.¹⁰³ The whole field of bankruptcy thus rests on abrogating creditors’ background legal entitlements. A less obvious example is the law of business organizations; according to one prominent theory, the most basic function of organizational law is to override the “background rules

98. Kenneth Rogoff, Professor of Pub. Policy & Professor of Econ. at Harvard Univ., Remarks at the 14th Jacques Polak Annual Research Conference of the International Monetary Fund (Nov. 8, 2013), <https://www.imf.org/external/mmedia/view.aspx?vid=2821294542001> [<https://perma.cc/UT3T-R5F2>].

99. See RICKS, *supra* note 9, at 232–37.

100. *Id.*

101. This entire old debate is thus built on a basic misunderstanding. See Richard C. Aspinwall, *On the “Specialness” of Banking*, 7 ISSUES BANK REG. 16 (1983); E. Gerald Corrigan, *Are Banks Special?*, 1982 FED. RESERVE BANK MINNEAPOLIS ANN. REP. A much-admired James Tobin essay on the subject makes the same mistake, in my view. James Tobin, *Commercial Banks as Creators of “Money,”* in BANKING AND MONETARY STUDIES 408–19 (Deane Carson ed., 1963).

102. Morgan Ricks, *Money as Infrastructure*, 2018 COLUM. BUS. L. REV. 757, 777 (2018).

103. 11 U.S.C. § 362 (2012).

of contract and property law” that would otherwise give business owners’ personal creditors a claim on business assets *pari passu* with business creditors.¹⁰⁴ Another example is the legal attribute of negotiability, which overrules the fundamental property law principle *nemo dat qui non habet* (you cannot transfer what you don’t have).¹⁰⁵ Similarly, the legal principle of common carriage overrules standard property entitlements by disallowing owners of certain resources from charging different prices to similarly-situated users.¹⁰⁶ Perhaps it should not be surprising that the law of money—like other core legal institutions of a market economy, such as bankruptcy and antitrust—should be fundamentally built on restricting the domain of property and contract entitlements. Lawyers should be quite comfortable with imposing these sorts of structural limits on the scope of private law. Lawmakers do this all the time.

Another thing lawmakers do all the time is draw a dividing line along a continuum. There is no sharp dividing line between money and bonds, as we have seen. But this should not be treated as an obstacle to entry restriction. The basic task of entry restriction would be to say that no one apart from chartered banks may use the distinctive and identifiable funding model we associate with banking, a key feature of which is the use of large amounts of short-term or demandable debt that is continuously rolled over. What counts as short-term must therefore be legally specified. Empirical evidence from the U.S. Treasury security market shows that money-ness is highly concentrated at the very short end of the yield curve, at maturities of six months or less.¹⁰⁷ Whether we choose six or nine or twelve months probably would not matter very much; that’s the right neighborhood. There is no single correct answer, but lawmakers do this kind of thing routinely: think voting ages and statutes of limitation. As noted above, accounting standards use a three-month maturity cutoff to classify something as a cash equivalent. MMF regulations limit average portfolio duration to sixty days and specify that MMFs may not own any assets with remaining maturities of greater than 397 days.¹⁰⁸ There are countless other examples.

Restricting entry is only the first step of the institutional engineering challenge. How should entry rights be allocated? What terms and conditions should attach? What should substantive regulation of chartered banks, which would have a monopoly on money augmentation, look like? How, if at all, should their portfolios be restricted? Should their monetary liabilities, whether or not styled as “deposits,” be explicitly backed by the state? Should there be a supervisory apparatus, and what should it look like?¹⁰⁹ Is a special insolvency

104. Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 YALE L.J. 387, 411 (2000).

105. James S. Rogers, *Negotiability, Property, and Identity*, 12 CARDOZO L. REV. 471, 478 (1990).

106. See RICHARD EPSTEIN, *PRINCIPLES FOR A FREE SOCIETY* 279–95 (1998) (tracing the impact of the common carriage doctrine on private contract rights).

107. See Greenwood, Hanson & Stein, *supra* note 79, at 1688.

108. 17 C.F.R. § 270.2a-7(d)(1) (2017).

109. See Lev Menand, *The Monetary Basis of Bank Supervision* (Oct. 17, 2019) (forthcoming) (describing the development of the bank supervision in the United States and highlighting its monetary

regime needed? And so forth. I won't delve into these questions here other than to say that, without first restricting entry, it is hard to even think about these questions coherently.

IV

FINAL THOUGHTS

Bernanke's blockbuster paper points to fertile ground for law and macroeconomics. Legal scholars who focus on financial stability regulation need to pay careful attention to the economic research on the channels through which financial crises transmit macroeconomic devastation. By the same token, macroeconomists can learn from legal scholars on questions of legal-institutional engineering. One interpretation of economic history—one that is corroborated to some degree by Bernanke's paper—is that private money often plays a central role in macroeconomic disasters, at least those emanating from the financial sector. The law of money encompasses the law of central banking, including such topics as administrative structure and independence¹¹⁰ as well as emergency powers. This Article has argued that the law of money must also address the interface between public monetary institutions and private law.¹¹¹ It seems to me that these topics belong at or near the center of the law and macroeconomics research agenda.

justification), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3421232 [<https://perma.cc/W5H5-B2FN>].

110. For an illuminating treatment, see PETER CONTI-BROWN, *THE POWER AND INDEPENDENCE OF THE FEDERAL RESERVE* (2016).

111. The roles of "public" and "private" in English monetary history, and in theories of money more generally, receive profound treatment in CHRISTINE DESAN, *MAKING MONEY: COIN, CURRENCY, AND THE COMING OF CAPITALISM* (2014).
