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Money as Infrastructure

Morgan Ricks

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MONEY AS INFRASTRUCTURE

Morgan Ricks*

Traditional infrastructure regulation—the law of regulated industries—rests atop three pillars: rate regulation, entry restriction, and universal service. This mode of regulation has typically been applied to providers of network-type resources: resources that are optimally supplied as integrated systems. The monetary system is such a resource; and money creation is the distinctive function of banks. Bank regulation can therefore be understood as a subfield of infrastructure regulation. With few exceptions, modern academic treatments of banking have emphasized banks’ intermediation function and downplayed or ignored their monetary function. Concomitantly, in recent decades U.S. bank regulation has strayed from its infrastructural roots. This regulatory drift has been unwise.

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I. INTRODUCTION

Two competing paradigms have long dominated understandings of banking and its regulation. One paradigm sees banking first and foremost as a species of financial intermediation. Under this *intermediation paradigm*—which has reigned supreme for decades—banks are understood to be primarily in the business of “taking funds” from depositors and then “lending them out.” Banks thereby connect savers and borrowers.¹ “[B]anking’ [has] become virtually synonymous with financial intermediation,” writes Richard Posner, in a typical example from this vein.² “I . . . use the words ‘bank’ and ‘banking’ broadly, to encompass all financial intermediaries[.]”³

The other paradigm can be called the *money paradigm*. It views banks as distinctly monetary institutions. This means something more than offering payment services, though that is certainly part of it.⁴ The money paradigm recognizes that claims on banks are, in a real sense, money, and that banks

¹ For a recent, broad critique of this paradigm, see Robert C. Hockett & Saule T. Omarova, *The Finance Franchise*, 102 CORNELL L. REV. 1143, 1144–67 (2017).

² RICHARD A. POSNER, *A FAILURE OF CAPITALISM: THE CRISIS OF '08 AND THE DESCENT INTO DEPRESSION* 46 (2009).

³ *Id.* at xvi.

⁴ Hence defining banks as “financial intermediaries that offer payment services” doesn’t quite capture it. See RICHARD SCOTT CARNELL, JONATHAN R. MACEY & GEOFFREY P. MILLER, *THE LAW OF FINANCIAL INSTITUTIONS* 65 (6th ed. 2017) (emphasis omitted).

thus augment the money supply. Rather than seeing banks as taking funds that are then lent out, the money paradigm sees banks primarily as *issuers* of “funds.”⁵ (Needless to say, taking and issuing are opposites.) On this view, banks are an integral part of the overall monetary framework, a status that justifies a unique relationship with the state.

The two paradigms are not strictly incompatible; most banking experts would probably find truth in both of them.⁶ But they coexist in uneasy tension. While the intermediation paradigm emphasizes the similarities between banks and other financial institutions, the money paradigm stresses their differences. While the intermediation paradigm tends to focus more on the left side of banks’ balance sheets (i.e., their

⁵ This point is sometimes conveyed by “loans create deposits” and similar expressions. See, e.g., IRVING FISHER, *THE PURCHASING POWER OF MONEY* 39 (rev. ed. 1920) (“A bank depositor . . . has not ordinarily ‘deposited money’[.]”); JOHN MAYNARD KEYNES, *THE PURE THEORY OF MONEY* 25 (1930) (“Practical bankers . . . have [concluded] . . . that the banks can lend no more than their depositors have previously entrusted to them. But economists cannot accept this as being the common-sense which it pretends to be.”); J. LAURENCE LAUGHLIN, *THE PRINCIPLES OF MONEY* 119 (1919) (“A loan is inevitably followed by the creation of a deposit account in favor of the borrower; as yet no money is paid out or comes in.”); JOSEPH A. SCHUMPETER, *HISTORY OF ECONOMIC ANALYSIS* 1114 (1954) (“It is much more realistic to say that banks . . . create deposits in their act of lending, than to say that they lend the deposits that have been entrusted to them.”); Frank A. Vanderlip, *The Modern Bank, in THE CURRENCY PROBLEM AND THE PRESENT FINANCIAL SITUATION: A SERIES OF ADDRESSES DELIVERED AT COLUMBIA UNIVERSITY, 1907–1908* 1, 5 (1908) (“It is a misconception to suppose that a bank first accumulates deposits and then loans them out to borrowers. The operation is the reverse. The bank first makes a loan to the borrower and in so doing creates a deposit.”); L. RANDALL WRAY, *MONEY AND CREDIT IN CAPITALIST ECONOMIES: THE ENDOGENOUS MONEY APPROACH* 73 (1990) (“[L]oans make deposits[.]”); Michael McLeay, Amar Radia & Ryland Thomas, *Money Creation in the Modern Economy*, 2014 BANK ENGLAND Q. BULL. 14, 15 (“[It is a] common misconception . . . that banks act simply as intermediaries, lending out the deposits that savers place with them [T]he act of lending creates deposits — the reverse of the sequence typically described in textbooks.”).

⁶ For instance, Posner refers in passing to banks’ role in “expanding and contracting the supply of money.” POSNER, *supra* note 2, at 20.

asset portfolios), the money paradigm is more concerned with the right side (i.e., liabilities that function as money). While the intermediation paradigm sees banks as private institutions, the money paradigm highlights their public dimension as central components of the monetary system. While the intermediation paradigm finds little that is special about banks,⁷ the money paradigm asserts that banks are indeed special.⁸

The money paradigm dominated Anglo-American banking thought during the nineteenth century.⁹ Over the course of the twentieth century, however, the intermediation paradigm gradually assumed primacy. Among the likely explanations for this eclipse, two stand out. The first has to do with the formal attributes of banks' monetary liabilities. In the nineteenth century, the prototypical bank liability was the bank note: a tangible piece of paper that circulated as money. By the early twentieth century, the checkable deposit account had largely supplanted the private bank note. Now, in economic substance, bank notes and transaction accounts are virtually identical. Both are demandable claims, puttable to the bank at par, that function as money. (Bank notes are paper money, whereas deposit balances can be understood as "account money.") But the physicality of the bank note made its monetary function much more conspicuous. Bank notes were plainly *issued*. As the transition from notes to accounts unfolded, numerous prominent authorities insisted on the

⁷ See Richard C. Aspinwall, *On the "Specialness" of Banking*, 7 ISSUES BANK REG. 16, 16–18 (1983).

⁸ See E. GERALD CORRIGAN, FED. RESERVE BANK OF MINNEAPOLIS, ANNUAL REPORT 1982: ARE BANKS SPECIAL? (1982), <https://www.minneapolisfed.org/publications/annual-reports/ar/annual-report-1982-complete-text> [<https://perma.cc/XY24-7QDD>].

⁹ See, e.g., BRAY HAMMOND, *BANKS AND POLITICS IN AMERICA FROM THE REVOLUTION TO THE CIVIL WAR 186* (1957) (noting that in the early years of the republic, "[t]he impression was general that the exercise of the banking function without express authorization from the sovereign power was improper" because "banks, being by nature imbued with monetary powers, were in a peculiar sense responsible to the state.").

functional equivalence of these two types of claims.¹⁰ That they felt the need to do so testifies to the conceptual difficulty that deposit accounts posed in many minds. Even today, the idea that bank accounts are tantamount to uncertificated bank notes is a source of puzzlement, though no one has trouble understanding that securities can be uncertificated.¹¹

The second likely explanation for the intermediation paradigm's victory in the twentieth century was the rise and pervasive influence of finance as a discipline.¹² The story of finance's midcentury ascent within academic economics has

¹⁰ See, e.g., CHARLES F. DUNBAR, *THE THEORY AND HISTORY OF BANKING* 63 (3rd ed. 1917) ("Legislators have generally failed to perceive the similarity of the two kinds of liability[.]"); ALBERT GALLATIN, *Considerations on the Currency and Banking System of the United States* (1831), reprinted in 3 *THE WRITINGS OF ALBERT GALLATIN* 231, 267–68 (Henry Adams ed., 1879) ("The bank-notes and the deposits rest precisely on the same basis We can in no respect whatever perceive the slightest difference between the two[.]"); HENRY DUNNING MACLEOD, 1 *THE THEORY AND PRACTICE OF BANKING* 331 (4th ed. 1883) ("It is . . . a fundamental error to divide banks into 'Banks of Deposit' and 'Banks of Issue.' All banks are 'Banks of Issue.'"); SCHUMPETER, *supra* note 5, at 1115 ("[T]he obvious truth [is] that deposits and banknotes are fundamentally the same thing."); LUDWIG VON MISES, *THE THEORY OF MONEY AND CREDIT* 53 (H. E. Batson trans., Yale Univ. Press 1953) (1912) ("[B]anknotes, say, and cash deposits differ only in mere externals, important perhaps from the business and legal points of view, but quite insignificant from the point of view of economics."); 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."); A. Mitchell Innes, *What is Money?*, 30 *BANKING L.J.* 377, 407 (1913) ("A bank note differs in no essential way from an entry in the deposit register of a bank.")

¹¹ See U.C.C. § 8-102(a)(18) (AM. LAW INST. 2017) (defining "uncertificated security").

¹² This seems to be what Perry Mehrling had in mind in describing the shift from a "money" view to essentially a "finance" view in the middle decades of the twentieth century. See PERRY MEHRLING, *THE NEW LOMBARD STREET: HOW THE FED BECAME THE DEALER OF LAST RESORT* 2–6 (2011).

been recounted elsewhere and need not be repeated here.¹³ It is enough to note that among its core postulates is that a firm's financing structure is irrelevant to its value, provided certain conditions are met.¹⁴ The right side of the balance sheet merely divvies up the pie, nothing more. These ideas had imperial reach, and they strongly influenced understandings of banking. By 1963, future Nobel-winning economist James Tobin, who had previously applied new concepts from portfolio theory to the analysis of money demand,¹⁵ was promoting a "new view" of banking, holding that "[t]he distinction between commercial banks and other financial intermediaries has been too sharply drawn."¹⁶ The title of his article—*Commercial Banks as Creators of "Money"* (note the scare quotes around money)—says it all.

By no means did the money paradigm completely disappear. Textbooks on macroeconomics and on money and banking have continued to dutifully describe banks as engines of money creation.¹⁷ But, in truth, this seems to have more to do with pedagogical inertia than with any kind of deep disciplinary commitment.¹⁸ Tellingly, within academic economics, leading modern theories of banking omit money entirely.¹⁹ Banks are modeled as pure intermediaries. It is

¹³ A brief overview can be found in the preface to the 2A HANDBOOK OF THE ECONOMICS OF FINANCE xxv–xxxii (George M. Constantinides, Milton Harris, Rene Stultz eds., 2013).

¹⁴ The canonical paper is Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV. 261 (1958).

¹⁵ See James Tobin, *Liquidity Preference as Behavior Towards Risk*, 25 REV. ECON. STUD. 65, 67 (1958).

¹⁶ James Tobin, *Commercial Banks as Creators of "Money,"* in BANKING AND MONETARY STUDIES 408, 410, 418 (Deane Carson ed., 1963).

¹⁷ See, e.g., FREDERIC S. MISHKIN, THE ECONOMICS OF MONEY, BANKING, AND FINANCIAL MARKETS 334–39 (10th ed. 2013).

¹⁸ Indeed, Tobin began his essay by mocking the standard pedagogy. See *supra* note 16, at 408.

¹⁹ The most influential economic model of banking—the Diamond-Dybvig model—has no role for money. See Douglas W. Diamond & Philip H. Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. POL. ECON. 401,

against this backdrop that two prominent economists could recently write that the notion that banks “create money . . . rests on an abuse of the word ‘money.’”²⁰

Ideas about banking naturally influence theories of bank regulation. In an influential 1976 article, *The Soundness of Financial Intermediaries*, Robert Clark expressed deep skepticism that banks’ monetary function had much if anything to do with their regulation.²¹ The article’s title leaves no doubt as to which paradigm it adopts. Not long thereafter, regulators followed suit. In 1987, as part of a general deregulatory trend, the primary U.S. federal banking regulator stated that it was moving beyond the “textbook sense” of banking—what this Article calls the money paradigm—and toward a “modern concept of banking as funds intermediation.”²²

In the years since the global financial crisis of 2007–2009, though, the money paradigm has enjoyed something of a

402–05 (1983). Critics have noted that in the Diamond-Dybvig model, “agents are essentially isolated from each other; there is no trade with other agents where ‘money’ buys goods Agents trade only with the bank.” Gary Gorton & Andrew Winton, *Financial Intermediation*, in 1 A HANDBOOK OF THE ECONOMICS OF FINANCE 431, 453 (George M. Constantinides, Milton Harris, Rene Stultz eds., 2003). Another leading theory of banking—the Calomiris-Kahn theory—explicitly posits that “liquidity demand is absent” and “there is no demand for transactability.” Charles W. Calomiris & Charles M. Kahn, *The Role of Demandable Debt in Structuring Optimal Banking Arrangements*, 81 AM. ECON. REV. 497, 500 n.8, 508 (1991). For a more extensive treatment of the relevant economic literature, see MORGAN RICKS, *THE MONEY PROBLEM: RETHINKING FINANCIAL REGULATION* 81–90 (2016).

²⁰ Anat Admati & Martin Hellwig, *The Parade of Bankers’ New Clothes Continues: 31 Flawed Claims Debunked* 8 (Rock Ctr. for Corp. Governance at Stanford Univ., Working Paper No. 143, 2015); cf. Paul Krugman, Opinion, *If Banks Are Outlawed, Only Outlaws Will Have Banks*, N.Y. TIMES, Oct. 10, 2011, <https://krugman.blogs.nytimes.com/2011/10/10/if-banks-are-outlawed-only-outlaws-will-have-banks> [<https://perma.cc/K55D-9EWW>] (“[W]hat banks do . . . [is] not mostly about money creation!”).

²¹ See Robert Charles Clark, *The Soundness of Financial Intermediaries*, 86 YALE L.J. 1, 23–26 (1976).

²² Office of the Comptroller of the Currency, No-Objection Letter No. 87-5, at *5, 1987 WL 267920 (July 20, 1987).

resurgence. Strangely enough, the locus of this counteroffensive has been not the banking system proper but the so-called “shadow” banking system. Experts define shadow banking in different ways, but pretty much everyone agrees that heavy reliance on short-term debt is a big part of it.²³ In other words, shadow banking involves a particular *liability* structure. And leading authorities have begun to emphasize that the financial sector’s short-term debt has a distinctly monetary character.²⁴ Gary Gorton, a leader in this field, refers to various types of financial sector short-term debt as “forms of money” and “private money.”²⁵ Harvard economist and former Federal Reserve governor Jeremy Stein says that the financial sector’s short-term debt obligations are “private ‘money’” and offer “monetary services.”²⁶ John Cochrane, a top finance and macroeconomic specialist, notes “short-term debt *is* money.”²⁷

Policymakers have taken note. In a 2016 speech, Daniel Tarullo, who was then on the Federal Reserve Board, observed that such short-term debt instruments exhibit “features

²³ See, e.g., FIN. STABILITY BD., ASSESSMENT OF SHADOW BANKING ACTIVITIES, RISKS AND THE ADEQUACY OF POST-CRISIS POLICY TOOLS TO ADDRESS FINANCIAL STABILITY CONCERNS 6–7 (2017).

²⁴ This is an old idea but it had been largely dormant for some time. See, e.g., J.R. HICKS, VALUE AND CAPITAL 168 (2nd ed. 1946) (“Bills of short maturity . . . [are] not quite perfect money, but still very close substitutes for it.”); JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT INTEREST AND MONEY 167 n.1 (1936) (averring that “we can treat as *money*” debt instruments with a maturity not “in excess of three months[.]”); HENRY C. SIMONS, A POSITIVE PROGRAM FOR LAISSEZ FAIRE: SOME PROPOSALS FOR A LIBERAL ECONOMIC POLICY (1934), reprinted in ECONOMIC POLICY FOR A FREE SOCIETY 320 n.7 (1948) (“Short-term debts . . . are . . . closely akin to money and demand deposits[.]”).

²⁵ GARY B. GORTON, MISUNDERSTANDING FINANCIAL CRISES: WHY WE DON’T SEE THEM COMING 5 (2012); Gary Gorton & Guillermo Ordoñez, *Collateral Crises*, 104 AM. ECON. REV. 343, 343 (2014).

²⁶ Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 Q.J. ECON. 57, 58 (2012).

²⁷ John H. Cochrane, *Toward a Run-Free Financial System*, in ACROSS THE GREAT DIVIDE: NEW PERSPECTIVES ON THE FINANCIAL CRISIS 224 (Martin Neil Baily & John B. Taylor eds., 2014).

sometimes characterized as ‘money-like.’”²⁸ 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.”²⁹

Legal scholars have only just begun to examine the *regulatory* implications that would follow from taking the money paradigm seriously.³⁰ To see what is at stake here, note that the two paradigms start from strikingly different institutional baselines. In the intermediation paradigm, banking is fundamentally a private activity that arises in the competitive marketplace. It may give rise to certain kinds of problems (instability foremost among them) that justify regulation, but such regulation is seen as a necessary evil and should be designed so as not to unduly interfere with market outcomes. Unquestionably, basic business matters—such as how much interest is paid on bank accounts, or who gets access to a bank account—should be left free from regulatory meddling, apart from generally applicable marketplace rules (consumer protection, antifraud, and so forth). Regulatory interference with such business matters is anathema to the intermediation paradigm. Entry restriction is likewise strongly disfavored as inimical to competitive market outcomes.

The money paradigm starts in a completely different place. Rather than seeing bank money creation as a legitimate private activity that is then regulated, it sees money creation

²⁸ Daniel K. Tarullo, Member, Bd. of Governors of the Fed. Reserve Sys., Opening Remarks at the Center for American Progress and Americans for Financial Reform Conference, Exploring Shadow Banking: Can the Nation Avoid the Next Crisis? (July 12, 2016), <https://www.federalreserve.gov/newsevents/speech/tarullo20160712a.htm> [<https://perma.cc/WN98-9UCD>].

²⁹ *Id.*

³⁰ I have explored some of these issues in previous work. See RICKS, *supra* note 19 at 84–85; see also Kathryn Judge, *Information Gaps and Shadow Banking*, 103 VA. L. REV. 411, 469 (2017).

as an intrinsically public activity that is then outsourced.³¹ The institutional baseline, then, is direct public provisioning. Insofar as banks are engaged in money creation, they do so pursuant to what amounts to a franchise arrangement.³² Notably, if the government chose not to outsource money creation—if, say, everyone held their transaction accounts directly with the central bank—then the notion that the interest paid on such accounts should be determined by “market forces” would be nonsensical. Surely the monetary authority would determine this interest rate in the conduct of monetary policy, based on macroeconomic conditions.³³ By similar logic, under direct government provisioning the government might conclude that broad or even universal access to transaction accounts would serve the public interest, even if this meant serving some users below cost. Many government services work this way. Crucially, the decision to

³¹ Even Milton Friedman—a champion of *laissez faire* in other areas—called the provision of a stable monetary framework “an essential governmental function on a par with the provision of a stable legal framework.” MILTON FRIEDMAN, A PROGRAM FOR MONETARY STABILITY 8 (1960); *see also* SUBCOMM. ON ECON. IN GOV'T, 91ST CONG., THE ANALYSIS AND EVALUATION OF PUBLIC EXPENDITURES: THE PPB SYSTEM 47, 48 (Joint Comm. Print 1969) (Kenneth J. Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation*) (“The creation of money is in many respects an example of a public good.”); CHARLES P. KINDLEBERGER & ROBERT Z. ALIBER, MANIAS, PANICS, AND CRASHES: A HISTORY OF FINANCIAL CRISES 19 (6th ed. 2011) (“Money is a public good[.]”); DAVID LAIDLER, TAKING MONEY SERIOUSLY 47 (1990) (“[T]here is something of the nature of a public good about money[.]”); James M. Buchanan, *The Constitutionalization of Money*, 30 CATO J. 251, 251 (“The market will not work effectively with monetary anarchy.”); John Cochrane, Remarks at the Federal Reserve Bank of Minneapolis (May 16, 2016), <https://youtu.be/QcidqjmxPyk?t=7651> [<https://perma.cc/R6GU-GUGS>] (“There’s a few things the government has a natural monopoly in . . . : national defense, courts, property rights, and I think money[.]”). For a contrary, *laissez-faire* perspective, *see* LAWRENCE H. WHITE, THE THEORY OF MONETARY INSTITUTIONS 88–119 (1999).

³² *Cf.* Hockett & Omarova, *supra* note 1, at 1147. Hockett and Omarova apply their franchise conception to the financial system as a whole, whereas my focus here (the monetary framework) is much narrower.

³³ *See infra* Part II.

outsource has *no necessary bearing* on these decisions. This is government procurement and the government must supply the specifications. The overall package must be attractive enough to induce private sector participation, but no particular term of the package is dictated by the mere fact of outsourcing. Finally, in the money paradigm, entry restriction is not disfavored. In fact, it is implied by the franchise arrangement. Administrative controls over deposit rates would alleviate concerns about the anticompetitive effects of entry restriction, since competition would not be relied upon to discipline prices.

The money paradigm's implicit institutional baseline points toward an unexpected connection to another, seemingly unrelated area of administrative regulation. In the study of "regulated industries"—also known as infrastructure industries, network industries, or public utilities and common carriers—the outsourcing or procurement-contracting framework is perhaps the dominant mode of analysis.³⁴ Harold Demsetz inaugurated this mode of contractual analysis in a classic 1968 article in which he suggested that "franchise bidding" might be used in lieu of administrative regulation in these industries.³⁵ Prospective service providers would submit competitive bids to offer the service in question, and the governing authority would select the most favorable bid. Competition *for* the market (as opposed to *within* the market) would protect consumers against supracompetitive prices, as pricing and terms of service would be locked in upfront. Contractual enforcement through courts would substitute for regulatory commissions or agencies. Other

³⁴ The legal study of regulated industries is generally understood to encompass certain portions of the energy, communication, and transportation sectors, but not banking. *See, e.g.*, W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR. & JOHN M. VERNON, *ECONOMICS OF REGULATION AND ANTITRUST* vii-xii, at 397 (4th ed. 2005); Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1327 (1998);.

³⁵ Harold Demsetz, *Why Regulate Utilities?*, 11. J.L. & ECON. 55, 56–57 (1968).

scholars have convincingly argued that this explicit long-term contracting strategy poses serious difficulties, involving such issues as contractual incompleteness and uncertainty.³⁶ Still, experts have continued to use the procurement-contracting or outsourcing framework as an *analytical* device in the area of infrastructure regulation.³⁷

Notably, the three regulatory devices just mentioned—rate regulation, entry restriction, and universal service requirements—feature prominently in infrastructure regulation. When it comes to banking, each of these devices is highly suspect under the intermediation paradigm but can be readily entertained under the money paradigm. The implication is startling: Insofar as the money paradigm has merit, bank regulation may have very little in common with, say, mutual fund regulation, in which financial intermediation is paramount. Bank regulation instead becomes a subfield of public utility and common carrier

³⁶ See, e.g., Keith J. Crocker & Scott E. Masten, *Regulation and Administered Contracts Revisited: Lessons from Transaction-Cost Economics for Public Utility Regulation*, 9 J. REG. ECON. 5, 9, 18 (1996); Victor P. Goldberg, *Regulation and Administered Contracts*, 7 BELL J. ECON. 426, 428, 444 (1976); George L. Priest, *The Origins of Utility Regulation and the "Theories of Regulation" Debate*, 36 J.L. & ECON. 289, 302 (1993); Oliver E. Williamson, *Franchise Bidding and Natural Monopolies—In General and with Respect to CATV*, 7 BELL J. ECON. 73, 80–82 (1976).

³⁷ See, e.g., JOSÉ A. GÓMEZ-IBÁÑEZ, REGULATING INFRASTRUCTURE: MONOPOLY, CONTRACTS, AND DISCRETION 3 (2003) (“[T]he problem of infrastructure monopoly is similar to any other long-term contracting problem, and particularly analogous to contracting in private sector procurement.”); Paul L. Joskow, *The Role of Transaction Cost Economics in Antitrust and Public Utility Regulatory Policies*, 7 J.L. ECON. & ORG. 53, 66 (1991) (“[T]he set of regulatory rules and procedures that determine the prices that a regulated firm can charge are usefully conceptualized as a set of incentive or procurement contracts that link the regulator as a principal seeking to achieve some social or political objective and the regulated firm as the agent supplying goods and services[.]”); Paul L. Joskow & Richard Schmalensee, *Incentive Regulation for Electric Utilities*, 4 YALE J. ON REG. 1, 8 (1986) (“[I]t is useful to think of the regulatory process embodied in established regulatory procedures as a long-term ‘regulatory contract’ between electricity customers, represented by the public utility commission, and the utility.”).

regulation. (It bears emphasis that banks' legal monopoly has nothing to do with lending—anyone can lend—but rather with the provision of “deposit” accounts,³⁸ which are widely acknowledged to be a form of money.)

That bank regulation and infrastructure regulation might enjoy a close kinship—as the money paradigm implies—is seldom recognized in the regulatory literature.³⁹ This is yet another sign of the intermediation paradigm's dominance. Unsurprisingly, the features of U.S. bank regulation most closely resembling infrastructure regulation were curtailed decades ago. With respect to entry restriction, for example, in 1980 the primary federal bank regulator relaxed its longstanding policy of granting new charters based on public convenience and necessity.⁴⁰ It concluded instead that “the marketplace normally is the best regulator of economic activity; and competition allows the marketplace to function[.]”⁴¹ As for rate regulation, the story is well known to students of banking history. The New Deal system of bank regulation imposed controls on deposit interest rates, known as Regulation Q. These controls were largely phased out in the 1980s.⁴² The direction of post-New Deal banking law, then, has generally been to *shed* features resembling infrastructure regulation. In the academic literature, these departures have gone almost completely unlamented.

³⁸ See 12 U.S.C. § 378(a)(2) (2012).

³⁹ This is not to say that it is never recognized. See Daniel R. Fischel, Andrew M. Rosenfield & Robert S. Stillman, *The Regulation of Banks and Bank Holding Companies*, 73 VA. L. REV. 301, 302–03 (1987) (“[W]hat is most striking about the New Deal program of banking regulation is its similarity to the programs of public utility and common carrier regulation, many of which . . . were established during the same period.”). For a more recent treatment that focuses on financial stability issues, see Prasad Krishnamurthy, *George Stigler on His Head: The Consequences of Restrictions on Competition in (Bank) Regulation*, 35 YALE J. ON REG. 823, 844, 849 (2018).

⁴⁰ See *infra* notes 183–193 and accompanying text.

⁴¹ Clarification and Revision of Charter Policy, 45 Fed. Reg. 68,603, 68,604 (Oct. 15, 1980).

⁴² See *infra* notes 147–149 and accompanying text.

This Article illuminates a different path that bank regulation might have followed (and still could). Rather than abandoning those features that resemble infrastructure regulation, bank regulation might instead embrace infrastructure regulation's logic and follow through on its implications. This Article explores compelling—and previously overlooked—rationales for imposing rate regulation, entry restriction, and universal service mandates on “banking,” understood as the activity of money creation or augmentation. The infrastructure framing is crucial here because it establishes that these devices are part and parcel of a preexisting *regulatory* model. They are thoroughly domesticated within regulatory theory and practice. Thus, adopting the money paradigm would not necessitate new concepts or modes of regulation. Far from creating a new regulatory type, the task is one of shifting banking within our existing institutional taxonomy.

Before proceeding, a point of clarification is in order. Over the years, and with increasing frequency lately, analysts have put forward various “public utility” views of banking. These treatments have tended to be pitched at a high level of abstraction. As a rule, they focus heavily on banks' credit allocation (i.e., lending) function, arguing that it should be harnessed to egalitarian social ends.⁴³ Such arguments

⁴³ See, e.g., Mehrsa Baradaran, *Banking and the Social Contract*, 89 NOTRE DAME L. REV. 1283, 1342 (2014); K. Sabeel Rahman, *The New Utilities: Private Power, Social Infrastructure, and the Revival of the Public Utility Concept*, 39 CARDOZO L. REV. 1621, 1690–91 (2018); Alan M. White, *Banks as Utilities*, 90 TUL. L. REV. 1241, 1283 (2016). In recent years, some Federal Reserve officials have used “public utility” language in reference to banks, though their meaning has not been entirely clear. See Neel Kashkari, President and CEO, Fed. Reserve Bank of Minneapolis, *Lessons from the Crisis: Ending Too Big to Fail*, Remarks at the Brookings Institution 5 (Feb. 16, 2016) (transcript available at <https://www.brookings.edu/wp-content/uploads/2016/02/KashkariBrookings2162016.pdf> [<https://perma.cc/C5PN-QEXN>]) (suggesting that policymakers consider “turning large banks into public utilities”); Joe Rauch, *Big Banks are Government-Backed: Fed's Hoenig*, REUTERS (Apr. 12, 2011), <https://www.reuters.com/article/us-fed-hoenig/big-banks-are-government-backed-feds-hoenig-idUSTRE73B3S820110412> [<https://perma.cc/2HG4->

obviously raise hotly contested questions of political philosophy. Even those sympathetic on philosophical grounds may question whether credit markets are an effective vehicle for social policy, whether the banking system is a suitable instrument to implement this type of policy, or whether it is wise to place such issues within the remit of bank regulators. By contrast, my arguments—which relate exclusively to banks’ monetary function and not their lending or investment activities—are for the most part grounded in efficiency norms, thus sidestepping these objections. That my arguments have broadly egalitarian distributional implications should only enhance their appeal.

This Article proceeds as follows. Part II investigates rate regulation and shows that, in the current institutional environment, the absence of administrative controls on bank deposit interest rates is a major impediment to the effective conduct of monetary policy. Unavoidably, this argument requires a deep dive into the relevant institutional setting—an area never before explored in the legal literature. I show that imposing such controls would necessarily involve bank regulators in what amounts to cost-of-service ratemaking, the quintessential practice of infrastructure regulation. While this might initially seem like a big departure from current practice, in reality bank regulators must already do this type of valuation in setting deposit insurance fees.

Part III considers entry restriction, which typically goes hand-in-hand with rate regulation. I have argued in previous work that restricting entry into (dollar-denominated) “money”

R3QQ] (quoting Federal Reserve Bank of Kansas City President Thomas Hoenig to the effect that large banks are “public utilities”). Noted banking expert Paul McCulley recently expressed a view that in some ways resonates with those expressed in this Article. Stephanie Kelton & Paul McCulley, Opinion, *The Fed Chair Should Be a Principled Populist*, N.Y. TIMES (Oct. 30, 2017), <https://www.nytimes.com/2017/10/30/opinion/fed-chair-yellen-powell.html> [<https://perma.cc/2KJ7-RKGF>] (“Banks are many things, but at their core, they have a public utility function, access to the payments system — the highway, if you will, on which you get paid and pay your bills. In that sense, banks are not different than the gas company or the electric company, connecting you to the grid[.]”).

creation, on a functional (as opposed to formalistic) basis, is both feasible and desirable.⁴⁴ Here I analyze what bank chartering standards ought to look like in such a system. The problem turns out to be one of portfolio management: the monetary authority, like any large endowment manager, retains external portfolio managers—that is, it outsources. Understood this way, bank chartering is a procurement problem, which implies discretionary chartering. Traditional infrastructure regulation works just this way: prospective infrastructure providers must obtain certificates of public convenience and necessity (PCN), granted at regulators' discretion, before commencing service.

Part IV addresses universal service requirements. The mainstream payment system is beyond the reach of many Americans; millions of “unbanked” and “underbanked” households must rely on expensive alternative providers to make routine payments. I argue that expanding access to the mainstream account-money system should be expected to generate substantial positive spillovers. Imposing universal service-type obligations on chartered banks to offer transaction accounts would place banking squarely within the domain of regulated industries, where such universal service obligations are standard fare. Concluding thoughts follow.

II. RATE REGULATION AND THE TRANSFORMATION OF MONETARY POLICY

Recent years have witnessed a dramatic transformation in the Federal Reserve's operational framework for monetary policy. The new framework has run up against unanticipated problems. Serious questions have arisen concerning both its efficacy and its distributional effects. This Part argues that administrative controls on bank deposit rates present an attractive (and previously overlooked) strategy for addressing these problems. Such controls would have the added benefit of greatly simplifying and rationalizing the institutional

⁴⁴ See RICKS, *supra* note 19, at 230–37; Morgan Ricks, *Entry Restriction, Shadow Banking, and the Structure of Monetary Institutions*, 2 J. FIN. REG. 291, 294 (2016).

environment in which monetary policy takes place. Establishing such controls would be functionally identical to cost-of-service ratemaking—the most distinctive practice of traditional infrastructure regulation.

The analysis that follows is rich in institutional detail. This thick description serves two purposes. First, when it comes to monetary policy mechanics, the details are all-important, and knowledge of these details is sparse outside a narrow group of monetary specialists. Much of this terrain is completely unknown to the legal literature to date. Indeed, once we get beyond the bare basics, much of what follows cannot be found in standard textbooks on macroeconomics and on money and banking. I aim, then, to provide an up-to-date depiction of current practice and to make this topic accessible to a generalist audience. Second, and more importantly, a high-resolution image of the institutional environment is a prerequisite to careful critical analysis in this area. We will see that the institutional setting of monetary policy is extremely (and needlessly) complex and that this complexity has been a source of analytical confusion.

A. The Institutional Setting

Modern monetary policy is centrally concerned with managing short-term interest rates with a view toward influencing macroeconomic conditions.⁴⁵ Broadly speaking, approaches to interest rate control can be classified into two types: those that rely on *reserve scarcity* and those that do not. Prior to late 2008, the Federal Reserve⁴⁶ made use of reserve scarcity in its monetary policy implementation framework. Starting in late 2008, it abandoned the scarce-reserves approach, relying instead on *administered rates* to set an adjustable floor on market interest rates. These two

⁴⁵ See Federal Reserve Act § 2A, 12 U.S.C. § 225a (2012) (codifying the Federal Reserve's dual mandate of full employment and stable prices).

⁴⁶ Throughout, this Article uses "Federal Reserve" or the "Fed" as a catch-all for the U.S. central bank's various organs, including the Board of Governors of the Federal Reserve System, the twelve regional Federal Reserve banks, and the Federal Open Market Committee. These sub-agency distinctions have no bearing on my argument.

approaches to interest rate control differ in fundamental respects. To see how they work, it is first necessary to understand some key operational features of modern central banking. This Part therefore begins with a very brief overview of some rudiments before proceeding to the frontiers of current practice and debate. Readers familiar with the basics should proceed directly to Section II.B.

Figure 1 presents a stylized balance sheet of a modern central bank. Like any balance sheet, it consists of assets (left side) and claims (right side). Under normal conditions, the central bank's asset portfolio consists exclusively, or nearly exclusively, of government securities. It is a safe, liquid, unexciting portfolio. The right side of the central bank's balance sheet is what makes it unique. It consists mostly of *base money*: outstanding paper currency plus "reserve balances," which are unconditional promises to deliver paper currency on demand. While anyone can hold paper currency, reserve balances may be held only by banks (and select other governmental or government-sponsored institutions—a nuance that will become important below).⁴⁷ Ordinary citizens and nonbank businesses are not permitted to own reserve balances. Reserve balances are, in effect, transaction accounts for commercial banks.⁴⁸ They are the primary medium through which banks make payments to one another.

⁴⁷ In addition to U.S. depository institutions, *see* 12 U.S.C. § 342 (2012), the Federal Reserve is authorized to maintain accounts for the U.S. Treasury, *see id.* § 391, certain government-sponsored enterprises in the residential mortgage area, *see id.* §§ 1435, 1452(d), 1723a(g), foreign governments, banks, and central banks, *see id.* §§ 347d, 358, certain international organizations, such as the International Monetary Fund and the World Bank, *see* 22 U.S.C. § 286d (2012), and certain designated financial market utilities, *see* 12 U.S.C. § 5465 (2012), as well as assorted other governmental and government-sponsored entities omitted here.

⁴⁸ "Banks use these accounts to make and receive payments in much the same way that a customer would use his or her checking account at a commercial bank." FED. RESERVE, THE FEDERAL RESERVE SYSTEM: PURPOSES AND FUNCTIONS 40 (10th ed. 2016).

Figure 1: Stylized Central Bank Balance Sheet

Assets	Claims	
Government Securities	Paper Currency Outstanding	} Base Money "Liabilities"
	----- Reserve Balances	
	Equity	

While base money appears as a “liability” on the central bank’s balance sheet, it is not a liability in any meaningful *economic* sense.⁴⁹ Paper currency holders are not entitled to any kind of contractual performance from the central bank.⁵⁰ Paper currency cannot default in any ordinary legal sense, because paper currency does not represent any actionable legal obligation.⁵¹ Reserve balances are no different. True, they are promises to deliver paper currency on demand, but

⁴⁹ Assume a modern “fiat” money system in which currency lacks intrinsic value and is not redeemable for anything else.

⁵⁰ Compare 12 U.S.C. § 411 (2012) (mandating that Federal Reserve notes “shall be redeemed in lawful money on demand[.]”), with 31 U.S.C. § 5103 (2012) (making Federal Reserve notes legal tender). Here I am echoing Joseph H. Sommer, *Where is a Bank Account?*, 57 MD. L. REV. 1, 13 n.30 (1998).

⁵¹ In this regard, Federal Reserve liabilities differ from, say, U.S. Treasury bills. See Robin Greenwood, Samuel G. Hanson & Jeremy C. Stein, *The Federal Reserve’s Balance Sheet as a Financial-Stability Tool*, 2016 ECON. POL’Y SYMP. PROC. 335, 338 (“[T]he Fed has a comparative advantage [over the Treasury Department] in providing very short-term government liabilities, because as the sole provider of the final means of payment, it does not face the same kind of ‘auction risk’ that the Treasury does.”).

this is a “liability” without substance because the central bank simply prints the paper currency it delivers. The obligation is therefore trivial—there is no possibility of default. Base money is unique among financial assets inasmuch as it imposes no legally cognizable obligation on its issuer.

Central banks typically increase or decrease the quantity of base money outstanding by buying or selling assets—most commonly, government securities—in the open market. These transactions are called “open market operations.” When it buys a security, a central bank pays for it by crediting the selling bank’s reserve balance.⁵² Base money is thereby created “out of thin air,” by a stroke on a computer keyboard. This is sometimes loosely called “printing” money, but this is figurative language; obviously no literal printing is involved when a reserve balance is credited. The central bank’s balance sheet has grown, and more base money is outstanding. All else equal, the macroeconomic effect should be stimulative. Open market purchases put downward pressure on market interest rates and upward pressure on prices in the economy (i.e., they are inflationary). This is known as monetary “easing” or “accommodation.”

Open market sales work the other way around. When the central bank sells a security out of its portfolio, the purchasing bank pays for it through a reduction in its reserve balance. The central bank’s balance sheet shrinks; it has extinguished a reserve balance, which means less base money is in circulation. Open market sales put upward pressure on market interest rates and downward pressure on prices, discouraging economic activity at the margin. This is monetary “tightening” or “contractionary” monetary policy.

⁵² If the central bank buys the security from a nonbank entity, it credits the reserve balance of the commercial bank where the seller maintains its deposit account, whereupon that commercial bank credits the seller’s deposit account. This is the standard practice in the United States; the Federal Reserve transacts with a designated set of about two dozen securities firms known as primary dealers. The main text omits this nuance to simplify the exposition; nothing turns on it here.

Like any balance sheet, the central bank's balance sheet has an equity entry on its lower right side. Economically, the equity belongs to the government as residual claimant.⁵³ The government receives a revenue stream by virtue of this equity ownership. Specifically, the central bank earns interest on its asset portfolio and transfers the interest to the government after deducting its own expenses (discussed more below). This payment stream is what central bankers and monetary economists call "seigniorage"—government revenue from money creation. The amounts are large. The Fed transferred \$98 billion, \$92 billion, and \$80 billion in earnings to the Treasury Department in 2015, 2016, and 2017, respectively.⁵⁴

Now, add the chartered banking system to the picture. Unlike central banks, which issue base money, ordinary commercial banks must hold reserves of base money to enable them to meet withdrawals by depositors and other claimants. Commercial banks hold base money reserves amounting to only a fraction of their outstanding deposit liabilities. Figure 2 presents a stylized commercial bank balance sheet. Note that base money is an *asset* on the commercial bank's balance sheet whereas it was a *liability* on the central bank's balance sheet. The central bank issues base money; commercial banks hold base money (consisting of reserve balances plus vault cash) as reserves.

⁵³ In the United States, stock ownership of the twelve regional Federal Reserve Banks is formally vested in "member banks" of the Federal Reserve System; however, this stock is inalienable and carries a maximum dividend of six percent. See Federal Reserve Act § 7(a), 12 U.S.C. § 289(a) (2012). The U.S. federal government is the de facto residual claimant and receives the vast majority of the Fed's distributions.

⁵⁴ See Press Release, Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Board Announces Reserve Bank Income and Expense Data and Transfers to the Treasury for 2017 (Jan. 10, 2018), <https://www.federalreserve.gov/newsevents/pressreleases/other20180110a.htm> [<https://perma.cc/2RSV-3UJ7>].

Figure 2: Stylized Commercial Bank Balance Sheet

Assets	Claims
<div style="border-bottom: 1px dashed black; padding-bottom: 5px;">Base Money</div> Loans and Bonds	Deposit Liabilities <div style="border-top: 1px solid black; padding-top: 5px;">Equity</div>

Two additional features of the institutional setting are important to the analysis below. The first is *reserve requirements* (not to be confused with capital requirements⁵⁵). Reserve requirements mandate that commercial banks hold reserves of base money against certain categories of deposit liabilities—for simplicity, “transaction accounts.”⁵⁶ For example, under a flat 10% reserve requirement, a bank with \$1 billion in outstanding transaction account liabilities would be required to hold base money reserves of at least \$100 million. This is the amount of “required reserves.” Any base money the bank held in excess of this amount would be “excess reserves.” Reserve requirements are a source of demand for base money. It follows that, under reserve requirements, the quantity of reserves in the banking system constrains the total quantity of transaction accounts outstanding. For example, if the banking system as a whole has \$100 billion in total reserves and the reserve requirement is set at a flat 10%,

⁵⁵ Capital requirements obligate banks to maintain equity financing in proportion to their assets and other (off-balance-sheet) risk exposures. *See, e.g.*, 12 C.F.R. pt. 3 (2018) (capital requirements for national banks).

⁵⁶ *See* Federal Reserve Act § 19(b), 12 U.S.C. § 461(b) (2012); 12 C.F.R. pt. 204 (2018).

then the banking system's total transaction account liabilities could be no higher than \$1 trillion (\$100 billion divided by 10%). If the reserve requirement were 5%, then the same \$100 billion in total reserves could support transaction accounts of up to \$2 trillion (\$100 billion divided by 5%).

Finally, commercial banks participate in an active lending market for reserve balances, which in the United States is called the federal funds market. A federal funds transaction consists of a short-term (typically overnight) unsecured loan of reserve balances by one authorized reserve balance holder to another. The interest rate on such loans—the federal funds rate—has for decades played a central role in the Federal Reserve's monetary policy framework.⁵⁷ Under normal conditions, the Fed conducts monetary policy by announcing, and seeking to achieve, a target federal funds rate. The next two Sections describe the mechanics and execution of this process.

B. Scarce Reserves

With this institutional setting as a backdrop, we can now examine the two principal frameworks that modern central banks use to manage short-term interest rates: reserve scarcity and administered rates. We begin with reserve scarcity.

Under scarce-reserves frameworks, reserve requirements (described above) normally play an important role in monetary policy.⁵⁸ Recall that reserve requirements obligate

⁵⁷ The Federal Reserve has employed a federal funds target rate since roughly 1984. See U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-17-117, FEDERAL RESERVE: OBSERVATIONS ON REGULATION D AND THE USE OF RESERVE REQUIREMENTS 49 (2016), <https://www.gao.gov/products/GAO-17-117> [<https://perma.cc/9GH3-BEBG>].

⁵⁸ Strictly speaking, scarce-reserves frameworks can function with or without reserve requirements. Canada, Australia, New Zealand, and Sweden have maintained scarce-reserves frameworks without reserve requirements. See Ulrich Bindseil, *Evaluating Monetary Policy Operational Frameworks*, 2016 ECON. POL'Y SYMP. PROC. 179, 185 (2016). Commercial banks need base money to clear payments, and central banks penalize

commercial banks to maintain base money reserves in proportion to their transaction account liabilities. Reserves are “scarce” when the banking system’s total reserves only slightly exceed required reserves—in other words, when excess reserves are very small. Commercial banks then have very little headroom to expand their balance sheets by increasing transaction account liabilities (an attractive funding source). Under these conditions, small adjustments to the base money supply can have a big impact on the federal funds rate.

Specifically, under reserve scarcity, a modest base money injection by the central bank—typically accomplished by purchasing government securities on the open market, resulting in credits to the selling banks’ reserve balances—will reduce the federal funds rate materially. Other market interest rates will usually follow, resulting in macroeconomic stimulus. Conversely, a small base money drainage by the central bank—typically accomplished by selling portfolio securities, resulting in debits to the purchasing banks’ reserve balances—will increase the federal funds rate materially. Other market interest rates tend to follow, and the macroeconomic effect is contractionary.

In this way, scarce reserves create a powerful fulcrum for monetary policy transmission. And, by and large, this is how the Federal Reserve conducted monetary policy until late 2008, when the global financial crisis reached its acute phase. To see the scarce-reserves approach in action, it is useful to examine the monetary easing cycle that the Federal Reserve commenced in September 2007, about a year earlier. Immediately prior to the easing cycle, the federal funds target stood at a cyclical peak of 5.25%.⁵⁹ The banking system’s

overdrafts. Demand for reserves therefore exists even without reserve requirements.

⁵⁹ The historical federal funds target rate can be found at the Federal Reserve Economic Database. See *Federal Reserve Economic Data (“FRED”), Federal Funds Target Rate (Discontinued) (“DFEDTAR”)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTAR>

required reserves were \$40 billion and excess reserves were only \$1.4 billion.⁶⁰ The Federal Reserve's total assets at the time were \$890 billion.⁶¹ The economy was starting to show signs of weakness in the face of housing market problems and related financial sector issues. In response, over the ensuing eight months the Federal Reserve reduced the federal funds target from 5.25% to 2.00%—a very substantial reduction over a short period. Because reserves were scarce, the Fed was able to accomplish this monetary easing via small open market operations with only trivial changes to its balance sheet. Thus, in early May of 2008, with the federal funds rate at 2.00%, the banking system's required reserves were \$42 billion and excess reserves were \$2.0 billion.⁶² The Federal Reserve's total assets were still \$890 billion.⁶³ Despite the very large reduction in the federal funds rate, the Fed's balance sheet had barely changed.

The Federal Reserve abandoned the scarce-reserves approach to managing short-term interest rates in late 2008. It did so because reserves had suddenly become (and remain today) anything but scarce. In response to the onset of the acute phase of the crisis in September 2008, the Federal Reserve extended massive loans to financial institutions to enable them to meet their liquidity needs. A central bank loan, like a central bank purchase of securities, expands its balance sheet: the central bank books a loan receivable (asset) and simultaneously credits a reserve balance (liability). The

[<https://perma.cc/7VR5-K6J3>] (last updated May 4, 2015).

⁶⁰ FED. RESERVE, STATISTICAL RELEASE: AGGREGATE RESERVES OF DEPOSITORY INSTITUTIONS AND THE MONETARY BASE H.3 tbl.1 (Sept. 13, 2007).

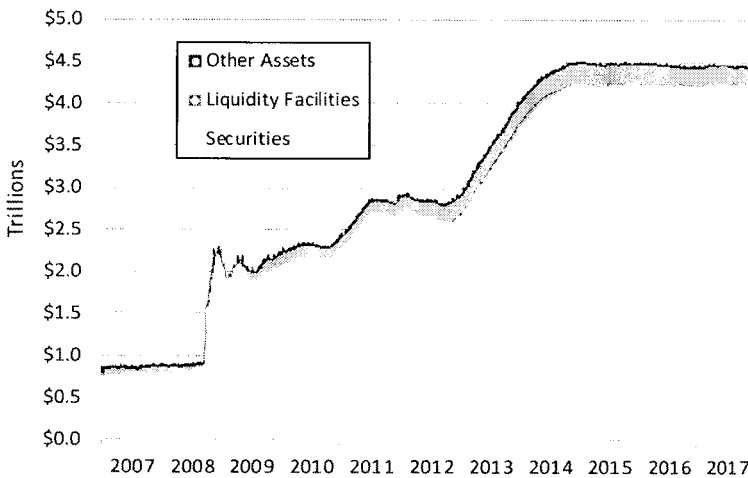
⁶¹ FED. RESERVE, STATISTICAL RELEASE: FACTORS AFFECTING RESERVE BALANCES OF DEPOSITORY INSTITUTIONS AND CONDITION STATEMENT OF FEDERAL RESERVE BANKS H.4.1 tbl.2 (Sept. 13, 2007).

⁶² FED. RESERVE, STATISTICAL RELEASE: AGGREGATE RESERVES OF DEPOSITORY INSTITUTIONS AND THE MONETARY BASE H.3 tbl.1 (May 8, 2008).

⁶³ FED. RESERVE, STATISTICAL RELEASE: FACTORS AFFECTING RESERVE BALANCES OF DEPOSITORY INSTITUTIONS AND CONDITION STATEMENT OF FEDERAL RESERVE BANKS, H.4.1 tbl.2 (May 8, 2008).

reserve balance, created by a stroke on a computer keyboard, is the borrowed money. As a result of this emergency support to the financial system, the Fed's balance sheet ballooned more than twofold in a matter of months, from \$909 billion in early September 2008 to over \$2 trillion by year end.⁶⁴ Excess reserves in the banking system rose exponentially, from about \$2 billion to about \$800 billion.⁶⁵

Figure 3: Federal Reserve Assets⁶⁶



As one might expect, the federal funds rate collapsed.⁶⁷ In fact, the Federal Reserve briefly lost control of the federal funds rate, which began to fall significantly below its target. In particular, on October 8, 2008, the Fed reduced its federal funds target rate from 2.00% to 1.50%. The 1.50% target

⁶⁴ See *infra* Figure 3.

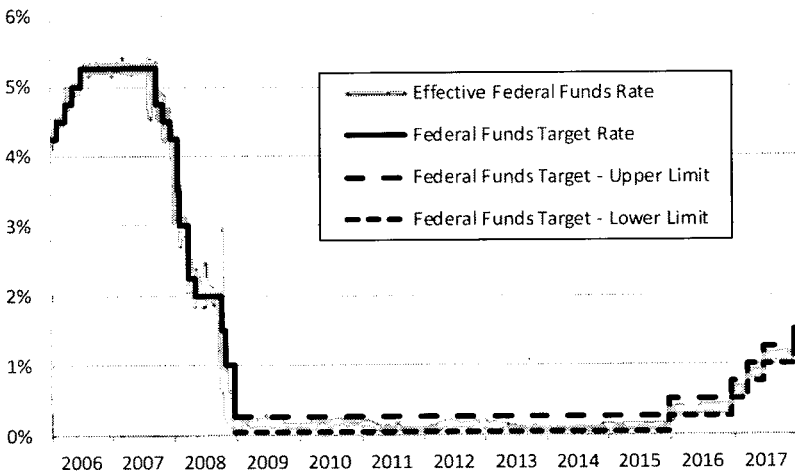
⁶⁵ FED. RESERVE, STATISTICAL RELEASE: AGGREGATE RESERVES OF DEPOSITORY INSTITUTIONS AND THE MONETARY BASE H.3 tbl.1 (Jan. 2, 2009).

⁶⁶ *Federal Reserve Economic Data ("FRED")*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/> [<https://perma.cc/V6V7-LJMJ>]. "Securities" consists of series WSECOUT; "Liquidity Facilities" consists of the sum of series WTERAUC, WPC, WSC, WSB, WPDF, WTERMFAC, WABCMF, WCPFF, WLIQSWP, WMAIDEN1, WMAIDEN2, WMAIDEN3, WALICO, and WAIG; "Other Assets" consists of series WALCL less the sum of Securities and Liquidity Facilities.

⁶⁷ See *infra* Figure 4.

remained in effect for fifteen business days. The average *effective* federal funds rate during those fifteen days was only 0.96%, however, well short of the target. On October 29, the Fed again lowered its federal funds target, this time to 1.00%. The new target remained in effect for the next 34 business days. Yet the average *effective* federal funds rate during this period was only 0.33%—again, far short of the target. Finally, on December 16, the Federal Reserve dropped its federal funds target rate to a range of 0.00% to 0.25%. It had reached the so-called zero lower bound; it was now pursuing “zero interest rate policy,” known as ZIRP. This policy would continue for seven years.

Figure 4: The Federal Funds Rate⁶⁸



⁶⁸ *Federal Reserve Economic Data (“FRED”), Effective Federal Funds Rate (“DFE”) (2008), FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFE> [<https://perma.cc/PKT3-Z9J4>]; Federal Reserve Economic Data (“FRED”), Federal Funds Target Range – Lower Limit (“DFEDTARL”) (2008), FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTARL> [<https://perma.cc/SN8U-KUZJ>]; Federal Reserve Economic Data (“FRED”), Federal Funds Target Range – Upper Limit (“DFEDTARU”) (2008), FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTARU> [<https://perma.cc/L7QB-ZHL9>]; Federal Reserve Economic Data (“FRED”), Federal Funds*

Over the course of 2009, the stress on the financial system subsided, and the Federal Reserve substantially retracted the liquidity facilities it had created to combat the crisis. Nevertheless, the Fed did not allow its balance sheet to shrink back to a more “normal” size. As shown in Figure 3, reductions in the Fed’s liquidity facilities were offset by vast purchases of securities—so-called large-scale asset purchases (“LSAPs”)—as part of a policy generally known as quantitative easing (“QE”). These purchases came in three waves, which are visible in Figure 3. The first wave of LSAPs, known as QE1, started in early 2009 and ended in March 2010. The second wave, QE2, lasted from November 2010 to June 2011. The third and largest wave, QE3, lasted from September 2012 to October 2014. By the end of QE3, the Fed’s balance sheet stood at about \$4.5 trillion,⁶⁹ and excess reserves were \$2.6 trillion.⁷⁰ Far from being scarce, reserves were (and still are) “superabundant”⁷¹: the banking system is “awash in reserves.”⁷²

The LSAPs’ stated purpose was to provide extraordinary monetary stimulus in the face of the worst U.S.

Target Rate (Discontinued) (“DFEDTAR”) (2008), FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTAR> [<https://perma.cc/56RS-XM95>].

⁶⁹ FED. RESERVE, STATISTICAL RELEASE: FACTORS AFFECTING RESERVE BALANCES OF DEPOSITORY INSTITUTIONS AND CONDITION STATEMENT OF FEDERAL RESERVE BANKS H.4.1 tbl.6 (Oct. 30, 2014).

⁷⁰ FED. RESERVE, STATISTICAL RELEASE: AGGREGATE RESERVES OF DEPOSITORY INSTITUTIONS AND THE MONETARY BASE H.3 tbl.1 (Oct. 30, 2014).

⁷¹ Jane E. Ihrig, Ellen E. Meade & Gretchen C. Weinbach, *Monetary Policy 101: A Primer on the Fed’s Changing Approach to Policy Implementation* 10–11 (Fin. & Econ. Discussion Series, Working Paper No. 2015-047, 2015).

⁷² Morten L. Bech, Antoine Martin & James McAndrews, *Settlement Liquidity and Monetary Policy Implementation—Lessons from the Financial Crisis*, 18 FRBNY ECON. POL’Y REV. 1, 13 n.21 (2012); see also Ben R. Craig & Matthew Koepke, *Excess Reserves: Oceans of Cash*, FRBC ECON. COMMENT. 1 (Feb. 12, 2015).

macroeconomic conditions since the Great Depression.⁷³ With short-term interest rates at or near the zero lower bound, traditional monetary policy had run out of ammunition. Whereas traditional monetary easing relies largely on purchases of short-term government securities, the LSAPs consisted mostly of longer-maturity bonds. These purchases were designed to put direct downward pressure on *long*-term interest rates.⁷⁴ In addition, the LSAPs were not limited to Treasury securities; they included large quantities of mortgage-backed securities guaranteed by, as well as securities directly issued by, the housing-finance giants Fannie Mae and Freddie Mac. By expanding into these securities, the Federal Reserve sought to support the flow of credit to the struggling housing sector while also limiting its own dominant presence in the Treasury market.

The Federal Reserve's balance sheet was thus transformed. And this unprecedented expansion raised a critical question: In a world with superabundant reserves, how might the Federal Reserve reverse course and raise interest rates if the economy showed signs of overheating? The seemingly obvious answer would be to start by reversing the LSAPs—that is, sell securities. A gradual sell-off of its enormous securities portfolio should increase long-term interest rates and dampen inflation. Eventually, the Fed's balance sheet would renormalize. Reserves would again be scarce, at which point the Fed could resume its traditional scarce-reserves approach to managing short-term interest rates.

⁷³ See, e.g., Press Release, Bd. of Governors of the Fed. Reserve Sys., Federal Reserve Issues FOMC Statement (Sept. 13, 2012), <https://www.federalreserve.gov/newsevents/pressreleases/monetary20120913a.htm> [<https://perma.cc/MLB3-3RPJ>].

⁷⁴ See Stephen D. Williamson, *Quantitative Easing: How Well Does This Tool Work?*, FED. RES. BANK OF ST. LOUIS (2017), <https://www.stlouisfed.org/publications/regional-economist/third-quarter-2017/quantitative-easing-how-well-does-this-tool-work> [<https://perma.cc/D93B-U7DL>].

For better or worse, the Fed has elected not to pursue this strategy. To be sure, as part of its plans for “policy normalization,” the Fed intends “in the longer run [to] hold no more securities than necessary to implement monetary policy efficiently and effectively, and [to] hold primarily Treasury securities, thereby minimizing the effect of [its] holdings on the allocation of credit across sectors of the economy.”⁷⁵ But this balance-sheet shrinkage is to be accomplished “in a gradual and predictable manner primarily by ceasing to reinvest repayments of principal on securities” held in its portfolio.⁷⁶ In other words, the Fed does not intend to use LSAP reversal as a means to tighten monetary policy. It has opted instead to do something else entirely: use administered rates to support short-term market interest rates.

C. Administered Rates

An administered rate is an interest rate that the central bank *pays* on certain of its liabilities and that it can adjust administratively.⁷⁷ (The federal funds rate is *not* an administered rate but rather a private market rate targeted by the Fed in the conduct of monetary policy.) The theory is that these administered rates will “pass through” to other market interest rates, giving the central bank a way to tighten or ease monetary policy without necessarily adjusting the quantity of base money outstanding. Administered rates do

⁷⁵ Press Release, Bd. of Governors of the Fed. Reserve Sys., Policy Normalization Principles and Plans (Sept. 17, 2014), <https://www.federalreserve.gov/newsevents/pressreleases/monetary20140917c.htm> [<https://perma.cc/AVW3-H3FD>].

⁷⁶ *Id.*; see also Ben S. Bernanke, *Shrinking the Fed's Balance Sheet*, BROOKINGS (Jan. 26, 2017), <https://www.brookings.edu/blog/ben-bernanke/2017/01/26/shrinking-the-feds-balance-sheet/> [<https://perma.cc/WET2-F84E>] (“In short: rate increases first, balance sheet reduction later.”).

⁷⁷ Technically, there are two types of administered rates: floor rates and ceiling rates. Because floor rates are much more important than ceiling rates in the current environment, “administered rates” herein refers only to floor rates. A ceiling rate is a rate that the central bank charges for loans of base money, also known as a discount rate.

not depend on scarce reserves for their efficacy. On the contrary, I will argue below that they may very well require the opposite: reserve abundance.

The most important administered rate is the interest rate the central bank pays on commercial banks' reserve balances. These interest payments are called "interest on reserves," consisting of "interest on required reserves" ("IORR") and "interest on excess reserves" ("IOER"). IORR and IOER serve quite different stated purposes. According to the Federal Reserve, IORR "is intended to eliminate effectively the implicit tax that reserve requirements . . . impose on depository institutions."⁷⁸ (This "tax" is discussed further below.) By contrast, IOER "gives the Federal Reserve an additional tool for the conduct of monetary policy."⁷⁹ Indeed, IOER has become the central lever for U.S. monetary policy.⁸⁰

Prior to the financial crisis, the Federal Reserve lacked the legal authority to pay interest on reserves. All base money was noninterest-bearing. In October 2008, Congress granted the Federal Reserve the authority to pay such interest, which it

⁷⁸ Bd. of Governors of the Fed. Reserve Sys., *Interest on Required Balances and Excess Balances*, FED. RES., <https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm> [<https://perma.cc/4LDD-E95M>] (last updated Sept. 13, 2018); Press Release, Bd. of Governors of the Fed. Reserve Sys., Board Announces That it Will Begin to Pay Interest on Depository Institutions' Required and Excess Reserve Balances (Oct. 6, 2008), <https://www.federalreserve.gov/newsevents/pressreleases/monetary20081006a.htm> [<https://perma.cc/DQ9R-BTN6>] ("Paying interest on required reserve balances should essentially eliminate the opportunity cost of holding required reserves, promoting efficiency in the banking sector.").

⁷⁹ Bd. of Governors of the Fed. Reserve Sys., *Interest on Required Balances and Excess Balances*, FED. RES., <https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm> [<https://perma.cc/4LDD-E95M>] (last update Sept. 13, 2018).

⁸⁰ See Policy Normalization Principles and Plans, *supra* note 75 ("During normalization, the Federal Reserve intends to move the federal funds rate into the target range . . . primarily by adjusting the interest rate it pays on excess reserve balances.").

began doing soon thereafter.⁸¹ When the Fed moved to ZIRP in December 2008—adopting a federal funds target range of 0.00% to 0.25%—it simultaneously set the IOER rate to 0.25%, the upper end of the range.⁸² The IOER rate remained there throughout the seven years of ZIRP.⁸³ When the Federal Reserve finally ended ZIRP (so-called “liftoff”) in December 2015—raising the federal funds target to a range of 0.25% to 0.50%—it raised the IOER rate to 0.50%.⁸⁴ When it again raised rates in December 2016, this time to a target range of 0.50% to 0.75%, it raised the IOER rate to 0.75%.⁸⁵ The pattern has continued: with each subsequent increase in the federal funds target range (2.00% to 2.25% at this writing⁸⁶),

⁸¹ In 2006, Congress authorized the Federal Reserve to begin paying interest on reserves beginning October 1, 2011. See Financial Services Regulatory Relief Act of 2006, Pub. L. No. 109-351, §§ 201, 203, 120 Stat. 1966, 1968–69 (2006). The Emergency Economic Stabilization Act of 2008 accelerated the effective date to October 1, 2008. See Pub. L. No. 110-343, § 128, 122 Stat. 3765, 3796 (2008).

⁸² *Federal Reserve Economic Data (“FRED”), Federal Funds Target Range – Lower Limit (“DFEDTARL”) (2008)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTARL> [<https://perma.cc/6LPG-SZQW>]; *Federal Reserve Economic Data (“FRED”), Federal Funds Target Range – Upper Limit (“DFEDTARU”) (2008)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTARU> [<https://perma.cc/QSD4-SQRZ>]; *Federal Reserve Economic Data (“FRED”), Interest Rate on Excess Reserves (“IOER”) (2008)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/IOER> [<https://perma.cc/U2YY-8URL>].

⁸³ *Federal Reserve Economic Data (“FRED”), Interest Rate on Excess Reserves (“IOER”) (2015)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/IOER> [<https://perma.cc/5827-5D6V>].

⁸⁴ *Id.*

⁸⁵ *Federal Reserve Economic Data (“FRED”), Interest Rate on Excess Reserves (“IOER”) (2016)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/IOER> [<https://perma.cc/L59E-BYEN>].

⁸⁶ *Federal Reserve Economic Data (“FRED”), Federal Funds Target Range – Lower Limit (“DFEDTARL”) (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTARL> [<https://perma.cc/88D2-8CWG>]; *Federal Reserve Economic Data (“FRED”), Federal Funds Target Range – Upper Limit (“DFEDTARU”) (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFEDTARU> [<https://perma.cc/V3AB-NKGW>].

the Federal Reserve has set the IOER rate at the top end of the range.⁸⁷

But why should the IOER rate be set at the *top* of the federal funds target range rather than the bottom? One might have expected (and, in fact, top Fed officials did initially expect)⁸⁸ that paying IOER would set an absolute floor on the federal funds rate—that is, the federal funds rate would never fall below the IOER rate. After all, why would any bank lend reserves (unsecured!) to another bank at a *lower* rate than it could risklessly earn by simply holding the reserve balance? In reality, however, the effective federal funds rate has stayed consistently and significantly below the IOER rate, contrary to initial expectations.

The generally accepted explanation for this anomaly is that certain nonbank government-sponsored enterprises (“GSEs”)⁸⁹ are permitted to hold reserve balances but are not legally eligible to receive interest on those balances.⁹⁰

⁸⁷ *Federal Reserve Economic Data (“FRED”), Interest Rate on Excess Reserves (“IOER”) (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/IOER> [<https://perma.cc/JSW2-EFTW>].

⁸⁸ See, e.g., Ben S. Bernanke & Donald Kohn, *The Fed’s Interest Payments to Banks*, BROOKINGS (Feb. 16, 2016), <https://www.brookings.edu/blog/ben-bernanke/2016/02/16/the-feds-interest-payments-to-banks/> [<https://perma.cc/74YX-EERV>] (noting that “many at the Fed expected” the federal funds rate to track the IOER rate); Simon Potter, Exec. Vice President, Fed. Reserve Bank of N.Y., Dinner Address for the Bank of England–Federal Reserve Bank of New York Conference on Money Markets and Monetary Policy Implementation (Nov. 16, 2015), <https://www.newyorkfed.org/newsevents/speeches/2015/pot151116> [<https://perma.cc/39GR-JK6M>] (“[W]e did not anticipate that frictions in our money markets would limit the arbitrage that would keep market rates in line with the rate of interest we pay on excess reserves by such an extent, leaving many money market interest rates well below the rate of interest paid on excess reserves (IOER), contrary to what theory would suggest.”).

⁸⁹ Namely, Fannie Mae and Freddie Mac, together with the federally chartered Federal Home Loan Banks.

⁹⁰ See, e.g., *Federal Funds and Interest of Reserves*, FED. RES. BANK OF N.Y. (Mar. 2013), <https://www.newyorkfed.org/aboutthefed/fedpoint/fed15.html> [<https://perma.cc/6UH5-PBZU>].

Consequently, the GSEs are willing to lend their reserve balances in the federal funds market at rates below the IOER rate. Still, this alone does not explain why the federal funds rate would fall *materially* below the IOER rate. In theory, commercial banks would compete to borrow the GSEs' reserves, thereby bidding the federal funds rate up to the IOER rate. In practice, however, banks have proved unwilling to do so, and the federal funds rate has remained substantially below the IOER rate.⁹¹ The reason, it seems, is regulation. As currently implemented, regulatory capital requirements and deposit insurance fees make balance-sheet expansion costly for commercial banks. These costs inhibit arbitrage, resulting in a meaningful spread between the IOER rate and the federal funds rate.

In addition to the IOER rate, the Federal Reserve has established one other important administered rate: the "overnight reverse repurchase agreement rate," or ON-RRP rate. A repurchase agreement, or "repo" transaction, consists of the sale of a security coupled with a forward purchase of the same security at a slightly higher price.⁹² A repo transaction is economically equivalent to a secured borrowing. The "seller" (borrower) receives cash today and pays it back with interest on the maturity date. If the seller fails to make the required payment, the "buyer" (lender) has the security as collateral. In the Fed's ON-RRP facility, the Fed is the seller/borrower, and it pays the administered ON-RRP rate to its counterparties. In substance, this is quite similar to IOER, in that the Federal Reserve pays interest on certain of its own liabilities in order to influence market interest rates. But there is a crucial difference: By law, IOER can be paid only to commercial banks,⁹³ whereas the Fed can do ON-RRP transactions with any counterparty it chooses. The Fed established the ON-RRP facility in September 2013 on a small

⁹¹ See *infra* Figure 5.

⁹² For a general overview of the repo market, see MARCIA STIGUM & ANTHONY CRESCENZI, *STIGUM'S MONEY MARKET* 531-79 (4th ed. 2007).

⁹³ See 12 U.S.C. §§ 461(b)(1)(A), (b)(12) (2012).

scale; by April 2014 the facility was operating on a large scale.⁹⁴

Why are two administered rates (IOER and ON-RRP) better than one? The Federal Reserve has said that the ON-RRP facility is designed to help it achieve its target federal funds rate.⁹⁵ This is questionable. As noted above, the federal funds rate can fall below the IOER rate only because the GSEs are ineligible to receive interest on their reserve balances. If the ON-RRP facility were intended only to support the federal funds rate, then it would be supplied *exclusively* to the GSEs. Giving the GSEs an overnight, risk-free, interest-bearing alternative to holding reserve balances would place an absolute floor under the federal funds rate; the GSEs would not lend reserve balances in the federal funds market at rates below the ON-RRP rate. But the Federal Reserve has accepted into its ON-RRP facility over one hundred counterparties—including, for example, money market mutual funds—that are neither commercial banks nor GSEs.⁹⁶ These institutions are ineligible to own reserve balances and hence do not participate in the federal funds market, so it is doubtful that their inclusion can be justified by reference to the federal funds rate.

⁹⁴ See Josh Frost, Lorie Logan, Antoine Martin, Patrick McCabe, Fabio Natalucci & Julie Remache, *Overnight RRP Operations as a Monetary Policy Tool: Some Design Considerations* 10 (Fin. & Econ. Discussion Series, Working Paper No. 2015-010, 2015).

⁹⁵ See, e.g., Bd. of Governors of the Fed. Reserve Sys., *Overnight Reverse Repurchase Agreement Facility*, FED. RES. <https://www.federalreserve.gov/monetarypolicy/overnight-reverse-repurchase-agreements.htm> [<https://perma.cc/LR6G-ZY47>] (last updated Jan. 3, 2018) (describing the ON-RRP facility as “a supplementary policy tool to help control the federal funds rate[.]”).

⁹⁶ For the list of approved ON-RRP counterparties, see *Reverse Repo Counterparties*, FED. RES. BANK OF N.Y., https://www.newyorkfed.org/markets/rrp_counterparties.html [<https://perma.cc/5JUJ-MJ4F>].

Figure 5: Selected Money Market Rates and Administered Rates⁹⁷

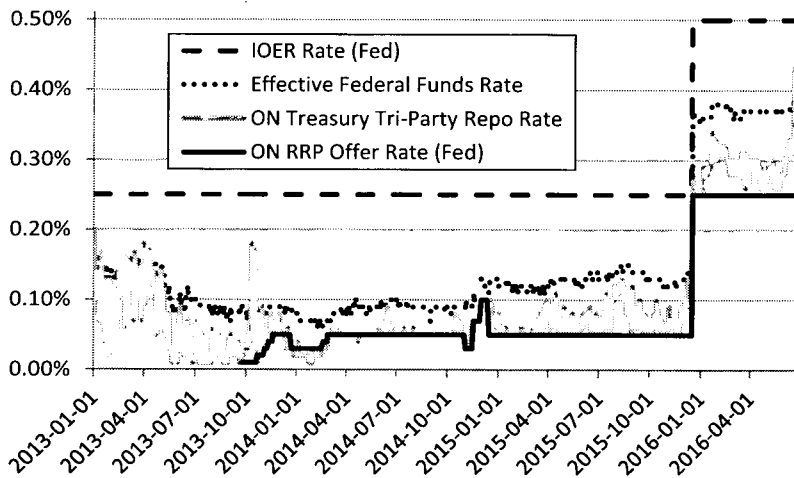


Figure 5 hints at a more likely explanation. Rather than being purely about supporting the federal funds rate, the ON-RRP facility appears to be designed to support *other* short-term market interest rates. As the figure shows, by April 2014 (by which time the facility was operating on a large scale) the ON-RRP rate appears to have established a very firm floor under the overnight Treasury tri-party repo rate.⁹⁸ Thus an alternate explanation for the ON-RRP facility's creation is

⁹⁷ *Federal Reserve Economic Data ("FRED"), Interest Rate on Excess Reserves ("IOER") (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/IOER> [<https://perma.cc/S6CF-W83K>]; *Federal Reserve Economic Data ("FRED"), Effective Federal Funds Rate ("EFFR") (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/DFE> [<https://perma.cc/9RZ9-X2B6>]; *Bank of N.Y. Mellon Tri-Party Repo Indices, Treasury Repo Index History (2018)*, BNY MELLON, <https://repoindex.bnymellon.com/repoindex/> [<https://perma.cc/5D8N-4NP5>]; *Federal Reserve Bank of N.Y., Repo and Reverse Repo Data (2018)*, FED. RES. BANK OF N.Y., <https://apps.newyorkfed.org/markets/autorates/temp> [<https://perma.cc/DW8Y-73D8>].

⁹⁸ The overnight Treasury repo market is a private money market in which financial institutions borrow money, posting U.S. Treasury securities as collateral.

that IOER was not achieving sufficient passthrough from the federal funds rate to other money market rates (such as tri-party repo rates). The ON-RRP facility allowed the Fed to bypass holders of reserve balances and provide administered rates directly to a broad array of other market participants. Again, if the exclusive goal had been to support the federal funds rate, no such bypassing would have been needed: The Federal Reserve would have supplied the ON-RRP facility to the GSEs and no one else.

But why isn't IOER alone sufficient to support all money market rates? It was widely assumed it would be. For example, in his seminal 2003 tract on monetary policy, macroeconomist Michael Woodford wrote that "the nominal interest yield on clearing balances at the central bank can determine overnight rates in the market as a whole."⁹⁹ His reasoning:

[A] central bank [can] determine the interest rate on overnight deposits at the central bank, and thus the interest rate in the interbank market for such claims But would control of *this* interest rate necessarily have consequences for other market rates, the ones that matter for critical intertemporal decisions such as investment spending? The answer is that it must—and all the more so in a world in which financial markets have become highly efficient, so that arbitrage opportunities created by discrepancies among the yields on different market instruments are immediately eliminated. Equally riskless short-term claims issued by the private sector (say, shares in a money-market mutual fund holding very short-term Treasury bills) would *not be able to promise a different interest rate* than the one available on deposits at the central bank; otherwise, there would be an excess supply or demand for the private-sector instruments.¹⁰⁰

⁹⁹ MICHAEL WOODFORD, INTEREST AND PRICES: FOUNDATIONS OF A THEORY OF MONETARY POLICY 35 (2003) (emphasis added).

¹⁰⁰ *Id.* at 36–37 (emphasis added).

It is now clear that the real world does not work this way, and it is important to try to understand why.

In a recent paper that has been widely discussed in central banking circles, Stanford economists Darrell Duffie and Arvind Krishnamurthy argue that “the current setting of U.S.-dollar money markets limits the passthrough effectiveness of the Federal Reserve’s monetary policy.”¹⁰¹ They focus in particular on the role imperfect competition plays in limiting passthrough. The authors summarize evidence that bank deposit rates respond asymmetrically to changes in federal funds rates: When federal funds rates decline, banks quickly reduce deposit rates, but when federal funds rates increase, banks are slow to raise deposit rates. Duffie and Krishnamurthy develop a model in which banks “exploit the limited attention of their deposit customers” by failing to fully pass through IOER.¹⁰² Importantly, in their model, “limited passthrough into deposit rates dampens passthrough into other money market rates, such as those for T-bills or tri-party repo.”¹⁰³ The basic idea is that imperfect competition in the deposit market suppresses deposit rates, which pushes more sophisticated cash investors into other money markets, thereby lowering yields in those markets.¹⁰⁴ The paper is highly technical, but Duffie explained the core takeaway in accessible terms:

When the Fed starts paying more to banks on their central bank deposits, called reserves, is it actually the case that T-bill rates move up, repo rates move up, commercial paper rates move up, bank deposit rates move up, and so on? If they don’t, then those decisions won’t actually get passed through into the broader economy and have the impact on inflation that the Fed’s looking for.

¹⁰¹ Darrell Duffie & Arvind Krishnamurthy, *Passthrough Efficiency in the Fed’s New Monetary Policy Setting 1* (2016) (unpublished manuscript) (available at <https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/jh-september-8-2016-bw.pdf> [<https://perma.cc/C5G7-J63Q>]).

¹⁰² *Id.* at 5.

¹⁰³ *Id.*

¹⁰⁴ *Id.* at 23.

... We're in a new regime now. In the old days, the Fed used to just tighten the screws on banks in terms of how much reserves they needed to meet their reserve requirements. But nowadays the Fed is trying to yank rates up, when it does, by lifting the deposit rate that it pays to banks [on their] money at the Fed. That's a completely different monetary policy framework. What Arvind and I show in our paper is, yes they can pull rates up, but [there are] some distortions that are created by things like regulation and imperfect competition in the banking market. So what we do is we question how effective they can be. But definitely they can move rates. [But] it might be somewhat messy, depending on the monetary policy framework.

... [I]t's not just a question of when the Fed moves, but will the economy respond to the choices that the Fed makes. And that's a question of how our markets work. . . . So we really need to understand how Fed policy actually affects the economy. That's where the action is.

... [M]ost of the messiness that I talked about . . . won't be apparent until rates are higher.¹⁰⁵

Let me add one other consideration to the mix, which is that, under administered-rate frameworks, the *quantity* of the central bank's interest-paying liabilities in relation to the size of the broader money markets could turn out to be vital to monetary policy effectiveness. Some analyses of monetary policy transmission—including, it seems, the Woodford excerpt above—tacitly assume that raising administered rates causes more “funds” to be “stashed” at the central bank as opposed to “invested” elsewhere, as though the central bank's balance sheet automatically expanded to “take in” those funds. This assumption is implicit in the notion that arbitrage will eliminate rate differentials. But it should be

¹⁰⁵ *Bloomberg Advantage: Duffie Wonders How Effective Fed Can Be*, BLOOMBERG (Aug. 30, 2016), <https://www.iheart.com/podcast/featured-podcasts-and-new-show-21297472/episode/bloomberg-advantage-duffie-wonders-how-effective-27659505/> [<https://perma.cc/RG4Y-27Y9>].

evident from the discussion above that the central bank unilaterally determines the quantity of base money outstanding. There is no coherent sense in which increasing administered rates attracts more aggregate “funds” to the central bank.¹⁰⁶ So, even in the absence of frictions, it is doubtful that administered rates would set an effective floor under all short-term market rates so long as the short-term funding markets were very large in relation to the central bank’s interest-paying liabilities.

To be concrete, recall from above that immediately prior to the financial crisis, excess reserves in the U.S. banking system hovered around \$2 billion.¹⁰⁷ It is inconceivable that paying interest on those reserves could possibly have set an effective floor on rates in the short-term repo market (which then stood at \$4.1 trillion)¹⁰⁸, in the commercial paper market (which then stood at \$2.2 trillion)¹⁰⁹, or, for that matter, in the market for bank deposits (which then stood at \$8.4 trillion).¹¹⁰ Indeed, the Federal Reserve’s experience with the ON-RRP facility has demonstrated that the facility’s efficacy varies in proportion to its size.¹¹¹ In short, under administered-rate frameworks, size matters. Ironically, this analysis implies that as the Federal Reserve gradually shrinks its balance

¹⁰⁶ It is true that higher bank deposit rates should, at the margin, induce currency holders to trade currency for bank deposits, and that banks could then deliver excess currency to the Fed in exchange for reserve balances, but this effect is quantitatively insignificant in practice.

¹⁰⁷ *Federal Reserve Economic Data (“FRED”), Excess Reserves of Depository Institutions (“EXCRESNS”) (2007)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/EXCRESNS> [https://perma.cc/6P8F-2UC4].

¹⁰⁸ *Federal Reserve Bank of New York, Primary Dealer Statistics (2007)*, FED. RES. BANK OF N.Y., <https://www.newyorkfed.org/markets/gsds/search.html> [https://perma.cc/LBJ8-4JRZ].

¹⁰⁹ *Federal Reserve Economic Data (“FRED”), Commercial Paper Outstanding (“COMPOUT”) (2007)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/COMPOUT> [https://perma.cc/U2UJ-AAW9].

¹¹⁰ See *Quarterly Banking Profile*, 2 FDIC Q. 1, 5–9 tbls. II-A, III-A, IV-A (2008).

¹¹¹ See Frost et al., *supra* note 94, at 11–12.

sheet in pursuit of normalization—a development normally associated with monetary tightening—its ability to support market interest rates through administered rates could very well erode.

Apart from concerns over efficacy, administered-rate frameworks raise uncomfortable distributional questions. By their nature, administered rates in the current institutional setting accrue only to holders of specified central bank liabilities. In the case of IOER, those holders are commercial banks. At this writing, commercial banks receive 2.20% interest¹¹² on their accounts with the Federal Reserve—a rate not available to ordinary citizens or nonbank businesses on their bank accounts. These interest payments come at a fiscal cost to taxpayers. Recall from above that the central bank generates seigniorage revenues to the government, consisting of its portfolio returns less expenses. IOER is an expense, so interest payments to banks reduce the government's seigniorage revenues dollar-for-dollar, all else being equal.

It is natural to ask whether administered rates produce a windfall or subsidy to their recipients at taxpayers' expense. The question has been controversial. In congressional hearings in early 2016, Federal Reserve Chair Janet Yellen faced pointed questions on this topic from both Democrats and Republicans. One member of Congress observed that, in 2015, the Federal Reserve paid about \$7 billion in interest to commercial banks, including more than \$100 million to Goldman Sachs and more than \$900 million to JPMorgan Chase.¹¹³ The dollar amounts are likely to be much higher in

¹¹² Bd. of Governors of the Fed. Reserve Sys., *Interest on Required Reserve Balances and Excess Balances*, FED. RES., <https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm> [<https://perma.cc/6TME-8FPD>] (last updated Nov. 28, 2018).

¹¹³ See Peter Coy, *This Is Why the Fed is Paying Interest to Big Banks*, BLOOMBERG (Feb. 10, 2016, 4:57 PM), <https://www.bloomberg.com/news/articles/2016-02-10/this-is-why-the-fed-is-paying-interest-to-big-banks> (on file with the *Columbia Business Law Review*); see also John Carney, *Treasury's Secretive \$2.4 Trillion Mutual Fund Guarantee*, CNBC (Aug. 8, 2012, 5:49 PM), <https://www.cnbc.com/id/48578949> [<https://perma.cc/W7A2-2QRF>]. For a

the future as rates continue to rise. The Fed has projected IOER payments totaling \$50 billion in 2019.¹¹⁴ Yellen defended the payments as essential to effective monetary policy implementation.¹¹⁵ Soon after the hearing, former chair Ben Bernanke and former vice chair Don Kohn likewise defended the payments, arguing that the payments “do not unduly subsidize banks.”¹¹⁶ In support of this claim, they observed that the difference between the IOER rate and the federal funds rate had tended to hover around 0.13%.¹¹⁷ Noting that the federal funds rate “is one reasonable measure of the marginal cost of funds to banks,” they concluded that “the subsidy to banks implicit in the Fed’s interest payments can be no greater than [this 0.13%] difference,” which they took to be quite small.¹¹⁸

The Bernanke-Kohn analysis is unconvincing. Reserve balances outstanding currently dwarf federal funds borrowings by a factor of about thirty.¹¹⁹ The dollar amount of interest payments in the federal funds market is therefore only a tiny fraction of the dollar amount of IOER payments over any given period. As passthrough efficiency in the money markets is limited—arguably owing largely to imperfect

broader discussion of the program, see Kathryn Judge, *Guarantor of Last Resort*, 97 TEX. L. REV. (forthcoming 2019).

¹¹⁴ See Erin E. Syron Ferris, Soo Jeong Kim & Bernd Schlusche, *Confidence Interval Projections of the Federal Reserve Balance Sheet and Income*, BD. OF GOVERNORS OF THE FED. RES. SYS. fig.5 (Jan. 13, 2017), <https://doi.org/10.17016/2380-7172.1875> [<https://perma.cc/3WHF-KGR5>].

¹¹⁵ See Ann Saphir, *Yellen Draws Fire for Fed Policy to Pay Banks*, REUTERS (Feb. 10, 2016), <https://www.reuters.com/article/usa-fed-yellen-politics/yellen-draws-fire-for-fed-policy-to-pay-banks-idUSL2N15P1Z7> [<https://perma.cc/3Q3Q-9VSN>].

¹¹⁶ Bernanke & Kohn, *supra* note 88.

¹¹⁷ See *id.*

¹¹⁸ *Id.*

¹¹⁹ *Federal Reserve Economic Data (“FRED”), Effective Federal Funds Volume (“EFFRVOL”), (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/EFFRVOL> [<https://perma.cc/5VUR-6HCB>]; *Federal Reserve Economic Data (“FRED”), Reserve Balances with Federal Reserve Banks (“WRESBAL”), (2018)*, FED. RES. BANK OF ST. LOUIS, <https://fred.stlouisfed.org/series/WRESBAL> [<https://perma.cc/T3Y3-37VZ>].

competition—it is impossible to reach any meaningful conclusions about the existence or size of subsidies by simply comparing the IOER rate with the federal funds rate; quantifying subsidies requires analysis of total or average, rather than marginal, costs of funds.

On top of that, adding the ON-RRP facility might make matters worse from a distributional standpoint. In the Duffie-Krishnamurthy model described above, passthrough efficiency to the broader money markets improves when the ON-RRP facility is added to IOER.¹²⁰ However, this result comes at the expense of *reducing* passthrough to less sophisticated depositors. Specifically, sophisticated parties move out of bank deposits and into higher-yielding money market alternatives; banks then exploit their market power over less sophisticated depositors. Perhaps for this reason, the Federal Reserve has indicated that it intends to use the ON-RRP facility “only to the extent necessary and will phase it out when it is no longer needed to help control the federal funds rate.”¹²¹

How then, should one think about the shift to administered rates as the central operational tool of monetary policy? Keep in mind that other tools were and are available. As noted above, the Fed could tighten by reversing the LSAPs—a strategy that would require no payments to banks or other counterparties. Fed officials have expressed some reservations about this strategy, including concerns that it might disrupt financial markets.¹²² But it is far from clear how serious this risk is. And there is no indication that the Fed has weighed this risk against the problems with administered rates, including their questionable efficacy as well as the distributional concerns just described.

Finally, this discussion has omitted one other possible tool for monetary tightening: the textbook tool of raising reserve requirements.¹²³ With a large enough increase in reserve

¹²⁰ See Duffie & Krishnamurthy, *supra* note 101.

¹²¹ Policy Normalization Principles and Plans, *supra* note 75, at 1.

¹²² See, e.g., Bernanke, *supra* note 76.

¹²³ See, e.g., MISHKIN, *supra* note 17, at 415.

requirements, reserves would again be scarce, and the Fed could again control the federal funds rate using small open market operations.¹²⁴ This strategy, like LSAP reversal, would involve no payments to banks. Nor would it require portfolio liquidation. Currently, there are statutory impediments to ramping up reserve requirements high enough to make reserves scarce again,¹²⁵ but recall that there were statutory impediments to implementing administered rates until late 2008, when Congress authorized IOER. The Federal Reserve actively sought IOER authority,¹²⁶ but it has not yet actively sought greater legal flexibility to raise reserve requirements. The reluctance to raise reserve requirements seems to arise, then, not from legal technicalities but from another source: a deeply ingrained sense that reserve requirements “tax” banks or that they are somehow inefficient. As noted above, the elimination of this purported tax is the stated reason for the Fed’s decision to pay interest on *required* reserves.¹²⁷

This “reserve tax” merits critical scrutiny. In the United States, banks have a legal monopoly on deposit creation. They occupy a privileged position in our system of money and

¹²⁴ *See id.*

¹²⁵ *See* 12 U.S.C. § 461(b)(2)(A)(ii) (2012) (limiting reserve requirements to fourteen percent). *But see* 12 U.S.C. § 461(b)(3) (2012) (permitting reserve requirements above this amount “[u]pon a finding by at least 5 members of the [Federal Reserve] Board that extraordinary circumstances require such action.”).

¹²⁶ *See* BD. OF GOVERNORS OF THE FED. RESERVE SYS., 93RD ANNUAL REPORT 2006, 139–40 (2006) (explaining the benefits of the Regulatory Relief Act granting the Federal Reserve Board more authority to pay interest and more flexibility to set reserve requirements).

¹²⁷ Recall that IOER and IORR supposedly serve entirely different purposes: the former is a monetary policy tool, while the latter eliminates a tax. It seems strange, then, that the two rates are always set at *exactly the same level*. The (circular) reasoning seems to be that the supposed tax consists of the opportunity cost of holding required reserves—and if there were no reserve requirements, all reserves would receive the IOER rate! But this is a tautology, not an economic or policy argument.

payments, one that is a source of significant profits.¹²⁸ This privilege comes with certain obligations, one of which is reserve requirements. Rather than singling out any one of these requirements as a “tax,” it seems more sensible to see these various privileges and requirements as components of a package deal. The next Section takes this package-deal conception seriously and shows that it opens up a new perspective on monetary policy implementation.

D. An Infrastructure Perspective

As discussed in *supra* Part I, the institutional baseline in the money paradigm is direct government provisioning of “account money,” just as the U.S. government currently supplies paper money as a monopolist. Commercial banks’ monetary function is then understood as an outsourcing or franchise arrangement.

To trace the implications of this framework, it is useful to first envision an institutional setup in which everyone holds his or her transaction account directly with the central bank, and no private firms offer (dollar-denominated) account money or close substitutes therefor. In this *insourced* setting, the administered rate—the rate the central bank pays on its liabilities—accrues to every holder of account money. There is no question of passthrough here because there is no commercial banking system through which the central bank seeks to pass interest.¹²⁹

¹²⁸ This point is sometimes expressed by noting that banks earn what amounts to seigniorage. See, e.g., CHRISTINE DESAN, *MAKING MONEY: COIN, CURRENCY, AND THE COMING OF CAPITALISM* 414–21 (2014) (discussing private “seigniorage”); Bindseil, *supra* note 58, at 190 (referring to “seigniorage’ income of banks”); Frank D. Graham, *Partial Reserve Money and the 100 Per Cent Proposal*, 26 AM. ECON. REV. 428, 430 (1936) (noting that banks earn “seigniorage profits”); Robin Greenwood, Samuel G. Hanson & Jeremy C. Stein, *A Comparative-Advantage Approach to Government Debt Maturity*, 70 J. FIN. 1683, 1705 (2015) (referring to the value derived from issuing money-like instruments as “seigniorage”).

¹²⁹ The administered rate serves as an absolute floor on short-term market interest rates. Everyone’s transaction account is nondefaultable in the same sense that paper money is nondefaultable.

Two things about this insourced system are salient for this discussion. First, all profit from money creation—the difference between the central bank’s portfolio earnings and its expenses (assumed to consist mostly of interest paid on accounts)—accrues to the government as seigniorage. This might very well be a substantial source of government revenue. Second, changes in the administered rate affect this revenue stream, just as they affect seigniorage revenue today. All else being equal, increasing administered rates reduces seigniorage, as each dollar of interest paid is one dollar less of government revenue from money creation.

Now suppose the government elects to outsource (never mind why)¹³⁰ by establishing chartered banks whose equity is privately owned. Can administered deposit rates, determined as a matter of monetary policy, be sustained? That is, can the monetary authority retain control over the interest paid on account money? There is no reason in principle why it cannot. Demsetz’s franchise bidding framework is instructive here.¹³¹ Bank charters afford the valuable privilege of issuing account money (“deposits”), an especially cheap source of funding.¹³² In a competitive auction, entrepreneurs would bid up the price of bank charters until they were just indifferent to having one. This price could consist of a lump-sum payment to the government (as in an auction of broadcast spectrum), but it would more likely involve a stream of payments in which the winning bidders would agree to pay the government each period the difference between their “fair” cost of financing—the cost of financing they would incur if they replaced their deposit funding with debt financing in the longer-term private capital markets—and their actual cost of deposit funding. From the government’s standpoint, this payment stream would be a form of seigniorage revenue.

¹³⁰ See *infra* notes 194–204 and accompanying text.

¹³¹ See *supra* notes 35–37 and accompanying text.

¹³² Gary Gorton, *Bank Regulation When ‘Banks’ and ‘Banking’ Are Not the Same*, 10 OXFORD REV. ECON. POL. 106, 107–08 (1994) (discussing the “charter value” of banks); cf. Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 Q.J. ECON. 57, 63 (2012) (noting the low pecuniary yield of money-like claims).

In this structure, bank stockholders are completely indifferent to government-administered bank deposit rates. Banks pay the fair cost of financing no matter what; how these payments are divvied up between account holders and the government is irrelevant to the banks. The monetary authority retains the power to determine bank account rates in the conduct of monetary policy. Raising deposit rates reduces seigniorage revenue in the fully insourced system—just as with administered rates in today’s framework, as shown above. When the government insources, it receives all the revenue generated by money creation. When it outsources, it presumably should give up no more revenue than necessary to induce the desired private sector participation. The decision to outsource in no way implies that the government must forfeit the entirety of the associated seigniorage revenue stream.

This structure would involve the monetary authority in a difficult valuation task: determining a “fair” cost of financing for each bank. No doubt this is challenging, but it raises two points that are germane to this Article’s broader argument. First, U.S. bank regulators are *already* engaged in this valuation exercise. They have been doing it for a quarter century, albeit in a somewhat crude way. Since 1991, deposit insurance fees that banks pay to the Federal Deposit Insurance Corporation (“FDIC”) have been risk-based, or keyed to the risk of the bank’s insolvency.¹³³ In principle, risk-based fees impose a fair price for the risk underwritten by the deposit insurer, which is the risk that the bank’s assets may become insufficient to cover its insured liabilities. If bank regulators price fees correctly, the deposit insurer expects to

¹³³ See Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991, Pub. L. No. 102-242, § 302(a)–(b), 105 Stat. 2236, 2345–49 (codified as amended at 12 U.S.C. § 1817(b) (2012)). Prior to that time, deposit insurance fees were one size fits all—they were not scaled to the risk of the institution. Evidence from the stock market suggests that the introduction of risk-based fees penalized risky banks and rewarded safer banks—exactly the desired incentive effect. See Marcia M. Cornett, Hamid Mehran & Hassan Tehranian, *The Impact of Risk-Based Premiums on FDIC-Insured Institutions*, 2 J. FIN. SERVS. RES. 153, 154–55 (1998).

break even over time: incoming fees match payouts. The structure of U.S. deposit insurance reflects this expectation; fees accrue to the deposit insurance fund and are not a source of government revenue.

To formalize slightly, any firm's debt financing cost can be expressed as $R_f + P$, where R_f is the risk-free rate corresponding to the debt's duration and P is a risk premium. Well-priced deposit insurance fees correspond to P .¹³⁴ Recall that, in the outsourcing scenario described above, the government seeks to charge each bank the difference between its fair cost of long-term debt financing and its actual cost of deposit funding. This payment equates to $R_f + P - D$, where D is the administered deposit rate. R_f is observable (the U.S. Treasury yield corresponding to the bank's asset portfolio duration) and D is determined administratively, so the valuation exercise consists of estimating P . This is isomorphic to deposit insurance. The only difference is that the government now receives expected net revenue of $R_f - D$.¹³⁵ This amounts to seigniorage; it is value that would be expected to accrue to the government in the hypothetical Demsetz auction (equivalently, it is value that would accrue to the government in the fully insured system).

Second, this type of valuation exercise is the central, archetypal practice of infrastructure regulation. Infrastructure ratemaking asks regulatory commissions to set regulated firms' product rates with a view toward generating a fair rate of return on invested capital.¹³⁶ "Specify[ing] the rate of return . . . occupies much of the agenda of modern

¹³⁴ Economically, this fee can be represented as the premium on a put option written on the bank's portfolio, struck at the face value of the bank's insured deposits. See Robert C. Merton, *An Analytic Derivation of the Cost of Deposit Insurance and Loan Guarantees: An Application of Modern Option Pricing Theory*, 1 J. BANKING & FIN. 3, 4 (1977).

¹³⁵ If P is priced correctly, it is exactly offset by expected losses over time.

¹³⁶ See STEPHEN BREYER, REGULATION AND ITS REFORM 36–59 (1982); RICHARD J. PIERCE, JR. & ERNEST GELLHORN, REGULATED INDUSTRIES IN A NUTSHELL 94–98 (1999).

commissions[,]" notes now-Justice Stephen Breyer.¹³⁷ The exercise is precisely equivalent to estimating P above. The goal in each case is to set a rate of return commensurate with risk. As with deposit insurance, the methods are inexact, but perfection is not the relevant standard. "[S]etting a rate of return cannot—even in principle—be reduced to an exact science," Breyer observes.¹³⁸ "To spend hours of hearing time considering elaborate rate-of-return models is of doubtful value, and suggestions of a proper rate, carried out to several decimal places, give an air of precision that must be false."¹³⁹

The symmetry between banking-as-monetary-outsourcing and infrastructure ratemaking becomes even clearer when it is recognized that the two systems give rise to identical incentive problems on the part of regulated firms. With monetary outsourcing, bank equity owners and management can profit by ramping up portfolio risk and/or increasing leverage. This moral hazard incentive—a product of asymmetric information between bank management and regulators—is universally regarded as the central problem of deposit insurance.¹⁴⁰ Notably, infrastructure regulators face analogous problems. If allowed rates of return are too high, regulated firms have an incentive to overinvest, expanding the rate base ("gold plating").¹⁴¹ And when firms are assured of being compensated for actual costs of production, their incentives to keep costs down are muted. "[T]he regulated firm may use its information advantage (*asymmetric information*) strategically to exploit the regulatory process to increase its

¹³⁷ BREYER, *supra* note 136, at 40.

¹³⁸ *Id.* at 47.

¹³⁹ *Id.*; cf. Fischer Black, Merton H. Miller & Richard A. Posner, *An Approach to the Regulation of Bank Holding Companies*, 51 J. BUS. 379, 387 (1978) (defending risk-based deposit insurance fees and noting that "any system of estimating risk will have arbitrary elements in it.").

¹⁴⁰ CARNELL ET AL., *supra* note 4, at 223.

¹⁴¹ This is the so-called Averch-Johnson (AJ) effect. See Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052, 1068 (1962).

profits This creates a potential moral hazard,” notes one expert.¹⁴²

On top of that, bank regulation and infrastructure regulation employ similar techniques to deal with these moral hazard incentives. Among other things, bank regulators impose prudential portfolio constraints to limit risk-taking; they prohibit insured banks from owning stock and junk bonds, for example.¹⁴³ Analogously, public utility regulators disallow investments that are not “prudently incurred” from inclusion in the rate base.¹⁴⁴ Operating costs may also be disallowed.¹⁴⁵ These tools mitigate the effects of moral hazard, albeit imperfectly.

To summarize, nothing about monetary outsourcing implies that monetary authorities must relinquish control over account-money rates. On the contrary, the money paradigm naturally implies a system in which such control is *not* relinquished. When it comes to monetary policy implementation, this approach has obvious advantages over the present system of administered central bank rates. The current system presents serious passthrough problems. The Federal Reserve today seeks to influence market rates by adjusting the interest rate on its own liabilities, but the effect turns out to be muted. The ON-RRP facility is designed, in part, to deal with this issue, but it raises problems of its own and adds complexity and opacity to an already immensely complicated and opaque system. Moreover, the current approach raises distributional concerns, as administered rates accrue only to a privileged set of institutions. Establishing regulatory controls over bank deposit interest rates would render these problems moot. Passthrough issues would evaporate, as the administered rate would accrue to all holders of account money. No set of institutions would have privileged access to administered rates. And monetary policy

¹⁴² Paul L. Joskow, *Incentive Regulation and its Application to Electricity Networks*, 7 REV. NETWORK ECON. 547, 550–51 (2008).

¹⁴³ See 12 U.S.C. § 24(Seventh) (2012) (stocks); 12 C.F.R. § 1.3 (2018) (junk bonds).

¹⁴⁴ See Joskow & Schmalensee, *supra* note 37, at 4–8.

¹⁴⁵ *Id.* at 8.

efficacy would no longer require a large central bank balance sheet.

In this regulatory model, it would be pointless to refer to any particular regulatory constraint as a “tax” for which chartered banks must then somehow be compensated. If, in the hypothetical franchise auction described above, the government indicated that the IORR rate would be held permanently at zero percent (as was the case in the United States before late 2008), then bidders would simply price this term into their bids. From a practical regulatory standpoint, the relevant binding constraint is that the provisions of the regulatory package as a whole must produce a rate of return sufficient to attract capital to the enterprise. This is well-understood in infrastructure regulation. To quote the leading Supreme Court case on public utility ratemaking, allowed returns “should be sufficient . . . to attract capital.”¹⁴⁶ Returns in excess of this amount constitute rent extraction.

To be sure, re-establishing regulatory controls over bank deposit rates would present administrative challenges, particularly with respect to valuation. But these valuation challenges are already inherent in deposit insurance pricing, which is central to existing bank regulation. It is far from obvious that the incremental costs of implementing administrative controls over bank deposit rates would exceed the very considerable benefits described above. And there is a longstanding, well-established regulatory model for this form of ratemaking in the area of infrastructure regulation.

Stepping back, it is evident that this monetary-outsourcing regulatory model, which emerges logically from the money paradigm, is fundamentally inconsistent with the intermediation paradigm. Intrinsic to the very notion of intermediation is that claims on the enterprise should reflect the risk attributes of the left side of the balance sheet (the asset portfolio). In the intermediation paradigm, decoupling these things cannot be seriously entertained. Taking the money paradigm seriously thus reveals institutional alternatives that are otherwise obscured from view. It raises

¹⁴⁶ Fed. Power Comm’n v. Hope Nat. Gas Co., 320 U.S. 591, 603 (1944).

the prospect of a rationalized and simplified approach to monetary policy implementation, one that is more transparent, more efficient, and more equitable.

III. ENTRY RESTRICTION AND THE OPTIMAL NUMBER OF BANKS

Deposit interest rate controls were a conspicuous feature of the New Deal system of bank regulation.¹⁴⁷ Known as Regulation Q, these controls unraveled in the 1980s. The proximate cause of their unraveling was banking system disintermediation. The banking industry had lobbied in favor of these controls in the 1930s with a view toward raising bank profits by lowering costs.¹⁴⁸ What the industry did not foresee was the emergence of deposit substitutes. High interest rates in the 1970s and early 1980s gave rise to the money market mutual fund (“MMF”) industry. MMFs mimicked key features of deposit accounts but paid higher interest rates. When bank depositors started flocking to MMFs, Regulation Q could no longer be sustained.¹⁴⁹

Regulation Q’s demise points to a central issue in rate regulation more generally. Whenever prices are set “high” for some or all users,¹⁵⁰ unregulated firms may seek to undercut rate regulation by offering substitute products at lower prices. To avoid this, rate regulation usually goes hand-in-hand with

¹⁴⁷ See Banking Act of 1933, Pub. L. No. 73-66, § 11, 48 Stat. 162, 181–82 (1933).

¹⁴⁸ See, e.g., Robert C. West, *The Depository Institutions Deregulation Act of 1980: A Historical Perspective*, FED. RES. BANK OF KAN. CITY ECON. REV., Feb. 1982, at 5.

¹⁴⁹ See Depository Institutions Deregulation and Monetary Control Act of 1980, Pub. L. No. 96-221, §§ 201–210, 94 Stat. 132, 142–45 (1980); see also The Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 627, 124 Stat. 1376, 1640 (2010).

¹⁵⁰ Low deposit interest rates are “expensive” from the consumer’s perspective.

entry restriction.¹⁵¹ Traditional infrastructure regulation implements entry restriction by requiring prospective infrastructure providers to obtain certificates of public convenience and necessity, granted at regulators' discretion. Banking regulation, too, employs entry restriction, though its history has been rocky, as explored in more detail below.¹⁵²

Plainly, the system of rate regulation described in Part II would require effective entry restriction into (dollar-denominated) "money" creation. There are two dimensions to this issue. First, one must define with specificity the nature of the activity into which entry is to be restricted. Second, one must establish criteria and processes for authorizing entry. Part III shows that the intermediation paradigm has left us ill-equipped to think coherently about these twin topics. The result has been conceptual and legal confusion. By contrast, reembracing the money paradigm—which sees bank money creation through a procurement lens—offers a natural way to structure how we think about entry. Among other things, the analysis that follows will offer a novel perspective on the optimal number of chartered banks.

A. Regulatory "Arbitrage" and the Money Substitute Problem

The first and most basic task of banking law is to define the legal privilege that a banking charter conveys. In current U.S. law, it is axiomatic that only banks (authorized depository institutions) may incur "deposit" liabilities.¹⁵³ But

¹⁵¹ In particular, entry restriction is typically used to prevent "cream skimming" in the presence of cross subsidies. These issues are discussed *infra* Part IV.

¹⁵² See *infra* notes 194–200 and accompanying text.

¹⁵³ See 12 U.S.C. § 378(a)(2) (2012). This provision of federal law is supplemented and reinforced by state "unauthorized banking" statutes. See, e.g., N.Y. BANKING LAW § 131 (McKinney 2018). Such laws have been in effect, in one form or another, since the early nineteenth century. See, e.g., Act of Apr. 21, 1818, ch. 236, 1818 N.Y. Laws 242 (prohibiting unauthorized persons from conducting banking business or operations).

this only restates the question in a different guise: what then is a deposit?

Among the oddities of banking law is that this question—the foundational question of the field—gets virtually no legal or scholarly attention.¹⁵⁴ “Deposit” is not defined in the entry restriction provision in federal law. To appreciate how strange this is, compare other subfields of financial regulation.¹⁵⁵ In securities regulation, the starting point is, and must be, “what is a security?” Federal statutory law defines the term,¹⁵⁶ and cases interpreting the definition are part of the regulatory canon.¹⁵⁷ The same goes for investment company regulation: there is a statutory definition¹⁵⁸ and a subsequent body of interpretive case law,¹⁵⁹ together with critical scholarship.¹⁶⁰ In insurance regulation, defining “insurance” is among the most basic tasks.¹⁶¹ To regulate swaps, the law must define a

¹⁵⁴ An important exception is Jonathan R. Macey & Geoffrey P. Miller, *Nondeposit Deposits and the Future of Bank Regulation*, 91 MICH. L. REV. 237 (1992). For a practitioner’s perspective, see Peter S. Smedresman, *Bank Deposits – A Troublesome Evolution*, 35 INT’L FIN. L. REV. 50, 50 (July 2016) (“The privilege of accepting deposits from the public is the exclusive franchise of the commercial banking sector, under authority granted by bank regulators There is remarkably little law, however, that helps to clearly distinguish a deposit from other debt obligations, of a bank or otherwise.”).

¹⁵⁵ See Howell E. Jackson, *Regulation in a Multisectoral Financial Services Industry: An Exploratory Essay*, 77 WASH. U. L.Q. 319, 367–71 (1999).

¹⁵⁶ See 15 U.S.C. § 77b(a)(1) (2012).

¹⁵⁷ See, e.g., SEC v. W.J. Howey Co., 328 U.S. 293 (1946).

¹⁵⁸ See 15 U.S.C. § 80a-3(a)(1) (2012).

¹⁵⁹ See, e.g., SEC v. Nat’l Presto Indus., Inc., 486 F.3d 305 (7th Cir. 2007).

¹⁶⁰ See, e.g., Edmund H. Kerr, *The Inadvertent Investment Company: Section 3(a)(3) of the Investment Company Act*, 12 STAN. L. REV. 29 (1959).

¹⁶¹ 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.”).

swap.¹⁶² To regulate proprietary trading, the law must define proprietary trading.¹⁶³ This list could continue indefinitely. In each of these regulatory fields, the inescapable starting point is to define *in functional terms* what is to be regulated. For whatever reason, there has been no comparable endeavor in the law of “deposit” claims.

True, federal statutory law does define “deposit” for purposes of deposit insurance (as distinct from entry restriction). Under the Federal Deposit Insurance Act (“FDIA”), a “deposit” is “money or its equivalent received or held by a bank . . . for which it has given or is obligated to give credit . . . to . . . [an] account[.]”¹⁶⁴ As a matter of statutory construction, few would object to importing this definition into the entry restriction section, where “deposit” is left undefined.

But would this help at all? Note, first, a basic confusion within the FDIA’s definition: it defines “deposit” in terms of what the bank *received* instead of the characteristics of the deposit claim itself. No one would fathom defining “security” in terms of what the issuer *received*. Whether a share of stock is issued in exchange for cash or noncash consideration (labor, tangible or intangible assets, other securities, whatever) obviously has no bearing on whether it is a share of stock. A deposit balance, like a share of stock, is a claim on an entity, and it seems self-evident that the same principle should apply. To be concrete, if a deposit balance is credited in exchange for a loan receivable—the usual and customary way banks make loans—presumably the claim is still a “deposit” even though “money or its equivalent” wasn’t “received” by the bank. In short, it is hard to conceive of any reason why the asset an entity receives (or accepts or takes) in exchange for incurring a liability should determine the legal substance of the liability itself. Courts have proved susceptible to this confusion. When called upon to interpret the FDIA’s “deposit” definition, the

¹⁶² See 7 U.S.C. § 1a(47) (2012).

¹⁶³ See Dodd-Frank Wall Street Reform and Consumer Protection Act § 619, 12 U.S.C. § 1851(h)(4) (2012).

¹⁶⁴ 12 U.S.C. § 1813(l) (2012).

Supreme Court concerned itself almost exclusively with what exactly the bank “received.”¹⁶⁵

Even if courts and regulators overcame this bit of confusion, the FDIA’s “deposit” definition would still offer no practical way forward for entry restriction. The essence of entry restriction is that only authorized banks may incur “deposit” obligations. But the FDIA defines “deposit” as an obligation *of a bank*. So this is a perfect legal circle.

This lack of a functional definition is not a benign oversight. When the 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 (the “DOJ”) for a legal opinion on the matter. The DOJ’s reply was a masterpiece of legal formalism. Heedless of economic substance, it opined in essence that MMF shares are not deposits because they are equity not debt.¹⁶⁶ Seemingly lost on the DOJ was the fact that MMFs arose precisely to mimic bank deposits. MMFs 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 (over \$2 trillion).¹⁶⁷

¹⁶⁵ *FDIC v. Philadelphia Gear Corp.*, 476 U.S. 426 (1986). In particular, the Court deemed the pertinent question to be whether “assets and ‘hard earnings’” had been “entrusted” to the bank or had been “surrender[ed] to the . . . custody” of the bank or were in the “possession” of the bank. “Congress wanted to ensure that someone who put tangible assets into a bank could always get those assets back,” the Court wrote. *Id.* at 435. The Court thus seemed to see a deposit as a form of bailment.

¹⁶⁶ See Letter from Philip B. Heymann & Lawrence Lippe, Crim. Div., U.S. Dep’t of Justice, to Martin Lybecker, Assoc. Dir., Div. of Mktg. Mgmt., SEC (Dec. 18, 1979) (on file with author).

¹⁶⁷ 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/5VQR-NE2W>].

I have argued elsewhere that the failure to reach a functional legal specification of what constitutes a monetary instrument has been *the* central issue of bank regulatory history.¹⁶⁸ The details need not be covered here, but a few brief highlights are instructive. Soon after the founding of the Bank of England in 1694, Parliament forbade any other entity in England (apart from small partnerships) from issuing “bills or notes payable at demand or at any less time than six months” from issuance.¹⁶⁹ The law took aim at bank notes, but Parliament failed to see that deposit accounts were economically the same thing. Later, deposits would come to dwarf bank notes in circulation in England, rendering the prohibition ineffectual.¹⁷⁰

Amazingly, this pattern repeated itself in the United States. The National Bank Acts of 1863 and 1864 created a new class of federally chartered “national” banks that were authorized to issue a new form of paper money (national bank notes).¹⁷¹ With this system, Congress sought to federalize money creation: it aimed to supplant, rather than supplement, money creation by state-chartered banks. Fatefully, though, Congress opted to drive state banks out of existence by imposing a prohibitive tax on bank notes issued by entities other than federally chartered banks.¹⁷² Famously, state banks responded by changing the form of their monetary liabilities: they shifted from bank notes to checkable deposits. As in England, restricting entry into money creation failed, owing to an arbitrary formalism. Not until the turn of the twentieth century was there widespread recognition that

¹⁶⁸ RICKS, *supra* note 19, at 230–37; Ricks, *supra* note 44.

¹⁶⁹ Bank of England Act 1708, 7 Ann. c. 30, § 66 (Eng.).

¹⁷⁰ See ERNEST SYKES, *BANKING AND CURRENCY* 95–96 (1905).

¹⁷¹ National Bank Act of 1864, ch. 106, §§ 5, 8, 22, 13 Stat. 99, 100–01, 105–06 (superseding the National Currency Act of 1863, ch. 58, 12 Stat. 665).

¹⁷² See Act of March 3, 1865, ch. 78, § 6, 13 Stat. 469, 484, *amended by* Act of February 8, 1875, ch. 36, § 19, 18 Stat. 307, 311.

deposit liabilities might pose more or less the same policy problem as bank notes.¹⁷³

The MMF episode of the 1970s, then, was just another installment in a centuries-old historical pattern. And it did not stop there. In the late twentieth century, a large deposit-substitute ecosystem, consisting of various types of financial sector short-term debt, arose alongside MMFs. In the early years of the twenty-first century, this “shadow deposit” system assumed gigantic proportions.¹⁷⁴ Instruments such as repurchase (“repo”) agreements, asset-backed commercial paper, Eurodollars, and auction-rate securities came to serve as institutional alternatives to bank deposits. These short-term debt instruments are classified as “cash equivalents” for accounting purposes.¹⁷⁵ The accounting treatment reflects a deeper economic reality. Because they have very stable values in nominal terms, these instruments are effective substitutes for money; they satiate money demand. It is increasingly recognized that their issuance amounts to money creation outside the regular money-and-banking system.¹⁷⁶ The unraveling of these cash equivalent markets was central to the financial crisis of 2007–2009 and the ensuing Great Recession.

If we are going to allow deposit substitutes to be freely issued, why bother requiring a special charter to issue “deposit” debt? What work is banking law supposed to be doing? Maybe the whole concept of banking law is outmoded. After all, a singular feature of the intermediation paradigm is its insistence on downplaying, or denying altogether, the specialness of “money”-type claims and their issuers. James Tobin, to take a prominent example, sought explicitly to “blur the sharp traditional distinctions between money and other

¹⁷³ See GEORGE E. BARNETT, STATE BANKS AND TRUST COMPANIES SINCE THE PASSAGE OF THE NATIONAL-BANK ACT, S. DOC. NO. 61–659, at 11–12 (3d Sess. 1911).

¹⁷⁴ See RICKS, *supra* note 19, at 32–37.

¹⁷⁵ FIN. ACCOUNTING STANDARDS BD., STATEMENT OF FINANCIAL ACCOUNTING STANDARDS NO. 95: STATEMENT OF CASH FLOWS (1987).

¹⁷⁶ See *supra* notes 24–29 and accompanying text.

assets and between commercial banks and other financial intermediaries.”¹⁷⁷ Money and its creation are nothing special in this view. Modern legislators and regulators have taken this conceptual “blurring” to heart. Among the key innovations of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 were mechanisms to extend bank-type regulation, supervision,¹⁷⁸ and insolvency proceedings¹⁷⁹ beyond the banking system proper. Modern approaches to so-called “macroprudential” supervision of the financial system reflect a similar sentiment.¹⁸⁰

The money paradigm turns this logic on its head. If money creation is an intrinsically public activity—and if private encroachment into money creation implicates sensitive issues of systemic stability, macroeconomic management, and private capture of seigniorage—then it almost goes without saying that money creation needs to be *confined* to the government itself and its designated franchisees. On this view, entry restriction is indispensable; it is implicit in the whole concept of outsourcing or procurement. Historically, as we have seen, bank regulation sought to do precisely this, albeit formalistically.

The system of rate regulation described in Part II would require doing entry restriction along functional lines. In other

¹⁷⁷ Tobin, *supra* note 16, at 410.

¹⁷⁸ See Dodd-Frank Wall Street Reform and Consumer Protection Act §§ 111–123, 12 U.S.C. §§ 5321–5333 (2012); see also Daniel K. Tarullo, Member, Bd. of Governors of the Fed. Reserve Sys., Remarks at the Americans for Financial Reform and Economic Policy Institute Conference, Shadow Banking and Systemic Risk Regulation (Nov. 22, 2013) (“The process established by the Dodd-Frank Wall Street Reform and Consumer Protection Act for designation of systemically important non-bank firms has provided a means for ensuring that the perimeter of prudential regulation can be extended as appropriate to cover large shadow banking institutions.”).

¹⁷⁹ See Dodd-Frank Wall Street Reform and Consumer Protection Act §§ 201–217, 12 U.S.C. §§ 5381–5394 (2012).

¹⁸⁰ See, e.g., Janet L. Yellen, Vice Chair, Bd. of Governors of the Fed. Reserve Sys., Remarks at the Annual Meeting of the National Association for Business Economics, Macroprudential Supervision and Monetary Policy in the Post-crisis World (Oct. 11, 2010).

words, U.S. banking law's current prohibition on incurring "deposit" liabilities without a bank charter would need to be modernized to suppress issuances of cash equivalents by nonbank financial institutions. I have argued elsewhere that such an update is both feasible and desirable.¹⁸¹ This brings us to the second prong of the entry restriction analysis: Once entry into money creation has been restricted, who gets to enter?

B. The Bipolar History of U.S. Bank Chartering Standards

Confining money creation to licensed banks is only half the story of entry restriction. For how does one go about getting a banking license? If banking licenses were handed out freely and indiscriminately, entry restriction would be inconsequential.

The history of bank chartering standards in the United States is one of continual vacillation. In the early republic, state legislatures granted bank charters and other corporate charters on an ad hoc basis. The process smacked of cronyism and special privilege.¹⁸² Starting in the 1810s, states began liberalizing their corporation laws, allowing all citizens equal access to the corporate form through a routinized administrative process. These "general incorporation" statutes did not, however, grant free access to *bank* charters. Banking was perceived as a sensitive activity, and a special act by the legislature remained the exclusive route to bank chartering.

But the same egalitarian sensibility that led to general incorporation statutes would soon take aim at banking. Starting in the late 1830s, states began enacting so-called

¹⁸¹ See RICKS, *supra* note 19, at 230–43.

¹⁸² See WILLIAM T. ALLEN & REINIER KRAAKMAN, COMMENTARIES AND CASES ON THE LAW OF BUSINESS ORGANIZATION 78–82 (5th ed. 2016) (describing a historical trend from incorporation through special acts by state legislatures toward general acts of incorporation).

“free banking” statutes.¹⁸³ It is sometimes incorrectly assumed that “free banking” meant no bank regulation at all. In fact, free banking statutes imposed strict limits on bank activities and portfolios. “Free banking” meant free *entry* into banking. State officials would grant a banking charter to anyone meeting the requisite statutory standards.

The National Bank Act, enacted in 1863 and 1864,¹⁸⁴ marked the beginning of federal bank regulation in the United States.¹⁸⁵ Patterned after the free banking statutes, the National Bank Act on its face accorded the comptroller no discretion in granting national bank charters. It said simply that the comptroller “shall give” a charter to qualified applicants.¹⁸⁶ Nonetheless, the earliest comptrollers exercised discretion. They reviewed information on economic conditions and existing banks in the locality when passing on bank charter applications.¹⁸⁷ This policy was reversed in the 1870s under the comptrollership of John Knox, who did not believe he had discretionary power under the Act.¹⁸⁸ After the Panic of 1907, however, the comptroller’s office waffled back to discretion, owing to concerns about “over-banking.”¹⁸⁹

Discretionary national bank chartering received a somewhat firmer statutory foundation with the Banking Act of 1935,¹⁹⁰ enacted after waves of bank panics had amplified the Great Depression. The 1935 Act required the Office of the Comptroller of the Currency (“OCC”) to certify that, in

¹⁸³ See, e.g., Act of Apr. 18, 1838, ch. 260, 1838 N.Y. Laws 245–46 (authorizing the business of banking). The political history of this Act is discussed in Bray Hammond, *Free Banks and Corporations: The New York Free Banking Act of 1838*, 44 J. POL. ECON. 184 (1936).

¹⁸⁴ See *supra* notes 171–172 and accompanying text.

¹⁸⁵ I am disregarding the ill-fated first and second Banks of the United States, which were not designed to implement broad-based banking regulation (though they did end up playing a quasi-regulatory role).

¹⁸⁶ National Bank Act of 1864, ch. 106, § 18, 13 Stat. 99, 104–05 (1864).

¹⁸⁷ MICHAEL S. BARR, HOWELL E. JACKSON & MARGARET E. TAHYAR, *FINANCIAL REGULATION: LAW AND POLICY* 162 (2016).

¹⁸⁸ *Id.*

¹⁸⁹ *Id.* at 163.

¹⁹⁰ See Bank Act of 1935, Pub. L. No. 74-305, 49 Stat. 684.

chartering a new bank, “consideration ha[d] been given” to the factors that the FDIC was required to consider when evaluating deposit insurance applications.¹⁹¹ By far the most important factor was the “convenience and needs of the community to be served by the bank.”¹⁹² A decade later, when the OCC formalized its chartering standards by rulemaking, it adopted the six statutory factors as a basis for passing on charter applications.¹⁹³

In adopting the “convenience and needs” factor for national bank chartering, Congress and the OCC took a page from infrastructure regulation. Half a century earlier, states had begun requiring prospective infrastructure providers to obtain certificates of “public convenience and necessity” (“PCN” certificates) before commencing service.¹⁹⁴ As some analysts have pointed out, the term “licensing” is too generic to capture this regulatory allocation function.¹⁹⁵ Licensing systems typically admit all applicants that meet the requisite standards; such systems may be used to weed out unfit providers, for example. The PCN certificate is different, in that otherwise qualified applicants may be excluded because the agency feels additional providers are unnecessary.¹⁹⁶ This is the nature of procurement. By 1910, railroads, telegraph

¹⁹¹ *Id.* at 687.

¹⁹² *Id.* at 688.

¹⁹³ Organization of Bureau of the Comptroller of the Currency, 11 Fed. Reg. 177A-13, 177A-14 (Sept. 11, 1946) (to be codified at 12 C.F.R. ch. 1). Subsequent case law confirmed the OCC’s broad discretion to reject charter applications based on the six statutory factors, including the “convenience and needs” factor. *See, e.g.,* Camp v. Pitts, 411 U.S. 138 (1973). For a thorough, highly critical analysis of federal banking agencies’ chartering decisions from the New Deal to the early 1970s, see Kenneth E. Scott, *In Quest of Reason: The Licensing Decisions of the Federal Banking Agencies*, 42 U. CHI. L. REV. 235 (1975).

¹⁹⁴ William K. Jones, *Origins of the Certificate of Public Convenience and Necessity: Developments in the States, 1870–1920*, 79 COLUM. L. REV. 426, 426 (1979).

¹⁹⁵ *See* BREYER, *supra* note 136, at 71; Jones, *supra* note 194, at 427.

¹⁹⁶ *See* BREYER, *supra* note 136, at 194; PIERCE & GELLHORN, *supra* note 136, at 256, 278.

and telephone services, and gas, electric, and water utilities were subjected to PCN certificate requirements in most states.¹⁹⁷ Congress later elevated PCN certificate requirements to the federal level, starting with railroads in 1920,¹⁹⁸ followed by other transportation industries¹⁹⁹ and the telecommunications industry during the New Deal.²⁰⁰ By inserting this requirement into federal banking law in 1935, Congress affirmed the commonality between banking and other network-type industries.

For some time thereafter, the OCC took policing entry to be central to its mission. As late as 1976, the OCC asserted that “[t]he vital relationship of banking to the monetary system precludes complete free market operation with unlimited entry.”²⁰¹ The OCC looked at “[t]he current economic condition or growth potential of the market in which the new bank proposes to locate” when considering bank charter applications.²⁰² This was a firm assertion of the OCC’s bank chartering prerogatives.

In 1980, though, apparently under pressure from Congress,²⁰³ the OCC announced a major “shift in emphasis.”²⁰⁴ It would no longer deny bank charters due to “the distressed condition of a market [or] the existence of an ‘adequate’ number of banking offices.”²⁰⁵ The “convenience and needs of communities for banking services,” it now opined,

¹⁹⁷ See Jones, *supra* note 194, at 454–55.

¹⁹⁸ See Transportation Act, 1920 (Esch-Cummins Act), Pub. L. No. 66-152, § 402, 41 Stat. 456, 477–78.

¹⁹⁹ See, e.g., Civil Aeronautics Act of 1938, Pub. L. No. 75-706, § 401, 52 Stat. 973, 987–89.

²⁰⁰ See Communications Act of 1934, Pub. L. No. 73-416, § 214, 48 Stat. 1064, 1075–76.

²⁰¹ Bank Charters, Branches, Conversions, Etc., 41 Fed. Reg. 47,964, 47,964 (Nov. 1, 1976); see also EUGENE N. WHITE, THE COMPTROLLER AND THE TRANSFORMATION OF AMERICAN BANKING, 1960–1990, at 53–54 (1992).

²⁰² Bank Charters, Branches, Conversions, Etc., 41 Fed. Reg. at 47,965.

²⁰³ See WHITE, *supra* note 201, at 54–55.

²⁰⁴ Rules, Policies and Procedures for Corporate Activities; Charter Policy, 45 Fed. Reg. 68,603, 68,603 (Oct. 15, 1980).

²⁰⁵ *Id.*

“are best served by a high degree of competition[.]”²⁰⁶ Accordingly, “market conditions alone will rarely provide the basis for denial.”²⁰⁷ No doubt influenced by the prevailing deregulatory ethos of the time, the OCC stated that “the marketplace normally is the best regulator of economic activity, and competition allows the marketplace to function[.]”²⁰⁸ By equating “convenience and needs” with “competition”—which can only *favor* approving a charter application—the OCC effectively read the “convenience and needs” factor out of the statute.

In 1991, Congress followed the OCC’s lead. It unceremoniously deleted the provision—originating with the 1935 Act—requiring that the OCC certify to the FDIC that it had considered the six statutory factors for each new bank charter.²⁰⁹ Thereafter, the OCC no longer had any statutory obligation to consider the convenience and needs of the community. This is where things stand today. The OCC’s chartering standards now place primary emphasis on the organizing group and its operating plan; “convenience and needs of the community” is no longer a factor.²¹⁰

As the foregoing capsule history shows, bank chartering in the United States has oscillated between the poles of discretion and no discretion. Its current resting point—as a matter of both statutory directive and agency policy—is on the side of no discretion. Under the intermediation paradigm, this is desirable. Competition is the touchstone, and more charters mean more competition. Regulators should not inquire into whether there are already “enough” banks. The decision to

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ *Id.* at 68,605.

²⁰⁹ See Federal Deposit Insurance Corporation Improvement Act of 1991, Pub. L. No. 102-242, § 115(a), 105 Stat. 2236, 2249.

²¹⁰ The OCC still considers whether the bank “[c]an reasonably be expected to achieve and maintain profitability”—a much more permissive standard. 12 C.F.R. § 5.20 (2018). The OCC “may” also consider the six statutory factors required of the FDIC in deposit insurance application decisions, but the OCC’s current licensing manual omits any mention of convenience and needs. See OFFICE OF THE COMPTROLLER OF THE CURRENCY, COMPTROLLER’S LICENSING MANUAL: CHARTERS (2016).

establish a bank, like the decision to establish a supermarket or dry cleaning business, should be left to “market” forces. As will now become apparent, the money paradigm sees things very differently.

C. An Infrastructure Perspective

As noted above, the system of rate regulation described in Part II would require effective entry restriction into “money” creation, functionally defined. This Section assumes that this is both feasible and desirable. Once entry is restricted, only the government itself and its franchisees (if any) may create money. But how should the government decide whether to outsource to franchisees in the first place? And if it decides to outsource, how many franchisees should be selected, and what should be the criteria for selection? Put differently: How should regulators exercise discretion in bank chartering?

To get at these questions, it is useful first to consider the fully *insourced* setting that we envisioned in Part II, in which everyone holds his or her transaction account directly with the central bank and no private firms offer account money or close substitutes therefor. In the money paradigm, this is the institutional baseline—it is the natural starting point for analysis. The government monopolizes (dollar-denominated) money creation.²¹¹

The first question is whether to outsource at all. We can break down this question by examining the activities reflected by the right side of the central bank’s balance sheet (account money and, if desired, paper money) and the left side (investment assets). Starting with the right side, there are two basic functions: processing account-money payments among users, and printing and distributing paper money. There are no obvious reasons to outsource these routinized, ministerial,

²¹¹ Lest this seem farfetched, note that one version of this approach, called “full reserve banking,” has a very distinguished intellectual lineage. See generally IRVING FISHER, 100% MONEY (3d ed. 1945); MILTON FRIEDMAN, A PROGRAM FOR MONETARY STABILITY 65–76 (Fordham U. Press, 1992) (1959); HENRY C. SIMONS, ECONOMIC POLICY FOR A FREE SOCIETY 62–65 (1948).

processing functions. The U.S. government, like other national governments, already prints and distributes paper money and enforces anti-counterfeiting laws. These are basic prerequisites for modern fiat money systems. The Federal Reserve, like other modern central banks, also processes account-money payments among banks through its Fedwire system.²¹² A fully insourced account-money system would mean doing this on a much larger scale, but the basic function—processing debits and credits in a ledger—is the same. These functions are not obvious candidates for any kind of franchising.²¹³

In fact, outsourcing the account-money system may be a recipe for problems. A general payment system must operate *as a system*, which means that horizontal interconnections among resource providers are essential. The histories of bank clearinghouses²¹⁴ and the Federal Reserve's decades-long efforts to enforce "par" check clearing on U.S. banks²¹⁵ illustrate the degree to which account-money services necessarily involve extensive horizontal coordination and interconnection.²¹⁶ Fragmentation impedes the account-money system's functioning. For a vivid illustration, consider the fact that bank-based payments often take days to clear in the United States whereas in many other countries, such as the United Kingdom, they clear virtually instantly.²¹⁷ The principal reason is that the U.S. banking system is orders of

²¹² See FED. RESERVE, *supra* note 48, at 122–24.

²¹³ Civil liberty and privacy concerns may weigh in favor of outsourcing, but as shown by extensive U.S. anti-money laundering rules, banks may be enlisted in law enforcement notwithstanding.

²¹⁴ See Gary Gorton, *Clearinghouses and the Origin of Central Banking in the United States*, 45 J. ECON. HIST. 277 (1985).

²¹⁵ See Hal S. Scott, *The Risk Fixers*, 91 HARV. L. REV. 737 (1978).

²¹⁶ Compare investment companies—classic financial intermediaries—where no such horizontal interconnections exist.

²¹⁷ The Federal Reserve has convened a Faster Payments Task Force to improve payment speed. See FASTER PAYMENTS TASK FORCE, THE U.S. PATH TO FASTER PAYMENTS (2017).

magnitude more fragmented.²¹⁸ When there is just one ledger—as in the fully insured system considered here—payments can be executed instantly through ledger entries, with no need for back-end coordination and settlement.

The left side of the balance sheet presents a very different set of considerations. Governments have usually found it convenient to issue money by acquiring investment assets, credit assets in particular (lending and bond-buying). There are good reasons for this. Issuing money in this way affords flexibility in monetary expansion and contraction, and it allows for a high degree of administrative independence in executing monetary policy.²¹⁹ But investing, unlike transaction processing by ledger entry, is far from a routinized function. It is informationally intensive, and systematic errors are costly. Nor can the central bank rely on market efficiency to protect it from investing errors. The liquid bond markets are only so large. Under insourcing, the central bank's balance sheet may be quite large in relation to these markets. The central bank's activities may therefore push bond prices around and distort resource allocation.²²⁰ To avoid this, the

²¹⁸ For an engaging podcast treatment of why “the invisible pipes that carry money from one place to another [in America] . . . are so slow” and why the ones in England are so much faster, listen to David Kestenbaum & Alex Blumberg, *Planet Money: The Economy Explained Episode 489: The Invisible Plumbing of Our Economy*, NAT'L PUB. RADIO (Oct. 4, 2013) <https://www.npr.org/templates/transcript/transcript.php?storyId=229224964> [<https://perma.cc/JJ4D-TVWN>].

²¹⁹ For a succinct explanation of the traditional rationale for monetary policy independence, see Ben S. Bernanke, Chairman, Fed. Reserve Sys. Bd. of Governors, Remarks at the Institute for Monetary and Economic Studies International Conference (May 26, 2010). For a nuanced treatment of Federal Reserve independence, historically and conceptually, see PETER CONTI-BROWN, *THE POWER AND INDEPENDENCE OF THE FEDERAL RESERVE* (2016).

²²⁰ The Fed faced these issues squarely in 2000, in the face of large budget surpluses and dwindling quantities of outstanding Treasury securities. See Marvin Goodfriend, *Policy Debates at the Federal Open Market Committee: 1993–2002*, in *THE ORIGINS, HISTORY, AND FUTURE OF THE FEDERAL RESERVE: A RETURN TO JEKYLL ISLAND* 332, 355–56 (Michael D. Bordo & William Roberds eds., 2013).

central bank could diversify into less liquid or illiquid markets, such as direct lending. Here, securities market efficiency offers no protection to the central bank against overpayment. Lending requires local and industry-specific knowledge and continuous expert judgment.²²¹ This investment function is a good candidate for outsourcing: establishing incentive arrangements that reward successful profit-seeking. The idea is to harness private incentives to invest well. As an added bonus, outsourcing insulates the investment process from the appearance or reality of politically motivated favoritism.

Bank chartering, on this view, is an exercise in portfolio management. Bank owners (equity holders) put some of their own wealth down as a first-loss equity position. The better and more efficiently they invest, the more they profit. The investment process is removed from direct government decision-making, allaying concerns about politicized asset allocation. As in any principal-agent relationship, incentives are not perfectly aligned. With the government holding a senior claim on each franchisee's asset portfolio, franchisees have incentives to increase risk-taking. Such moral-hazard incentives are endemic to credit and insurance markets, and there are standard mechanisms to deal with them, including risk constraints and first-loss requirements (capital requirements or deductibles). These are core features of the banking regulatory "contract."²²²

With this rationale for outsourcing in hand, we can turn to the second question: how many franchisees should be selected and on what basis? It is important to be clear about what is *not* being asked. First, the question is not *how much* aggregate

²²¹ Walter Bagehot wrestled with this issue in his classic work on central banking. See WALTER BAGEHOT, *LOMBARD STREET: A DESCRIPTION OF THE MONEY MARKET* 88–89 (1873) (“A central bank, which is governed in the capital and descends on a country district, has much fewer modes of lending money safely than a bank of which the partners belong to that district, and know the men and things in it. . . . The worst people will come to him and ask for loans. His ignorance is a mark for all the shrewd and crafty people thereabouts.”).

²²² See RICKS, *supra* note 19, at 204–12; Black et al., *supra* note 139.

credit the banking system should extend. Ten trillion dollars in loans and bonds can be held by one bank or split between ten banks, a hundred banks, or more. Second, the question is not (necessarily) about the *distribution* of credit. The number of chartered banks has no necessary relation to who gets a bank loan. This point will be discussed with a caveat below; for now, assume that the number of chartered banks has no influence on the total quantity or distribution of bank loans.

How then should the central bank decide how many banks to charter? Consider the question from a portfolio management perspective. It would be foolish to entrust the whole portfolio to a single manager. No large endowment would put all its eggs in one basket. Diversification among managers is called for; if one or a few franchisees turn out to be inept or corrupt, the damage is limited. On the other hand, adding new managers is administratively costly, since they must be monitored (the bank supervisory function). And there is a subtler, but even more important, cost to adding new managers: for any given set of underlying investments and any given aggregate quantity of first-loss equity, combining portfolios reduces risk to the senior claimant (in this case, the government).²²³ This factor weighs in favor of fewer franchisees with larger portfolios. Indeed, if diversification among managers was not an issue, a single franchisee would be optimal.

These portfolio-management considerations suggest a basis for determining the optimal number of chartered banks. The benefits of more franchisees (greater manager diversification) should be weighed against the costs (administrative costs, plus portfolio risk to the government per unit of money issued). While this Article does not

²²³ The central bank as senior claimant in effect has written a "put option" on each franchisee's portfolio. It owns a portfolio of options, one for each franchisee. Assuming the central bank wants a safe portfolio, it will seek to minimize the fair value of the options it writes. It is an axiom of options theory that an "option on a portfolio" costs less than a "portfolio of options." See Robert C. Merton, *Theory of Rational Option Pricing*, 4 BELL J. ECON. & MGMT SCI. 141, 148 (1973).

undertake a quantitative estimate, it strains belief to think the optimal number of banks on these criteria should be as numerous as the 5700 insured banks in the United States today.²²⁴ Even less plausible is that they should vary in size from tiny to huge, with the largest insured bank exceeding the smallest by a factor of over 600,000.²²⁵ Surely, one hundred banks of roughly equal size, with each managing about one percent of the total portfolio, would provide ample manager diversification—maybe much more than needed.

Now for the caveat, which relates to credit distribution. There is a widespread sense that smaller, community banks serve a distinctive and important role in supplying “relationship” loans to certain classes of borrowers, such as small businesses. If true, this would weigh in favor of chartering larger numbers of smaller banks. But these claims should be treated with some caution. Empirically, there are reasons to question the extent of small business’ reliance on “relationship” loans,²²⁶ as well as their assumed preference for borrowing from community banks.²²⁷ Moreover, concerns about credit distribution might be better addressed through regulatory mechanisms or direct subsidies rather than by chartering more banks. Under the Community Reinvestment Act, U.S. banks are required to take measures to “[meet] the credit needs of [their] entire communit[ies], including low- and moderate-income neighborhoods.”²²⁸ And explicit subsidies for small business lending, or for lending to other

²²⁴ Fed. Deposit Ins. Corp., *Quarterly Banking Profile*, FDIC Q., Third Quarter 2017, at 1.

²²⁵ For a list of all FDIC-insured banks by asset size, see *Details and Financials – Institution Directory*, FED. DEPOSIT INS. CORP., <https://www5.fdic.gov/idasp/advSearchLanding.asp> [<https://perma.cc/TK3D-NAWS>].

²²⁶ See Augusto de la Torre, María Soledad Martínez Pería & Sergio L. Schmukler, *Bank Involvement with SMEs: Beyond Relationship Lending*, 34 J. BANKING & FIN. 2280 (2010).

²²⁷ See Allen N. Berger, William Goulding & Tara Rice, *Do Small Businesses Still Prefer Community Banks?*, 44 J. BANKING & FIN. 264, 264 (2014).

²²⁸ 12 U.S.C. § 2903(a)(1).

market segments, do not rely on small banks for their efficacy.²²⁹

Finally, and most importantly, banks *have no legal monopoly* on extending credit.²³⁰ Entry into lending is not restricted. In a competitive lending market, one should generally expect loans to be supplied at marginal cost. Even granting market imperfections, market forces should be expected to ensure reasonable access to credit for creditworthy borrowers, irrespective of how many banks are chartered. And in the rate regulation system described in Part II, banks' funding costs are unsubsidized, so one should not expect bank loans to carry systematically lower rates than loans by nonbanks.

Congress's explicit purpose in enacting the National Bank Act of 1864 was to "provide a national currency"²³¹—not to "regulate financial intermediation" or anything like that. The intermediation paradigm has obscured this animating purpose. In so doing, it has left U.S. bank regulation in a conceptual muddle. Efficient deposit rate regulation of the type described in Part II would necessitate restricting entry into "money" creation, functionally defined. The money paradigm allows us to see bank chartering as procurement: an exercise in portfolio management. Procurement implies discretionary selection, and traditional infrastructure regulation supplies a well-established model for this regulatory function.

²²⁹ Small business loans, student loans, and residential mortgage loans each receive some degree of federal government support.

²³⁰ There has admittedly been some confusion on this score in state "unauthorized banking" statutes; however, insofar as these provisions purport to restrict entry into "discounting" or other forms of credit extension, they have for the most part been ignored. For an incisive treatment, see Homer Kripke, *Illegal "Discounts" by Non-Banking Corporations in New York*, 56 COLUM. L. REV. 1183 (1956).

²³¹ National Bank Act of 1864, ch. 106 (preamble), 13 Stat. 99, 99.

IV. UNIVERSAL SERVICE AND THE UN- AND UNDER-BANKED

This Part now pivots from the rarefied spheres of monetary policy and bank chartering to the ground-level public interface of the monetary system. Here again, the money paradigm opens up a way of thinking about bank regulatory policy that the intermediation paradigm cannot readily accommodate—and infrastructure regulation supplies a time-tested regulatory model.

A. Access to the Mainstream Payment System

It is well-documented that the mainstream payment system is beyond the reach of many Americans. Approximately 6.5% of U.S. households—comprising fourteen million adults and six million children—do not have a bank account.²³² These unbanked households use a mishmash of techniques to make and receive payments. To convert their paychecks and other checks into cash, these consumers may visit a branch of the bank that issued the check. Such a branch may or may not be conveniently located or have convenient hours. Alternatively, they may cash checks at retail stores (such as grocery, drug, or convenience stores) or standalone check-cashing businesses. Nonbank check cashing is expensive; service providers typically charge 1.5% to 3.5% of face value.²³³ By comparison, most banked households use direct deposit for paychecks, which is convenient and free.

For routine bills, the unbanked often cannot use efficient online payment methods. They often stand in line at bill pay centers to pay in cash. They rely heavily on nonbank money orders, which are subject to fees. They commonly transfer money within the United States through expensive wire transfer outlets, such as Western Union or Moneygram. In

²³² FED. DEPOSIT INS. CORP., 2017 FDIC NATIONAL SURVEY OF UNBANKED AND UNDERBANKED HOUSEHOLDS 17 (2018) [hereinafter 2017 FDIC NATIONAL SURVEY].

²³³ Michael S. Barr & Rebecca M. Blank, *Savings, Assets, and Banking Among Low-Income Households: Introduction and Overview*, in INSUFFICIENT FUNDS 3 (Rebecca M. Blank & Michael S. Barr eds., 2009).

recent years, the unbanked have increasingly turned to prepaid debit cards, which are available at a variety of retail locations, to meet payment needs. These cards, too, are subject to various types of fees, including upfront fees, monthly fees, transaction fees, cash reload fees, ATM fees, account statement fees, customer service call fees, and online bill pay fees.²³⁴ Prepaid cards have recently experienced service interruptions, leaving their users unable to access funds for days at a time.²³⁵

For those lacking a bank account—a disproportionately low-income population²³⁶—the pecuniary and nonpecuniary costs (including time and distance costs) of basic transaction services are high. According to one recent study, “A worker earning minimum wage, working full-time, and making under \$12,000 a year might pay \$250 to \$500 annually to cash payroll checks at a check-cashing outlet, in addition to fees for money orders, wire transfers, bill payments, and other common transactions.”²³⁷ Middle- and high-income households generally avoid such costs. “Basic transactional services—receiving income, storing it, and paying bills—are less available and more expensive for low-income households.”²³⁸

²³⁴ For example, see the fee chart for the RushCard Prepaid Visa. *Fee Chart*, RUSHCARD, www.rushcard.com/fee-chart [<https://perma.cc/WX28-2BQ3>]; see also Prepaid Accounts Under the Electronic Fund Transfer Act (Regulation E) and the Truth in Lending Act (Regulation Z), 81 Fed. Reg. 83,934, 83,937, 83,954 (Nov. 22, 2016) [hereinafter Regs. E and Z].

²³⁵ See Stacy Cowley, *Senators Press for Answers After Prepaid Debit Cards Fail*, N.Y. TIMES (June 28, 2016), <https://www.nytimes.com/2016/06/29/business/dealbook/senators-press-for-answers-after-prepaid-debit-cards-fail.html> [<https://perma.cc/2U8U-NE6U>]; Liz Moyer & Jessica Silver-Greenberg, *RushCard Breakdown Affects Thousands of Prepaid Debit Card Users*, N.Y. TIMES (Oct. 20, 2015), <https://www.nytimes.com/2015/10/21/business/dealbook/after-technical-snap-fury-and-no-cash.html> [<https://perma.cc/GR56-8N9U>].

²³⁶ Barr & Blank, *supra* note 233, at 3.

²³⁷ *Id.* at 4.

²³⁸ *Id.* at 14.

Bank accounts, as currently structured, are inhospitable or simply unavailable to many consumers. Minimum balance requirements are a major obstacle for households living paycheck to paycheck, as are delays in check clearance. Account fees, including annual fees and bounced check fees, are substantial for low-balance depositors and may deter them from opening or retaining accounts. A history of bounced checks may also preclude access to a bank account. Banks use the private ChexSystem to screen out users who have had problems with checking accounts in the past.²³⁹ Also, bank branch locations are less prevalent in low-income communities, and their hours of operation are inconvenient for many prospective users. Cultural and sociological factors also come into play. Among the unbanked, a frequently cited reason for lacking a bank account is dislike or distrust of banks.²⁴⁰

It is not only the unbanked who are ill-served by the existing payments architecture. Another 18.7% of U.S. households—comprising forty-nine million adults and fifteen million children—are “underbanked,” meaning that, despite having a bank account, they rely to some degree on expensive nonbank services for payments and other financial needs.²⁴¹ For example, these underbanked households, which are predominately low- or moderate-income, may resort to expensive nonbank check cashing for reasons of convenience and immediacy of payment.²⁴²

The plight of the un- and underbanked has attracted intermittent regulatory and legislative attention in the United States, but without meaningful results. The

²³⁹ See James Marvin Pérez, Note, *Blacklisted: The Unwarranted Divestment of Access to Bank Accounts*, 80 N.Y.U. L. REV. 1586, 1586 (2005).

²⁴⁰ See FED. DEPOSIT INS. CORP., 2013 FDIC NATIONAL SURVEY OF UNBANKED AND UNDERBANKED HOUSEHOLDS 24 (2014).

²⁴¹ See 2017 FDIC NATIONAL SURVEY, *supra* note 232, at 17.

²⁴² See RACHEL SCHNEIDER & BALAFAMA LONGJOHN, CENT. FOR FIN. SERVS. INNOVATION, BEYOND CHECK-CASHING: AN EXAMINATION OF CONSUMER DEMAND AND BUSINESS INNOVATION FOR IMMEDIATE ACCESS TO CHECK FUNDS (2014).

percentage of Americans who were unbanked appears to have spiked around the time that deposit interest rate controls were phased out in the early 1980s.²⁴³ Some analysts have inferred causality, suggesting that increased competition caused banks to eliminate unprofitable services and close branches in less prosperous areas.²⁴⁴

Whatever the catalyst, consumer advocates drew attention to the issue in the mid-1980s.²⁴⁵ In 1987 the federal bank regulatory agencies, in conjunction with state bank supervisors, adopted an interagency policy statement on the topic. The statement expressed “concerns” over apparent declines in account ownership, “encourage[d]” the banking industry “to meet certain minimum needs of all consumers,” and expressed confidence that the industry could mount a “constructive response without the rigidities of legislation or regulation.”²⁴⁶ Around the same time, states began considering legislation to address the issue. Several states adopted “lifeline account” legislation in the late 1980s and early 1990s requiring that state-chartered commercial banks offer low-cost, basic accounts. Take-up was lackluster for a variety of reasons. Customers living paycheck to paycheck need payment immediacy, which limits the appeal of even low-cost accounts. Locational convenience, consumer sentiment, and lack of consumer information also played a role.²⁴⁷ Empirically, lifeline banking legislation had virtually no effect

²⁴³ See Ebonya Washington, *The Impact of Banking and Fringe Banking Regulation on the Number of Unbanked Americans*, 41 J. HUM. RESOURCES 106, 112 tbl.2 (2006).

²⁴⁴ See, e.g., JOHN P. CASKEY, FRINGE BANKING: CHECK-CASHING OUTLETS, PAWNSHOPS, AND THE POOR 87–88 (1994); Glenn B. Canner & Ellen Maland, *Basic Banking*, 73 FED. RES. BULL. 255, 255–56 (1987).

²⁴⁵ See Edward L. Rubin, *The Lifeline Banking Controversy: Putting Deregulation to Work for the Low-Income Consumer*, 67 IND. L.J. 213, 215–16 (1992).

²⁴⁶ Interagency Policy Statement on Basic Financial Services, 52 Fed. Reg. 7,024, 7,024–25 (Mar. 6, 1987).

²⁴⁷ See Joseph J. Doyle, Jose A. Lopez & Marc R. Saidenberg, *How Effective is Lifeline Banking in Assisting the ‘Unbanked’?*, 4 CURRENT ISSUES IN ECON. & FIN. 1, 3–5 (1998).

on the number of unbanked households in the relevant states.²⁴⁸

At the federal level, Congress has held hearings on lifeline accounts over the years,²⁴⁹ but no legislation materialized. The Federal Reserve opposed federal lifeline banking legislation in 1989 on the ground that “voluntary efforts by financial institutions will continue to be successful in meeting many of the concerns that have been expressed without the burden and cost that rules and regulations inevitably impose.”²⁵⁰

The U.S. Treasury Department achieved limited success through its Electronic Transfer Accounts program, whereby it compensates federally insured banks for providing basic bank accounts to beneficiaries of government transfers.²⁵¹ However, because this program supplies accounts only to recipients of federal benefits, its reach is necessarily limited.²⁵² The Treasury Department has piloted another initiative, the First Accounts Program, to support private organizations that seek to assist the unbanked, but the program is very small.²⁵³ In 2011, the FDIC launched a Model Safe Accounts Pilot with nine financial institutions to explore the feasibility of offering stripped-down transaction accounts

²⁴⁸ See Washington, *supra* note 243, at 108.

²⁴⁹ See *Ways of Increasing Access of Low- and Moderate-Income Americans to Financial Services: Hearing Before the Subcomm. on Fin. Insts. Supervision, Regulation & Deposit Ins. and the Subcomm. on Consumer Credit & Ins. of the H. Comm. on Banking, Fin. & Urban Affairs*, 103d Cong. 1–3 (1994); *Government Check Cashing, “Lifeline” Checking, and the Community Reinvestment Act: Hearings on S. 906, S. 907, and S. 909 Before the Subcomm. on Consumer & Regulatory Affairs of the S. Comm. on Banking, Hous., & Urban Affairs*, 101st Cong. 1 (1989).

²⁵⁰ Martha R. Seger, *Statement by Martha R. Seger, Member, Board of Governors of the Federal Reserve System, before the Subcommittee on Consumer and Regulatory Affairs of the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, June 7, 1989*, 75 FED. RES. BULL. 550, 557 (1989).

²⁵¹ See *Electronic Transfer Account*, 64 Fed. Reg. 38,510, 38,510 (July 16, 1999).

²⁵² See Pérez, *supra* note 239, at 1601.

²⁵³ See *id.* at 1601–02.

to meet the needs of underserved consumers, including the unbanked.²⁵⁴ While the pilot was successful, it did not lead to any substantial permanent initiative.

Opposition to direct legislative or regulatory mandates for banks to supply transaction accounts to underserved populations has usually proceeded from the supposition that such requirements inefficiently “tax” banks or otherwise impose unwarranted “social” obligations on private enterprise.²⁵⁵ Scholarly treatments tend to eschew direct mandates in favor of other strategies, such as further deregulation (with the aspiration of reducing costs and spurring access to accounts),²⁵⁶ tax incentives to banks for providing basic accounts to underserved groups,²⁵⁷ or direct government provisioning.²⁵⁸ In the next Section, this Article will outline a more promising *regulatory* model for addressing the needs of the un- and underbanked. Before proceeding to the regulatory analysis, though, it is useful to ask whether the marketplace might supply solutions on its own.

B. Bypassing Bank-Based Payments?

Do banks need to be involved in payments at all? Could nonbanks offer cheaper, more efficient payment solutions to underserved populations? Might the steady march of technology solve these problems?

It is tempting to respond that the plight of the unbanked has been on the policy radar for over three decades and the market has not yet furnished a solution. In fairness, enthusiasts for market solutions may respond that regulatory impediments are to blame. But this seems doubtful. Part III.A reviewed the porous, ineffective nature of U.S. legal

²⁵⁴ FED. DEPOSIT INS. CORP., FDIC MODEL SAFE ACCOUNTS PILOT: FINAL REPORT 1 (Apr. 2012).

²⁵⁵ See, e.g., Rubin, *supra* note 245, at 224–26.

²⁵⁶ See *id.* at 240–48.

²⁵⁷ See Michael S. Barr, *Banking the Poor*, 21 YALE J. ON REG. 121, 222–33 (2004).

²⁵⁸ See MEHRSA BARADARAN, HOW THE OTHER HALF BANKS: EXCLUSION, EXPLOITATION, AND THE THREAT TO DEMOCRACY 210–25 (2015).

constraints on entering the money creation business. I have argued in the past that it is vital to shore up these restrictions—for reasons having to do with financial instability, monetary control, and private capture of seigniorage²⁵⁹—but set that aside. If existing regulatory constraints are ineffective, then they are not meaningfully impeding the market. Nor are anti-money laundering and “know your customer” rules a likely culprit; their cost didn’t become meaningful until the early 2000s,²⁶⁰ whereas the problem of the unbanked has been around for much longer. So regulation can’t shoulder the blame, at least not all of it. In fact, there is reason to think that *deregulation* of deposit interest rates exacerbated the problem.²⁶¹

Promisingly, payment innovation has surged in recent years. New services like Apple Pay, Android Pay, and Venmo have become a meaningful part of the payments landscape. PayPal has been a major player in payments for even longer. But these services don’t offer adequate substitutes for the mainstream payment system. PayPal and Venmo are closed systems that process payments only among existing users; they are not general-purpose payment systems. And both require users to have a bank or credit card account.²⁶² Apple Pay and Android Pay are general-purpose, but they too must link to an existing bank or credit card account. As a practical matter, these services remain unavailable to unbanked households. Further, one should not exaggerate the extent to which these new interfaces bypass the traditional, bank-centered payments system. All these consumer interfaces are

²⁵⁹ RICKS, *supra* note 19, at 230–40; Ricks, *supra* note 44.

²⁶⁰ These costs escalated dramatically as a consequence of the USA Patriot Act of 2001, Pub. L. No. 107-56, 115 Stat. 272.

²⁶¹ See *supra* notes 242–243 and accompanying text.

²⁶² According to one authority, PayPal does not “[present] a ‘new’ payment system, [but relies] on existing systems (credit cards, debit cards, checking accounts, and ACH transfers) to make payments. Essentially, [it] uses the technology of the Web site to facilitate the use of conventional payment networks.” RONALD J. MANN, PAYMENT SYSTEMS AND OTHER FINANCIAL TRANSACTIONS 313 (5th ed. 2011).

“new technologies running on old rails.”²⁶³ They provide “mirages of financial disintermediation.”²⁶⁴

A more serious case for a “market” solution can be mounted on behalf of prepaid cards, discussed briefly above.²⁶⁵ Prepaid cards are among the fastest-growing payment devices in the United States, and they have achieved meaningful market penetration in unbanked and underbanked populations. Some prepaid cards approach the functionality of checking accounts, offering services such as direct deposit, automatic bill pay, and online or mobile device access. Compared to traditional bank accounts, though, prepaid cards are expensive. According to one 2014 study, the median prepaid card user pays between \$120 and \$360 annually in card fees.²⁶⁶ It is possible that these fees have decreased somewhat in the ensuing years due to increased competition. Still, for unbanked and underbanked households, a large proportion of which make less than \$30,000 per year²⁶⁷, these fees are a significant expense.

But are prepaid cards really a *nonbank* payment system? They piggyback on existing payment network rails (point of sale terminals and ATMs) whose primary function is to service bank-centric products (credit and debit cards). More than that, in most cases the prepaid card *issuer* is a bank.²⁶⁸ More accurately, the bank issues an account linked to the card, in the same way that a debit card links to a bank deposit account.²⁶⁹ It is common to speak of “money” being “stored” or “loaded” on a prepaid card, but in fact the “money” consists of

²⁶³ BARR ET AL., *supra* note 187, at 796.

²⁶⁴ Tom C. W. Lin, *Infinite Financial Intermediation*, 50 WAKE FOREST L. REV. 643, 643–44, 656 (2015).

²⁶⁵ See *supra* notes 234–235 and accompanying text. The discussion here relates to so-called “general purpose reloadable” cards.

²⁶⁶ THE PEW CHARITABLE TRUSTS, CONSUMERS CONTINUE TO LOAD UP ON PREPAID CARDS 39 (2014).

²⁶⁷ See 2017 FDIC NATIONAL SURVEY, *supra* note 232, at 19–20.

²⁶⁸ Regs. E and Z, *supra* note 234, at 83,939.

²⁶⁹ Hence the CFPB quite sensibly opts for the term “prepaid accounts” rather than “prepaid cards.” See *id.* at 83,934.

a bank deposit that is associated with the card. The prepaid card program manager, which is typically a nonbank, establishes the bank account and manages it on a pooled, custodial basis for all cardholders.²⁷⁰ Obviously, either the program manager or the bank itself must demarcate each individual cardholder's entitlement to a portion of the pooled account.²⁷¹ The FDIC supplies "pass-through" deposit insurance to cardholders so long as they are the "actual owners" of the deposit—in other words, so long as the program manager is acting as custodian.²⁷² As the FDIC notes, "the access mechanism [i.e., the card itself] is merely a device. . . . The 'deposit' is the underlying money."²⁷³ From the FDIC's standpoint, then, the prepaid cardholder is the *actual owner* of a bank deposit account which is accessed by the card. One might fairly question what relevant distinction exists between such a "prepaid card," on the one hand, and a bank deposit account accessed via debit card that lacks an overdraft feature, on the other. Unbanked households that use prepaid cards are, in this sense, banked—but in a high-cost way, one subject to elevated operational risk.²⁷⁴

Whether this is a *good* way of banking the unbanked is another question. These products' fee structures may exploit consumers' behavioral biases. But even if prepaid card fees just reflect the cost of provision, we can fairly ask whether cost *ought* to determine how this particular resource—mainstream payment system access—gets allocated. The money paradigm points toward a different set of distributive considerations.

C. An Infrastructure Perspective

As in Parts II and III, we can organize our thinking about mainstream payment system access by first considering a

²⁷⁰ See *id.* at 83,940.

²⁷¹ See *id.* at 83,940.

²⁷² Insurability of Funds Underlying Stored Value Cards and Other Nontraditional Access Mechanisms, 73 Fed. Reg. 67,155, 67,156 (Nov. 13, 2008).

²⁷³ *Id.* at 67,157.

²⁷⁴ See Regs. E and Z, *supra* note 234, at 83,939.

fully *insourced* system in which everyone holds his or her transaction account directly with the central bank. No private firm offers account money or close substitutes therefor. This would be direct government provisioning of (dollar-denominated) account money, just as the U.S. government currently supplies physical currency as a monopolist. This is the money paradigm's institutional baseline. How might the central bank in this insourced setting determine who gets access to transaction accounts and under what terms?

The main issue is cost. Every new account imposes some incremental cost on the central bank. It must supply account holders with some means of payment, such as debit cards or checkbooks. They presumably will receive periodic account statements, whether in paper form or electronically. There will be some incremental customer service cost. The payment system as a whole will see more traffic, the cost of which, though infinitesimal at the margin for each new account, is still positive.

So long as the central bank does not offer overdraft privileges, none of this requires any customer *credit* analysis by the central bank. There is no necessary connection between the left side of the central bank's balance sheet (investment assets) and the right side (transaction accounts). Consumers can get credit, including point-of-sale revolving credit (credit cards), from third parties that likewise hold transaction accounts with the central bank.²⁷⁵ The terms and conditions of such private credit arrangements are a matter of private contract to which the central bank is not a party. The central bank's payment function here consists of mechanical processing, not judgment-intensive, individualized credit underwriting. Upon receipt of an authenticated instruction—card swipe, check, automatic bill payment, etc.—the central bank debits the payer's account and credits the payee's account.

Even if credit-underwriting costs are nonexistent, the other costs are real and must be covered. One possibility

²⁷⁵ It would be trivial to link such privately-supplied revolving credit facilities to transaction accounts, such that any overages would be charged automatically to the credit facility.

would be to charge these costs directly to users. The central bank could offer transaction accounts only to those customers who fully covered their own incremental costs through, say, periodic fees. This would be an application of marginal cost pricing, the competitive-market benchmark. Under standard economic theory, prices in competitive markets equilibrate to marginal cost.²⁷⁶ Prominent experts have argued that, where rate regulation is called for, regulators should aim for marginal cost pricing.²⁷⁷ The idea is to mimic the pricing structure and efficient resource allocation that would prevail under perfect competition.

The efficiency of marginal cost pricing rests upon the absence of externalities. However, broad access to transaction accounts should generate positive spillovers in at least two ways. First, the account-money system has positive network externalities, meaning that adding new users makes the system more valuable to existing users.²⁷⁸ For example, employers are better off when their employees have transaction accounts. Payroll can then be processed through convenient direct deposit rather than by cutting physical checks. Similarly, some classes of vendors benefit when their customers have transaction accounts that can support convenient auto-pay relationships. Such arrangements avoid the cost of dealing with physical payment media while also improving payment timeliness and regularity. And the government itself accrues positive network externalities when more residents have transaction accounts. Making transfer payments to, and receiving tax payments from, unbanked individuals is costly and inefficient. Broader access to

²⁷⁶ See, e.g., N. GREGORY MANKIW, *PRINCIPLES OF ECONOMICS* 312–13 (7th ed. 2014).

²⁷⁷ See, e.g., ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* 63–86 (1988).

²⁷⁸ For general treatments of network effects that discuss legal and regulatory implications, see Nicholas Economides, *Competition Policy in Network Industries: An Introduction*, in *THE NEW ECONOMY AND BEYOND: PAST, PRESENT AND FUTURE* 96, 96–121 (Dennis W. Jansen ed., 2006); Mark A. Lemley & David McGowan, *Legal Implications of Network Effects*, 86 CALIF. L. REV. 1 (1998).

transaction accounts would therefore facilitate the administration of public services, including public assistance. Adding new active members to the account-money system, then, benefits existing network users.

Second and more broadly, the system of money and payments is integral to commercial life—it comes into play in practically every commercial transaction—and commerce itself is a spillover-rich activity. “The positive externalities [arising from voluntary association and trade] are often ignored,” writes Richard Epstein.²⁷⁹ But in reality “[t]he successful conclusion of any voluntary transaction among two or more people routinely increases the opportunities for association and trade available to everyone else.”²⁸⁰ Writing three decades earlier, Carol Rose said much the same: “The more people who engage in trade, the greater the opportunities for all to make valuable exchanges[.]”²⁸¹ Whereas Epstein enlisted positive externalities from commerce to support classical liberal principles of freedom of contract and association, Rose sought to shed light on public property doctrines:

Through ever-expanding commerce, the nation becomes ever-wealthier, and hence trade and commerce routes must be held open to the public, even if contrary to private interest.

. . . . The individuals involved in commerce help themselves, but they help others as well, and they need encouragement to do so; thus the cost of the locations necessary for commerce—particularly transport facilities—should be kept at a minimum, and perhaps be borne by the organized community at common expense. Nineteenth-century doctrine

²⁷⁹ Richard Epstein, *Freedom of Association and Antidiscrimination Law: An Imperfect Reconciliation*, L. AND LIBERTY (Jan. 2, 2016), lawliberty.org/liberty-forum/freedom-of-association-and-antidiscrimination-law-an-imperfect-reconciliation/ [<https://perma.cc/35PD-N73C>].

²⁸⁰ *Id.*

²⁸¹ Carol M. Rose, *The Comedy of the Commons: Commerce, Custom, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 769–70 (1986).

attempted to maintain public access to these locations, even at the expense of exclusive ownership rights.

....
The protection of commerce was clearly the central object of earlier “inherently public property” doctrines. Commerce, of all activities, is ever more valuable as more participate.²⁸²

Rose focused on transport facilities (roads and waterways) but her analysis applies with equal force to the mainstream payment system. If spillovers are present, supplying transaction accounts to some or all users at prices below cost may be efficiency-enhancing.

So, in the insourced setting described above, the central bank might maximize social welfare by promoting broad or even universal access to transaction accounts, even if this means furnishing accounts to some or all users at prices below marginal cost. The simplest approach would be to charge users nothing at all. Transaction accounts could be offered for free to all comers, subject to any desired screening for law enforcement and national security objectives.²⁸³ Because the mainstream payment system is not depletable or congestible, “commons”-type concerns are irrelevant. These are ledger entries, not consumption goods, and there is no legitimate reason to worry about “excessive” use. In microeconomic terms, the mainstream payment system is nonrival. Public goods combine nonrivalry with non-excludability. While the mainstream payment system is excludable, it does not follow that exclusion is good public policy. Account money could instead function like paper money: an open-access resource with costs borne by the public at large. In the presence of spillovers, this strategy may very well maximize efficiency.

Here again we reach the crucial point: *nothing* about this analysis changes when the government elects to outsource the provision of account-money services. The procurement contract with the government’s “franchisees” can readily

²⁸² *Id.* at 770–74.

²⁸³ U.S. banks are required to maintain Customer Identification Programs as part of their Bank Secrecy Act/Anti-Money Laundering compliance programs. *See* 31 U.S.C. § 5318(l) (2012).

include provisions relating to access. The overall regulatory package must be attractive enough to attract franchisees, but no particular term of the package is dictated by the mere fact of outsourcing. If universal service promotes the public interest, the regulatory compact should include universal service provisions.

It should come as no surprise that universal service mandates have long been a central part of the regulatory contract in U.S. infrastructure industries.²⁸⁴ Today, these mandates are most commonly seen in local utility-type services. Electric and gas utilities generally must adequately serve all consumers within their franchise area—even if this requires unprofitable investment—and they may not charge higher prices to more remote consumers.²⁸⁵ This is a *quid pro quo* of the franchise, a term of the overall regulatory bargain. State regulators also require telephone companies to offer service at uniform rates to all residential subscribers in their service areas, regardless of the cost of serving hard-to-reach customers.²⁸⁶ In these cases, some consumers pay prices below fully allocated cost, promoting broad access to infrastructure services.

Historically, U.S. *federal* regulators have imposed universal service mandates on more spatially expansive, state-spanning infrastructural systems. These mandates were largely eviscerated in the deregulatory wave of the late 20th century—a dubious policy development, in my view—but a brief tour of how they worked is useful. The original model, and one in which universal service remains operative, is the postal system. This is a quintessential “insourced” system, but it is nonetheless instructive. The landmark Post Office Act of

²⁸⁴ This Article uses “universal service” loosely to refer to any context in which regulated firms must serve some classes of customers at prices below cost, in order to promote broad access.

²⁸⁵ See, e.g., PIERCE & GELLHORN, *supra* note 136, at 217.

²⁸⁶ PETER W. HUBER, MICHAEL K. KELLOGG & JOHN THORNE, FEDERAL TELECOMMUNICATIONS LAW § 2.1.1 (2nd ed. 1999).

1792²⁸⁷ established procedures to ensure the rapid geographic expansion of the postal network, including routes that “could not possibly break even.”²⁸⁸ The Act deliberately subsidized nonpaying remote areas, particularly in the South and West.²⁸⁹ This policy has continued without interruption. It is the “post office principle:” transferring revenue from populous areas to thinly settled areas in order to provide postal services to the entire population.²⁹⁰ Since 1863, all U.S. domestic letter rates have been uniform (weight-based) irrespective of distance traveled.²⁹¹ This is a dramatic departure from

²⁸⁷ An Act to Establish the Post-Office and Post-Roads Within the United States, ch. 7, 1 Stat. 232 (1792).

²⁸⁸ RICHARD R. JOHN, SPREADING THE NEWS: THE AMERICAN POSTAL SYSTEM FROM FRANKLIN TO MORSE 49 (1995) (ebook).

²⁸⁹ RICHARD R. JOHN, GEORGE MASON UNIV., HISTORY OF UNIVERSAL SERVICE AND THE POSTAL MONOPOLY 21 (Nov. 2008). <http://mars.gmu.edu/bitstream/handle/1920/3477/Appendix%20D.pdf?sequence=4&isAllowed=y/> [<https://perma.cc/VXR2-M2VA>].

²⁹⁰ *Id.* at 13. Another researcher has observed that, in contemplating postal reform in the 1840s, “[t]he Congress unanimously believed that the government had a duty to provide postal service to non-paying frontier and rural areas.” George L. Priest, *The History of the Postal Monopoly in the United States*, 18 J.L. & ECON. 33, 65 (1975).

²⁹¹ U.S. POSTAL SERV., UNIVERSAL SERVICE AND THE POSTAL MONOPOLY: A BRIEF HISTORY 5 (2008).

marginal cost pricing. Modern postal legislation²⁹² and official pronouncements²⁹³ have reaffirmed these principles.

U.S. telecommunications regulation was influenced by the postal model. In 1910—the year that Congress declared the telephone and telegraph systems “common carriers” and placed them under the Interstate Commerce Commission’s (“ICC”) jurisdiction²⁹⁴—AT&T’s leadership explicitly committed the company to universal service.²⁹⁵ Regulators followed suit. In the 1920s, state public utility commissions adopted statewide rate averaging.²⁹⁶ The resulting cross-subsidies promoted residential telephone service in less

²⁹² See Postal Reorganization Act, Pub. L. No. 91-375, § 101, 84 Stat. at 719 (codified at 39 U.S.C. § 101(a)) (providing that the postal system “shall be operated as a basic and fundamental service provided to the people by the Government of the United States” and that it “shall render postal services to all communities”); *id.* (codified at 39 U.S.C. § 101(b)) (providing that the postal system “shall provide a maximum degree of effective and regular postal services to rural areas, communities, and small towns where post offices are not self-sustaining” and that “[n]o small post office shall be closed solely for operating at a deficit, it being the specific intent of the Congress that effective postal services be insured to residents of both urban and rural communities.”); *id.* § 3623, 84 Stat. 719, 761 (1970) (codified at 39 U.S.C. § 404(c)) (mandating continuation of uniform nationwide rates for each class of mail).

²⁹³ See generally PRESIDENT’S COMM’N ON THE U.S. POSTAL SERV., EMBRACING THE FUTURE: MAKING THE TOUGH CHOICES TO PRESERVE UNIVERSAL MAIL SERVICE (2003) (reaffirming the postal system’s universal service mission and endorsing continued uniform rates), https://www.treasury.gov/press-center/press-releases/documents/pcusps_report.pdf [<https://perma.cc/CQN4-TLDP>]; U.S. POSTAL SERV., ANNUAL REPORT 2 (2007), <https://about.usps.com/who-we-are/financials/annual-reports/fy2007.pdf> [<https://perma.cc/J65N-KFC8>] (“[O]ur mission remains the same—providing trusted, affordable, universal service.”); *id.* at 59 (defining universal service as providing “uniform and reasonable rates to everyone, everywhere”).

²⁹⁴ Mann-Elkins Act, ch. 309, § 7, 36 Stat. 539, 539, 544–45 (1910).

²⁹⁵ See RICHARD R. JOHN, NETWORK NATION: INVENTING AMERICAN TELECOMMUNICATIONS 345 (2010) (ebook).

²⁹⁶ See Richard H.K. Vietor, *AT&T and the Public Good: Regulation and Competition in Telecommunications, 1910–1987*, in FUTURE COMPETITION IN TELECOMMUNICATIONS 27, 35 (Stephen P. Bradley & Jerry A. Hausman eds., 1989).

populous areas. The Communications Act of 1934, which created the Federal Communications Commission (“FCC”), made universal service an explicit federal policy.²⁹⁷ By the early 1940s the FCC had adopted a policy of “equal charges for equal services,” eliminating interstate rate differentials and leading soon thereafter to de facto nationwide average pricing.²⁹⁸ This policy benefited rural and small-town telephone users nationwide. This pricing model ultimately became unsustainable, owing to regulatory acquiescence in the 1960s and 1970s to ever-increasing levels of “cream-skimming” entry by competitors like MCI Communications.²⁹⁹ With the forced breakup of AT&T in 1984, the era of U.S. telecommunications as a highly integrated, universal system came to a definitive end.

U.S. transportation industries followed a similar regulatory (and subsequent deregulatory) pattern. Even before the Interstate Commerce Act of 1887³⁰⁰—the foundation stone of U.S. federal administrative regulation—railroad corporate charters specified the routes that they were required to serve.³⁰¹ Railroads could not freely discontinue service, even if continuation was unprofitable.³⁰² In 1906, the ICC gained the power to regulate rates directly,³⁰³ and in 1920 its powers were broadened to control entry and exit by issuing certificates of public convenience and necessity.³⁰⁴ As before, notes one scholar, “carriers were often required to continue unprofitable services[.]”³⁰⁵ Universal service in the railroad

²⁹⁷ Communications Act of 1934, Pub. L. No. 73-416, § 1, 48 Stat. 1064, 1064 (codified at 47 U.S.C. § 151 et seq.).

²⁹⁸ See Vietor, *supra* note 296, at 46.

²⁹⁹ See *id.*; see also BREYER, *supra* note 136, at 285-314.

³⁰⁰ Interstate Commerce Act of 1887, ch. 104, 24 Stat. 379.

³⁰¹ THEODORE E. KEELER, RAILROADS, FREIGHT, AND PUBLIC POLICY 21 (1983).

³⁰² *Id.*

³⁰³ Hepburn Act of 1906, ch. 3591, § 2, 34 Stat. 584, 586.

³⁰⁴ Transportation Act, 1920 (Esch-Cummins Act), Pub. L. No. 66-152, § 402, 41 Stat. 456, 477-78.

³⁰⁵ KEELER, *supra* note 301, at 25.

industry began its decline in 1958, when Congress passed legislation making it easier for rail companies to discontinue unprofitable *passenger* train service.³⁰⁶ The legislation also endowed the ICC with the authority to reverse state public utility commission denials of discontinuance applications.³⁰⁷ Additional legislation from 1973 to 1980 eased exit on the *freight* side.³⁰⁸ Since deregulation, service discontinuance and outright rail line abandonment have been widespread³⁰⁹—a devastating outcome for many rural and smaller communities.

The motor carrier industry furnishes another example of universal service mandates in action. The Motor Carrier Act of 1935 brought bus and trucking companies within the ICC's jurisdiction.³¹⁰ Regulation of rates and entry applied, and motor carriers were required to serve off-line points. The ICC would suspend carriers' authority for failing to meet these universal service obligations.³¹¹ Money-losing routes were balanced with more profitable traffic. Legislation in 1980 substantially liberalized entry, exit, and rates for trucking companies.³¹² Service to small communities and small shippers deteriorated.³¹³

³⁰⁶ Transportation Act of 1958, Pub. L. No. 85-625, § 5, 72 Stat. 568, 571.

³⁰⁷ *Id.* at 572.

³⁰⁸ See Regional Rail Reorganization Act of 1973, Pub. L. No. 93-236, 87 Stat. 985; see also Railroad Revitalization and Regulatory Reform Act of 1976, Pub. L. No. 94-210, 90 Stat. 31; Staggers Rail Act of 1980, Pub. L. No. 96-448, 94 Stat. 1895.

³⁰⁹ See FRANK J. DOOLEY & WILLIAM E. THOMS, RAILROAD LAW A DECADE AFTER DEREGULATION 46 (1994) (discussing the discontinuance of passenger trains after 1958); see also *id.* at 18 (noting the abandonment of rail lines in the 1970s and 1980s).

³¹⁰ Motor Carrier Act of 1935, Pub. L. No. 74-255, 49 Stat. 543.

³¹¹ PAUL STEPHEN DEMPSEY, THE SOCIAL AND ECONOMIC CONSEQUENCES OF DEREGULATION 28-29 (1989).

³¹² See Motor Carrier Act of 1980, Pub. L. No. 96-296, 94 Stat. 793.

³¹³ See James P. Rakowski, *Marketing Economies and the Results of Trucking Deregulation in the Less-Than-Truckload Sector*, TRANSP. J., Spring 1988, at 11, 21 (1980).

Outcomes were even more extreme in the intercity bus industry. The Bus Regulatory Reform Act of 1982 let bus companies abandon or discontinue service practically at their discretion.³¹⁴ As with railroads, it also let the ICC reverse state public utilities commission denials of service discontinuance.³¹⁵ The president of Greyhound had predicted that “the rural areas are going to have to suffer” under bus deregulation.³¹⁶ He predicted correctly. Thousands of smaller communities lost intercity bus service in short order.³¹⁷

Finally, U.S. airline regulation went through a broadly similar pattern. The Civil Aeronautics Act of 1938 brought federal economic regulation to the infant airline industry.³¹⁸ As with other transportation industries, entry and rates were regulated. Over the next few decades the air passenger network grew exponentially. Pricing was uniform, under an “equal fares for equal miles” standard.³¹⁹ Airlines were awarded more profitable routes to balance their less profitable routes.³²⁰ In the late 1970s this universal service model came to an end, first through administrative action³²¹ and then through legislation.³²² Comprehensive deregulation of

³¹⁴ Bus Regulatory Reform Act of 1982, Pub. L. No. 97-261, 96 Stat. 1102.

³¹⁵ *Id.* § 16(a), 96 Stat. at 1115–1117.

³¹⁶ DEMPSEY, *supra* note 311, at 205.

³¹⁷ *Id.* at 206. Even Alfred Kahn, the intellectual godfather of infrastructure deregulation, later questioned the wisdom of this legislation: “I’m not sure I would ever have deregulated the buses because the bus is a lifeline of many small communities for people to get to the doctor or to the Social Security office.” Testimony of Alfred Kahn Before the California Public Utilities Commission 6247-48 (Jan. 31, 1989); see PAUL STEPHEN DEMPSEY & ANDREW R. GOETZ, AIRLINE DEREGULATION AND LAISSEZ-FAIRE MYTHOLOGY 279 (1992).

³¹⁸ Civil Aeronautics Act of 1938, Pub. L. No. 75-706, 52 Stat. 973.

³¹⁹ BREYER, *supra* note 136, at 212.

³²⁰ *Id.* at 213.

³²¹ See DEMPSEY, *supra* note 311, at 20.

³²² Airline Deregulation Act of 1978, Pub. L. No. 95-504, § 4, 92 Stat. 1705, 1708.

airlines led to drastic service reductions to small and midsize cities.³²³

In each of the foregoing examples—electric and gas utilities, telecommunications, and transportation—regulated firms have been required, in one form or fashion, to serve some classes of users at prices below cost, with a view toward promoting broad access to infrastructure resources. Insofar as spillovers are an increasing function of the active user base (or network penetration) of the resource, such requirements can be efficiency-enhancing. “Universal service commitments are not solely normatively grounded in distributional concerns,” notes Brett Frischmann in his influential study of infrastructural resources.³²⁴ “[T]he commitments also have positive efficiency implications.”³²⁵

Richard Posner argued in a brilliant early article that regulation of this type can be seen as a branch of public finance—a way of securing broader access to infrastructural resources than the market alone would supply.³²⁶ Internal cross-subsidies mean that some classes of users, typically those in higher-density areas, pay higher prices than they otherwise would. The resulting profits are then used to provide below-cost services to others. “[I]nternal subsidization is one method whereby the expansion of the infrastructure services can be promoted,” Posner notes.³²⁷ He concludes that the public-finance theory better accounts for the basic

³²³ See Andrew R. Goetz & Timothy M. Vowles, *The Good, the Bad, and the Ugly: 30 Years of US Airline Deregulation*, 17 J. TRANSP. GEOGRAPHY 251, 252 (2009), <https://www.sciencedirect.com/science/article/pii/S0966692309000386> [<https://perma.cc/9F3M-FRCQ>]; Phillip Longman & Lina Khan, *Terminal Sickness: How a Thirty-Year-Old Policy of Deregulation Is Slowly Killing America's Airline System*, WASH. MONTHLY (Mar./Apr. 2012), <https://washingtonmonthly.com/magazine/marchapril-2012/terminal-sickness> [<https://perma.cc/W6Z5-HUW6>].

³²⁴ BRETT M. FRISCHMANN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 223 (2012).

³²⁵ *Id.*

³²⁶ Richard A. Posner, *Taxation by Regulation*, 2 BELL J. ECON. & MGMT. SCI. 22, 39 (1971).

³²⁷ *Id.*

structure of infrastructure regulation than do other theories (specifically, the natural monopoly/public interest theory and the capture/public choice theory). “[S]ociety frequently subjects to the public utility type of control services that it wants provided on the broadest possible basis,” Posner writes.³²⁸ “The regulated industries are part of the ‘infrastructure’ of economic growth.”³²⁹

Cross-subsidies as a method of finance are controversial. (One noted scholar has described cross-subsidies in the postal context as “tumorous.”³³⁰) Some users must pay prices well above marginal cost. This amounts to an excise tax, which distorts resource allocation. But Posner argues convincingly that this criticism is superficial.³³¹ Given the decision to subsidize—which may be justified on efficiency or other grounds—funding must come from somewhere. All methods of taxation distort resource allocation. It is not *a priori* obvious that the cross-subsidization excise “tax” is more distortive than, say, raising more revenue from income taxation. It may in fact be less distortive, inasmuch as infrastructure users’ demand is often relatively inelastic.³³²

On top of that, Posner argues internal subsidization has certain advantages over taxation-plus-direct-subsidization.³³³ First, it avoids some of the administrative expense of the formal tax-and-transfer machinery. Second, where average-cost pricing is adopted (as is often the case), cross-subsidization avoids the expense of implementing a fine-grained rate structure. Third, it frees up legislative resources by delegating a minor taxing function to regulators.

To Posner’s list of advantages I would add one more, related to the last one. By sidestepping legislative appropriations, internal cross-subsidies hive off infrastructure resources into self-contained systems that are *relatively* insulated from normal political processes. The

³²⁸ *Id.*

³²⁹ *Id.*

³³⁰ Priest, *supra* note 290, at 56.

³³¹ See Posner, *supra* note 326, at 42.

³³² See *id.*

³³³ See *id.* at 45.

rationale for structuring things this way mirrors the standard rationale for administrative independence. It is a form of commitment device—a way of reducing the chances that short-term political expediencies will have longer-term deleterious effects on certain types of government functions. With annual legislative appropriations, the legislature must affirmatively and continually act for the flow of public finance to continue. Administered cross-subsidies reverse the default: the legislature must act to *end* them. The latter method of finance should be more durable. And greater expected durability promotes efficient reliance *ex ante*, encouraging the growth of infrastructure-dependent systems and thus augmenting downstream spillovers. To be sure, greater durability does not mean permanence. The deregulatory wave of the late twentieth century showed that internal cross-subsidies may succumb to sustained ideological assault. But surely direct public subsidies would have proved even less resilient.

At any rate, these questions of funding are moot in the case at hand. In the fully *insourced* setting described above, the cost of universal service would be just another expense item for the central bank, deducted from the central bank's portfolio earnings before those earnings are remitted to the fiscal authority. In effect, universal service would be funded out of general revenue, through a reduction in seigniorage. Presumably, this would continue to be true under outsourcing. As described in Part II, in a Demsetz auction framework, the government continues to accrue seigniorage revenue from chartered banks. This amount equates to $R_f + P - D$, where R_f is the risk-free rate corresponding to the bank's asset portfolio duration, P is the risk premium, and D is the administered deposit rate.³³⁴ Funding universal service out of general revenue would mean folding its cost into D ; in other words, reducing banks' periodic seigniorage payments to the government.

³³⁴ See *supra* notes 134–135 and accompanying text.

Implementation would present some challenges, but this is equally true in all the infrastructural contexts mentioned above.³³⁵ Regulators would have to devise ways of measuring banks' compliance with universal service mandates. Where multiple banks operate within a single geographic area, some method of allocation would be needed. This issue is manageable; transportation regulators dealt with similar issues in allocating airline and motor carrier routes prior to deregulation. It is not my purpose to spell out in detail how a universal service mandate might be implemented in the bank account context. Rather, I have sought to show that there are established *regulatory* models for bringing universal service to the mainstream payment system—and that there are powerful reasons to consider doing so.

Stepping back, one again sees that the money paradigm affords a perspective on bank regulation that differs fundamentally from the intermediation paradigm. In the intermediation paradigm, access to bank accounts—the core of the mainstream payment system—is a matter of private concern. It is up to the banks to decide which customers to serve. Naturally, unprofitable customers do not get access. Public interference in such matters is presumptively disfavored. The money paradigm, which envisages a bank charter as a monetary outsourcing contract, offers a very different vantage point. Universal service becomes one of the terms of the bargain, a “spec” of the procurement

³³⁵ There is precedent abroad: Canadian banks are required to open accounts for applicants unless an enumerated exception applies. The exceptions generally relate to fraud prevention. *See Access to Basic Banking Services Regulations*, SOR/2003-184 (Can.), <http://lois.justice.gc.ca/PDF/SOR-2003-184.pdf> [<https://perma.cc/B7MJ-W4QB>]; *see also* Asli Demirguc-Kunt, Leora Klapper, Dorothe Singer & Peter Van Oudheusden, *The Global Findex Database 2014: Measuring Financial Inclusion Around the World* 83–84 (World Bank Grp., Policy Research Working Paper No. 7255, 2015), <http://documents.worldbank.org/curated/en/187761468179367706/pdf/WPS7255.pdf> [<https://perma.cc/Y8G5-5QZ5>] (finding bank account penetration in Canada, as well as other in developed economies like Germany and the United Kingdom, is at or exceeds ninety-nine percent).

arrangement. Under this view, access to bank accounts, like interest on bank accounts, is a matter of public concern, not a matter to be left to banks' profit-and-loss calculations.

V. CONCLUSION

"[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."³³⁶ So wrote Milton Friedman in 1960. He described regulated banks as "issuers of money."³³⁷

This money paradigm fell out of fashion long ago. Its abandonment was unwise. The money paradigm suggests lines of regulatory analysis that the intermediation paradigm practically forecloses. Should "market" forces determine how much interest is paid on bank-issued money? Should (dollar-denominated) money creation be characterized by free entry? Should profit-and-loss considerations determine who gets access to the mainstream payment system? The money paradigm, which envisions a bank charter as a monetary outsourcing contract or franchise arrangement, affords an organizational framework for thinking about these matters. It suggests grounds for imposing rate regulation, entry restriction, and universal service mandates on chartered banks. And traditional infrastructure regulation furnishes proof-of-concept that this regulatory model is workable. Modern U.S. bank regulation has drifted ever-further away from the infrastructure model, with questionable results.

³³⁶ FRIEDMAN, *supra* note 31, at 74.

³³⁷ *Id.* at 8.