

## **MONEY AS INFRASTRUCTURE**

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*Traditional infrastructure regulation—the law of regulated industries—rests atop three pillars: rate regulation, entry restriction, and universal service. These three regulatory techniques are widely deemed appropriate under conditions in which (1) the price mechanism does not allocate a given resource well and (2) broad access to the resource is especially desirable. The monetary system is such a resource; and money creation is the distinctive function of banks. Bank regulation is therefore properly 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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### 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. “‘Banking’ has become virtually synonymous with financial intermediation,”<sup>1</sup> writes Richard Posner, in a typical example from this vein. “I ... use the words ‘bank’ and ‘banking’ broadly, to encompass all financial intermediaries.”<sup>2</sup>

The other paradigm can be called the *money paradigm*. It sees banks as distinctly monetary institutions. This means something more than

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<sup>1</sup> Richard A. Posner, *A Failure of Capitalism: The Crisis of '08 and the Descent into Depression* 46 (2009).

<sup>2</sup> *Id.* at xvi.

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offering payment services, though that is certainly part of it.<sup>3</sup> The money paradigm recognizes that claims on banks are, in a real sense, money, and that banks 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.”<sup>4</sup> (Needless to say, taking and issuing are opposites.) Under this view, banks are an integral part of the overall monetary framework, a status that arguably justifies a unique relationship with the state.

The two paradigms are not strictly incompatible; most serious banking analysts would probably find truth in both of them.<sup>5</sup> 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

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<sup>3</sup> Hence defining banks as “financial intermediar[ies] providing transaction services,” as the market-leading financial regulation casebook does, doesn’t quite capture it. Richard S. Carnell, Jonathan R. Macey & Geoffrey P. Miller, *The Law of Financial Institutions* 39 (5th ed. 2013).

<sup>4</sup> This point is sometimes conveyed by “loans create deposits” and similar expressions. See, e.g., J. Laurence Laughlin, *The Principles of Money* 119 (1903) (“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.”); 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*, at 5–6 (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.”); Irving Fisher, *The Purchasing Power of Money* 37–39 (rev. ed. 1913) (“A bank depositor . . . has not ordinarily ‘deposited money.’”); John Maynard Keynes, *A Treatise on Money*, vol. 1, 23–30 (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.”); 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.”); 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*, *Bank of England Quarterly Bulletin*, no. 1, 2–3 (2014) (“It is common misconception . . . that banks act simply as intermediaries, lending out the deposits that savers place with them. . . . The act of lending creates deposits—the reverse of the sequence typically described in textbooks.”).

<sup>5</sup> Posner does refer in passing to banks’ role in “expanding and contracting the supply of money.” Posner, *supra* note \_\_, at 20.

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tends to focus more on the left side of banks' balance sheets (i.e., their 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,<sup>6</sup> the money paradigm asserts that banks are indeed special.<sup>7</sup>

The money paradigm dominated Anglo-American banking thought during the nineteenth century.<sup>8</sup> 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 were 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 functional equivalence of these two types of claims.<sup>9</sup> That they felt the

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<sup>6</sup> See Richard C. Aspinwall, On the "Specialness" of Banking, 7 *Issues in Bank Reg.* 16 (1983).

<sup>7</sup> See E. Gerald Corrigan, Are Banks Special?, Annual Report: Federal Reserve Bank of Minneapolis (Jan. 1982).

<sup>8</sup> 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").

<sup>9</sup> See, e.g., Albert Gallatin, Considerations on the Currency and Banking System of the United States (1831), in *The Writings of Albert Gallatin*, ed. Henry Adams, vol. 3, 267–8 (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, *The Theory and Practice of Banking*, vol. 1, 330–31 (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.'"); Charles F. Dunbar, *Deposits as Currency*, 1 Q.

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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.<sup>10</sup>

The second likely explanation for the intermediation paradigm's conquest in the twentieth century was the rise and pervasive influence of finance as a discipline.<sup>11</sup> The story of finance's midcentury ascent within academic economics has been recounted elsewhere and need not be repeated here.<sup>12</sup> 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.<sup>13</sup> 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,<sup>14</sup> was promoting a "new view" of banking, holding that "[t]he distinction between commercial banks and other financial intermediaries has been too

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J. Econ. 401, 402–3 (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."); Ludwig von Mises, *The Theory of Money and Credit* (1912), trans. H. E. Batson 53 (1934; repr., Yale University Press, 1953) ("[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, *The Theory and History of Banking* 63 (3rd ed. 1917) ("Legislators have generally failed to perceive the similarity of the two kinds of liability."); Schumpeter, *supra* note \_\_, at 1115 ("[T]he obvious truth [is] that deposits and banknotes are fundamentally the same thing.").

<sup>10</sup> See Uniform Commercial Code § 8-102 (defining "uncertificated security").

<sup>11</sup> This seems to be what Perry Mehrling had in mind in describing the shift from a "money view" to 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).

<sup>12</sup> A brief overview can be found in the preface to the *Handbook of the Economics of Finance: Financial Markets and Asset Pricing*, ed. George M. Constantinides, Milton Harris & René M. Stulz (2013).

<sup>13</sup> The canonical paper is Franco Modigliani & Merton Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 *Am. Econ. Rev.* 261 (1958).

<sup>14</sup> See James Tobin, *Liquidity Preference as Behavior Towards Risk*, 25 *Rev. Econ. Stud.* 65 (1958).

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sharply drawn.”<sup>15</sup> 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. But, in truth, this seems to have more to do with pedagogical inertia than with any kind of deep disciplinary commitment.<sup>16</sup> Tellingly, within academic economics, leading modern theories of banking omit money entirely.<sup>17</sup> Banks are modeled as pure intermediaries. It is against this backdrop that two prominent economists could recently write that the notion that banks “produce (or create) money ... rests on an abuse of the word ‘money.’”<sup>18</sup>

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.<sup>19</sup> The article’s title leaves no doubt as to which paradigm it adopts. Not long thereafter,

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<sup>15</sup> James Tobin, *Commercial Banks as Creators of ‘Money,’* in *Banking and Monetary Studies*, ed. Deane Carson, 408–19 (1963).

<sup>16</sup> Indeed, Tobin began his essay by mocking the standard pedagogy. See *id.* at 408.

<sup>17</sup> 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 (1983). Critics have noted that “agents [in the model] are essentially isolated from each other; there is no trade with other agents where ‘money’ buys goods. ... Agents trade only with the bank.” Gary B. Gorton & Andrew Winton, *Financial Intermediation*, in *Handbook of the Economics of Finance*, ed. George M. Constantinides, Milton Harris & Rene Stulz (2003), vol 1A, at 453. Another leading theory of banking—the Calomiri-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, 500n8, 508 (1991). For a more extensive treatment of the relevant economic literature, see Morgan Ricks, *The Money Problem: Rethinking Financial Regulation* 81–90 (2016).

<sup>18</sup> Anat R. Admati & Martin F. Hellwig, “The Parade of Bankers’ New Clothes Continues: 23 Flawed Claims Debunked,” Rock Center for Corporate Governance at Stanford University Working Paper 143, June 23, 2013, 6. *Cf.* Paul Krugman, *If Banks Are Outlawed, Only Outlaws Will Have Banks*, *The Conscience of a Liberal* (blog), *New York Times*, Oct. 10, 2011 (noting that “what banks do” is “not mostly about money creation!”).

<sup>19</sup> Robert C. Clark, *The Soundness of Financial Intermediaries*, 86 *Yale L. J.* 1, 23–6 (1976).

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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 I am here calling the money paradigm—and toward a “modern concept of banking as funds intermediation.”<sup>20</sup> More recently, in a lengthy 2009 report imposingly titled *The Fundamental Principles of Financial Regulation*, five luminaries in economics and finance reflected this modern consensus.<sup>21</sup> Nowhere in the report is there any recognition that banks might be monetary institutions. Presumably this is because the authors do not see banks that way. It would be odd if banking were centrally about money creation but bank regulation had next to nothing to do with this activity.

In the years since the Global Financial Crisis of 2007–9, though, the money paradigm has enjoyed something of a 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. 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.<sup>22</sup> Gary Gorton, a leader in this field, refers to various types of financial sector short-term debt as “forms of money” and “private money.”<sup>23</sup> Harvard economist and former Federal Reserve governor Jeremy Stein says that the financial sector’s short-term debt

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<sup>20</sup> OCC No Objection Letter 87-5 (July 20, 1987).

<sup>21</sup> Markus Brunnermeier, Andrew Crockett, Charles Goodhart, Avinash D. Persaud & Hyun Song Shin, *The Fundamental Principles of Financial Regulation*, 11 Geneva Reports on the World Economy (2009).

<sup>22</sup> This is an old idea but it had been largely dormant for some time. See, e.g., Henry C. Simons, A Positive Program for Laissez Faire: Some Proposals for a Liberal Economic Policy (1934), in *Economic Policy for a Free Society* 320n7 (1948) (“Short-term debts ... are ... closely akin to money and demand deposits.”); John Maynard Keynes, *The General Theory of Employment, Interest, and Money* 167n1 (1936) (averring that “we can treat as *money*” debt instruments with a maturity not “in excess of three months”); John Hicks, *Value and Capital* 168 (2nd ed. 1946) (“Bills of short maturity ... [are] not quite perfect money, but still very close substitutes for it.”).

<sup>23</sup> Gary B. Gorton, *Misunderstanding Financial Crises: Why We Don’t See Them Coming* 5 (2012); Gary B. Gorton & Guillermo Ordoñez, *Collateral Crises*, 104 *Am. Econ. Rev.* 343, 343 (2014).

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obligations are “private money” and offer “monetary services.”<sup>24</sup> John Cochrane, a finance and macroeconomic specialist at the University of Chicago, says “short-term debt *is* money.”<sup>25</sup> 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 sometimes characterized as ‘money-like.’”<sup>26</sup> 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.”<sup>27</sup>

Legal scholars have only just begun to examine the *regulatory* implications that would follow from taking the money paradigm seriously.<sup>28</sup> To see what is at stake here, note that the intermediation paradigm and the money paradigm start from strikingly different institutional baselines. In the intermediation paradigm, banking is fundamentally a private activity. It arises, quite legitimately, “out there” in the competitive marketplace. It may give rise 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.

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<sup>24</sup> Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 *Q. J. Econ.* 57, 58 (2012).

<sup>25</sup> John H. Cochrane, *Toward a Run-Free Financial System*, in *Across the Great Divide: New Perspectives on the Financial Crisis*, ed. Martin Neil Baily and John B. Taylor, 224 (2014) (emphasis in original).

<sup>26</sup> Daniel K. Tarullo, *Opening Remarks*, Center for American Progress and Americans for Financial Reform, *Conference on Exploring Shadow Banking: Can the National Avoid the Next Crisis?* (July 12, 2016).

<sup>27</sup> *Id.*

<sup>28</sup> I have explored some of these issues in previous work. See Ricks, *supra* note \_\_\_. See also Kathryn Judge, *Information Gaps and Shadow Banking*, 103 *Va. L. Rev.* 411 (2017); Dan Awrey, *The International Money Problem* (2016).

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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 as an intrinsically public activity that is then outsourced.<sup>29</sup> 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.<sup>30</sup> Notably, if the government chose not to outsource money creation—if, say, everyone held his or her transaction account 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 as a matter of monetary policy, based on macroeconomic conditions.<sup>31</sup> 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 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

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<sup>29</sup> 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 Kenneth J. Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-market Allocations*, in *Analysis and Evaluation of Public Expenditures: The PPP System* 48 (J. Econ. Comm. of Cong. 1969) (“The creation of money is in many respects an example of a public good.”); David Laidler, *Taking Money Seriously* 47 (1990) (“[T]here is something of the nature of a public good about money.”); Charles P. Kindleberger & Robert Z. Aliber, *Manias, Panics, and Crashes: A History of Financial Crises* 19 (6th ed. 2011) (“Money is a public good . . .”); 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 (“There’s a few things that government has a natural monopoly in: national defense, courts, property rights, and I would say money.”). For a contrary, *laissez-faire* perspective, see Lawrence H. White, *The Theory of Monetary Institutions* 88–119 (1999).

<sup>30</sup> Cf. Robert C. Hockett & Saule T. Omarova, *The Finance Franchise*, 102 *Cornell L. Rev.* 1143 (2017). Hockett and Omarova apply their franchise conception to the financial system as a whole, whereas my focus here (the monetary framework) is much narrower.

<sup>31</sup> See Part I.

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participation, but no particular term of the package is dictated by the mere fact of outsourcing. Finally, under 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 no longer 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. (The legal study of regulated industries is generally understood to encompass certain portions of the energy, communication, and transportation sectors<sup>32</sup>—but not banking.) 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.<sup>33</sup> 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 ultimate 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 scholars have convincingly argued that this explicit long-term contracting strategy poses serious difficulties, involving such issues as contractual incompleteness and uncertainty.<sup>34</sup>

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<sup>32</sup> See, e.g., Richard J. Pierce, Jr. & Ernest Gellhorn, *Regulated Industries* (1999); Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation in Regulated Industries Law*, 98 *Colum. L. Rev.* 1323, 1327 (1998); W. Kip Viscusi, Joseph E. Harrington, Jr. & John M. Vernon, *Economics of Regulation and Antitrust* (4th ed. 2005) (Part II: Economic Regulation).

<sup>33</sup> Harold Demsetz, *Why Regulate Utilities*, 11. *J. L. & Econ.* 55 (1968).

<sup>34</sup> See, e.g., Oliver E. Williamson, *Franchise Bidding and Natural Monopolies—In General and with Respect to CATV*, 7 *Bell J. Econ.* 73 (1976); Victor P. Goldberg, *Regulation and Administered Contracts*, 7 *Bell J. Econ.* 426 (1976); George L. Priest, *The Origins of Utility Regulation and the "Theories of Regulation" Debate*, 36 *J. L. & Econ.* 289 (1993); Keith J. Crocker & Scott E. Masten, *Regulation and Administered*

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Still, experts have continued to use the procurement-contracting or outsourcing framework as an *analytical* device in the area of infrastructure regulation.<sup>35</sup>

Notably, the three regulatory devices just mentioned—rate regulation, universal service requirements, and entry restriction—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, where financial intermediation is paramount. Bank regulation instead becomes a subfield of public utility and common carrier 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,<sup>36</sup> 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.<sup>37</sup> This is yet another sign of the intermediation

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Contracts Revisited: Lessons from Transaction-Cost Economics for Public Utility Regulation, 9 J. Reg. Econ. 5 (1996).

<sup>35</sup> See, e.g., Paul L. Joskow & Richard Schmalensee, Incentive Regulation for Electric Utilities, 4 Yale J. 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.”); Paul L. Joskow, The Role of Transaction Cost Economics in Antitrust and Public Utility Regulatory Policies, 7 J. L. Econ. & Org. 53, 66 (1991) (“The 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.”); 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.”).

<sup>36</sup> See 12 U.S.C. § 378(a)(2).

<sup>37</sup> For a lonely mention of this connection, see Daniel R. Fischel, Andrew Rosenfield & Robert Stillman, The Regulation of Banks and Bank Holding Companies, 73 Va. L. Rev. 301 (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

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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.<sup>38</sup> It concluded instead that “[t]he marketplace normally is the best regulator of economic activity; and competition allows the marketplace to function.”<sup>39</sup> 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.<sup>40</sup> These controls were largely phased out in the 1980s.<sup>41</sup> 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 un lamented.

This Article illuminates a different path that bank regulation might have followed, and could still follow. Rather than abandoning those features that resemble infrastructure regulation, bank regulation might instead embrace infrastructure regulation's logic and follow through on its implications. In other writings, I have examined in detail the rationale for banking entry restrictions.<sup>42</sup> This article treats the other two regulatory devices mentioned above: rate regulation and universal service mandates. I argue that these regulatory tools have plausible but overlooked economic

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recent treatment that focuses on financial stability issues, see Prasad Krishnamurthy, *Rethinking New Deal Bank Regulation*, Yale J. Reg. (forthcoming 2018).

<sup>38</sup> For a statement of the older policy, see Office of the Comptroller of the Currency, Policy Statements on Corporate Activities, 41 Fed. Reg. 47964, 47964 (Nov. 1, 1976) (“The vital relationship of banking to the monetary system precludes complete free market operation with unlimited entry.”). See also Eugene N. White, *The Comptroller and the Transformation of American Banking, 1960–1990*, at 53–4 (1992); Carnell et al., *supra* note \_\_, at 75–6.

<sup>39</sup> Office of the Comptroller of the Currency, Clarification and Revision of Charter Policy (final rule), 45 Fed. Reg. 68603, 68604 (Oct. 15, 1980).

<sup>40</sup> See Banking Act of 1933, Pub. L. No. 73-66, § 11, 48 Stat. 162, 181–82.

<sup>41</sup> Depository Institutions Deregulation and Monetary Control Act of 1980, Pub. L. No. 96-221, §§ 201–210, 94 Stat. 132, 142–45. The remaining vestiges of Regulation Q were repealed by Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 627, 124 Stat. 1376, 1640 (2010).

<sup>42</sup> See Ricks, *supra* note \_\_, at 230–37; Morgan Ricks, *Entry Restriction, Shadow Banking, and the Structure of Monetary Institutions*, 2 J. Fin. Reg. 291 (2016).

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efficiency justifications when it comes to banking (understood as the activity of money creation). The infrastructure framing is crucial here, because it establishes that these devices are part and parcel of a preexisting *regulatory* model. These devices are thoroughly domesticated within regulatory theory and practice. Hence 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 quite high level of abstraction. As a rule, they focus heavily on banks’ credit allocation (lending) function, arguing that it should be harnessed to egalitarian social ends.<sup>43</sup> Such arguments obviously raise hotly contested questions of political philosophy. Even those who are sympathetic on philosophical grounds may question whether credit markets are an effective vehicle for social policy, or whether the banking system is a suitable instrumentality 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 grounded in

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<sup>43</sup> See, e.g., Alan M. White, *Banks as Utilities*, 90 *Tulane L. Rev.* 1241 (2016); Mehrsa Baradaran, *Banking and the Social Contract*, 89 *Notre Dame L. Rev.* 1283 (2014); K. Sabeel Rahman, *Private Power, Public Values: Regulating Social Infrastructure in a Changing Economy*, 39 *Cardozo L. Rev.* (forthcoming 2017). In recent years, a couple of 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, Federal Reserve Bank of Minneapolis, *Lessons from the Crisis: Ending Too Big to Fail*, Remarks at the Brookings Institution (Feb. 16, 2016) (suggesting that policymakers consider “turning large banks into public utilities”); Joe Rauch, *Big Banks are Government-Backed: Fed’s Hoenig*, *Reuters* (Apr. 12, 2011) (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. “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,” he said. “In that sense, banks are not different than the gas company or the electric company, connecting you to the grid.” Stephanie Kelton & Paul McCulley, *The Fed Chair Should Be a Principled Populist*, *N.Y. Times* (Oct. 30, 2017).

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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 I investigates rate regulation. I show 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.<sup>44</sup> Unavoidably, this argument requires a deep dive into the relevant institutional setting—an area never before explored in the legal literature. (This omission is troubling; money is a legal institution, after all.<sup>45</sup>) I show that imposing such controls would necessarily involve bank regulators in what amounts to cost-of-service ratemaking: the quintessential practice of public utility regulation.

Part II 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 plain-vanilla transaction accounts would place banking squarely within the domain of regulated industries, where such broad-service obligations are standard fare. Concluding thoughts follow.

### I. 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. I argue in this Part that administrative controls on bank deposit rates, if implemented sensibly, would present an attractive (and heretofore overlooked) strategy for addressing these problems. Such controls would

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<sup>44</sup> Imposing such controls presupposes effective entry restriction into the creation of deposits and their close substitutes, an issue I have discussed at length elsewhere. See *supra* note \_\_\_\_.

<sup>45</sup> See Christine Desan, *Money as a Legal Institution*, in *Money in the Western Legal Tradition: Middle Ages to Bretton Woods* (David Fox & Wolfgang Ernst eds., 2016).

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have the added benefit of greatly simplifying and rationalizing the institutional environment in which monetary policy is conducted. Establishing such controls would be functionally identical to cost-of-service ratemaking—the central practice of infrastructure (public utility) 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 important, 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 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.<sup>46</sup> 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 Reserve<sup>47</sup> 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 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. I therefore begin with a very brief overview of some rudiments before proceeding to the frontiers

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<sup>46</sup> See Federal Reserve Act § 2A, 12 U.S.C. § 225a (codifying the Federal Reserve’s dual mandate of full employment and stable prices).

<sup>47</sup> Throughout, I use “Federal Reserve” as a catch-all for the U.S. central bank’s various organs, including the Board of Governors of the Federal Reserve System, the 12 regional Federal Reserve banks, and the Federal Open Market Committee. These sub-agency distinctions have no bearing on my argument.

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of current practice and debate. (Readers who already know the basics can skip ahead to section B.)

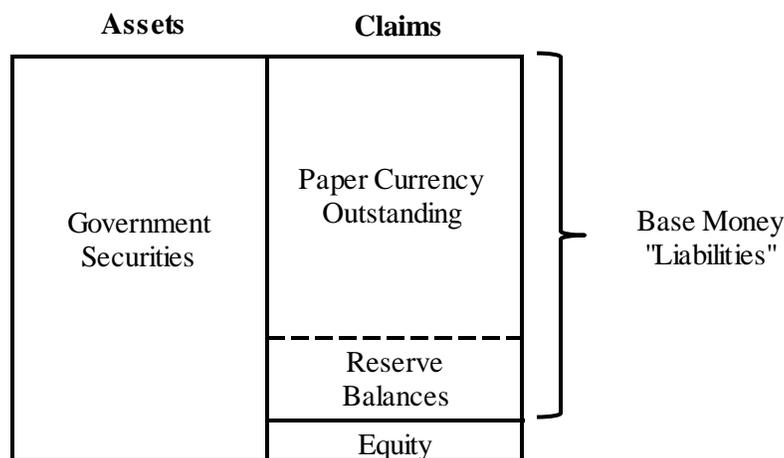
Figure 1 presents a stylized balance sheet of a modern central bank. Like any balance sheet, it consists of assets (left side) and claims (right side). Under normal conditions, the central bank's asset portfolio consists exclusively, or nearly exclusively, of government securities. It is a safe, liquid, 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 paper currency may be held by anyone, reserve balances may be held only by chartered commercial banks<sup>48</sup> (and perhaps by select other governmental or government-sponsored institutions—a nuance that will become important below). Ordinary citizens and nonbank corporations are not permitted to own reserve balances. Reserve balances are, in effect, transaction accounts for commercial banks.<sup>49</sup> They are the primary medium through which banks make payments among one another.

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<sup>48</sup> In this article, "commercial bank" and "bank" are catch-alls for licensed depository institutions (including savings associations and credit unions).

<sup>49</sup> "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." The Federal Reserve System: Purposes and Functions 39–40 (10th ed. 2016).

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**Figure 1. Stylized Central Bank Balance Sheet**

While base money appears as a “liability” on the central bank’s balance sheet, it is not a liability in any meaningful *economic* sense.<sup>50</sup> Holders of paper currency are not entitled to any kind of contractual performance from the central bank.<sup>51</sup> Paper currency cannot default in any ordinary legal sense, because paper currency does not represent any actionable legal obligation.<sup>52</sup> Reserve balances are no different. True, they are promises to deliver paper currency on demand. But 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

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<sup>50</sup> Assume a modern “fiat” money system in which currency lacks intrinsic value and isn’t redeemable for anything else.

<sup>51</sup> Compare 12 U.S.C. § 411 (mandating that Federal Reserve notes “shall be redeemed in lawful money on demand”) with 31 U.S.C. § 5103 (making Federal Reserve notes legal tender).

<sup>52</sup> In this regard, Federal Reserve liabilities differ from, say, U.S. Treasury bills. See Robin Greenwood, Samuel G. Hanson, and Jeremy C. Stein, *The Federal Reserve’s Balance Sheet as a Financial-Stability Tool* 4–5 (“The 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.”).

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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, the central bank pays for it by crediting the selling bank’s reserve balance.<sup>53</sup> 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.

Like any balance sheet, the central bank’s balance sheet has an equity entry on the lower right. Economically, the equity belongs to the government as residual claimant.<sup>54</sup> The government receives a revenue stream by virtue of this equity ownership. Specifically, the central bank

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<sup>53</sup> 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. I omit this nuance in the main text to simplify the exposition; nothing turns on it here.

<sup>54</sup> 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 6 percent. See Federal Reserve Act § 7(a), 12 U.S.C. § 289(a). The U.S. federal government is the de facto residual claimant and receives the vast majority of the Fed’s distributions.

## *Money as Infrastructure*

earns interest on its asset portfolio, and it hands the interest over to the government after deducting its own expenses (about which 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 \$97 billion, \$98 billion, and \$92 billion in earnings to the Treasury Department in 2014, 2015, and 2016, respectively.<sup>55</sup>

Let’s now add the chartered banking system to the picture. Unlike central banks, which print base money, ordinary commercial banks must hold reserves of base money to enable them to meet withdrawals by depositors and other claimants.<sup>56</sup> Commercial banks hold base money reserves amounting to only a fraction of their outstanding deposit liabilities. This is what it means to say that commercial banks operate on a “fractional reserve” basis. 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.

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<sup>55</sup> See Board of Governors of the Federal Reserve System, Press Release: Federal Reserve Board Announces Reserve Bank Income and Expense Data and Transfers to the Treasury for 2016 (Jan. 10, 2017).

<sup>56</sup> See 18 U.S.C. §§ 470–477 (prohibiting currency counterfeiting).

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Assets	Claims
Base Money	Deposit Liabilities
Loans and Bonds	
	Equity

**Figure 2. Stylized Commercial Bank Balance Sheet**

Two additional features of the institutional setting will be important to the analysis below. The first is *reserve requirements* (not to be confused with capital requirements<sup>57</sup>). Under reserve requirements, commercial banks must hold reserves of base money against certain categories of deposit liabilities—for simplicity, “transaction accounts.”<sup>58</sup> 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 should be apparent 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%, then the banking system’s total transaction account liabilities can be no higher than \$1 trillion (\$100 billion divided by 10%). If the reserve requirement were 5%, then the same \$100 billion in total

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<sup>57</sup> 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 (capital requirements for national banks).

<sup>58</sup> See Federal Reserve Act § 19(b), 12 U.S.C. § 461(b); 12 C.F.R. pt. 204.

## *Money as Infrastructure*

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 commercial bank (or other 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.<sup>59</sup> Under normal conditions, the Fed conducts monetary policy by announcing, and seeking to achieve, a target federal funds rate. How specifically it goes about this is the topic of the next two sections.

### *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. We begin with reserve scarcity.

Under scarce-reserves frameworks, reserve requirements (described above) normally play an important role in monetary policy.<sup>60</sup> Recall that reserve requirements obligate 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 supply of base money can have a big impact on the federal funds rate.

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<sup>59</sup> The Federal Reserve has employed a federal funds target rate since roughly 1984. See U.S. Government Accountability Office, Report to Congressional Requesters, Federal Reserve: Observations on Regulation D and the Use of Reserve Requirements 49 (2016).

<sup>60</sup> Strictly speaking, scarce-reserves frameworks can function with or without reserve requirements. Canada, Australia, New Zealand, and Switzerland have maintained scarce-reserves frameworks without reserve requirements. See Ulrich Bindseil, Evaluating Monetary Policy Operational Frameworks (Aug. 31, 2016), at 5. Commercial banks need base money to clear payments, and central banks penalize overdrafts. Demand for reserves therefore exists without reserve requirements.

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Specifically, under reserve scarcity, a modest injection of base money 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, and the macroeconomic effect is stimulative. Conversely, a small drainage of base money 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 the transmission of monetary policy. 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 before the acute phase of the crisis arrived. Immediately prior to the easing cycle, the federal funds target stood at a cyclical peak of 5.25%.<sup>61</sup> The banking system's required reserves were \$40 billion and excess reserves were only \$1.4 billion.<sup>62</sup> The Federal Reserve's total assets at the time were \$890 billion.<sup>63</sup> 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.<sup>64</sup> The Federal

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<sup>61</sup> The historical federal funds target rate can be found at the Federal Reserve Economic Database, series DFEDTAR, available at <https://fred.stlouisfed.org/>.

<sup>62</sup> See Federal Reserve Statistical Release, Aggregate Reserves of Depository Institutions and the Monetary Base (H.3), Sept. 13, 2007, tbl. 1.

<sup>63</sup> See Federal Reserve Statistical Release, Factors Affecting Reserve Balances (H.4.1), Sept. 13, 2007, tbl. 2.

<sup>64</sup> See Federal Reserve Statistical Release, Aggregate Reserves of Depository Institutions and the Monetary Base (H.3), May 8, 2008, tbl. 1.

## *Money as Infrastructure*

Reserve's total assets were still \$890 billion.<sup>65</sup> Despite the very large reduction in the federal funds rate, the Fed's balance sheet had barely changed.

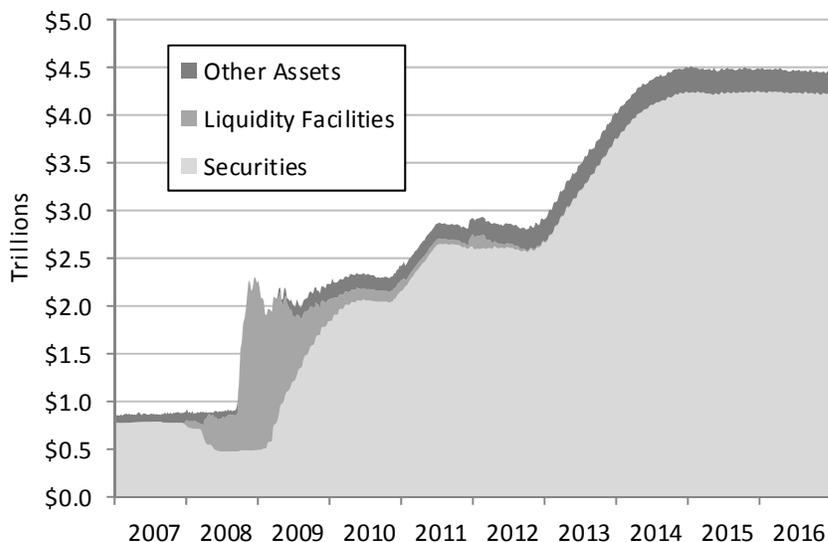
The Federal Reserve abandoned the scarce-reserves approach to managing short-term interest rates in late 2008. It did so because reserves had suddenly become (and remain today) anything but scarce. With the onset of the acute phase of the crisis in September 2008, the Federal Reserve responded with massive 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 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 of 2008 to over \$2 trillion by the end of the year (see Figure 3). Excess reserves in the banking system rose exponentially, from about \$2 billion to about \$800 billion.<sup>66</sup>

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<sup>65</sup> See Federal Reserve Statistical Release, Factors Affecting Reserve Balances (H.4.1), May 8, 2008, tbl. 2.

<sup>66</sup> See Federal Reserve Statistical Release, Aggregate Reserves of Depository Institutions and the Monetary Base (H.3), Jan. 2, 2009, tbl. 1.

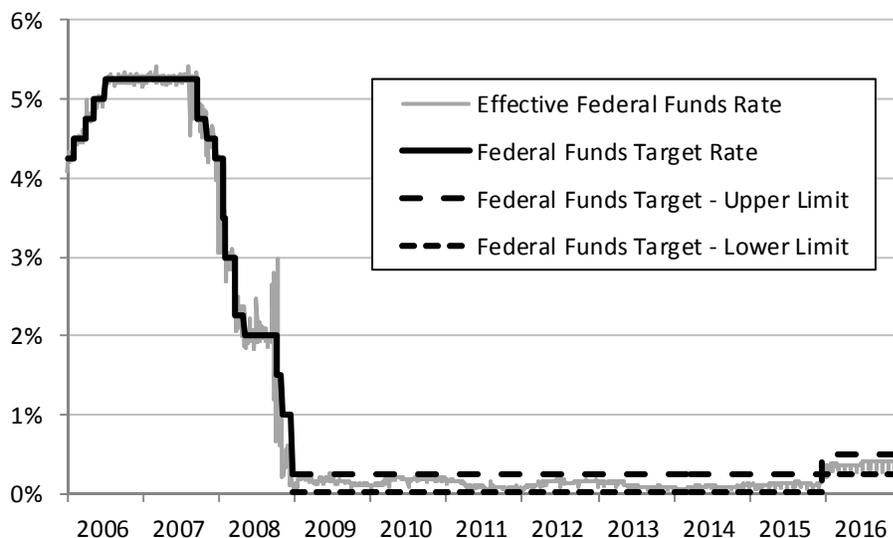
## Money as Infrastructure



**Figure 3. Federal Reserve Assets**

As one might expect, the federal funds rate collapsed (see Figure 4). 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 remained in effect for fifteen business days. The average *effective* federal funds rate during those fifteen days was, however, only 0.96%, 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.

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**Figure 4. The Federal Funds Rate**

Over the course of 2009, financial system stress subsided, and the Federal Reserve substantially retracted its liquidity facilities. Nonetheless, 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 huge purchases of securities—so-called large-scale asset purchases (LSAPs), also 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,<sup>67</sup> and excess reserves were \$2.6 trillion.<sup>68</sup>

<sup>67</sup> See Federal Reserve Statistical Release, Factors Affecting Reserve Balances (H.4.1), October 30, 2014, tbl. 6.

<sup>68</sup> See Federal Reserve Statistical Release, Aggregate Reserves of Depository Institutions and the Monetary Base (H.3), Oct. 30, 2014, tbl. 1.

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Far from being scarce, reserves were (and still are) “superabundant”<sup>69</sup>: the banking system is “awash in reserves.”<sup>70</sup>

The stated purpose of the LSAPs was to provide extraordinary monetary stimulus in the face of the worst U.S. macroeconomic conditions since the Great Depression. 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. 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.

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

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<sup>69</sup> Jane E. Ibrig, Ellen E. Meade & Gretchen C. Weinbach, Monetary Policy 101: A Primer on the Fed’s Changing Approach to Policy Implementation, Finance and Economics Discussion Series 2015-047, Board of Governors of the Federal Reserve System (June 30, 2015), 2.

<sup>70</sup> Morten L. Bech, Antoine Martin & James McAndrews, Settlement Liquidity and Monetary Policy Implementation—Lessons from the Financial Crisis, FRBNY Econ. Pol’y Rev., March 2012, 13n21. See also Ben R. Craig & Matthew Koepke, Excess Reserves: Oceans of Cash, Federal Reserve Bank of Cleveland Economic Commentary (Feb. 12, 2015).

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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.”<sup>71</sup> 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.<sup>72</sup> In other words, the Fed does not intend to use LSAP reversal (large-scale portfolio liquidation) as a means to tighten monetary policy. It has opted instead do something else entirely. It has begun tightening by using 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.<sup>73</sup> (Note that the federal funds rate is *not* an administered rate but rather a private market rate that the Federal Reserve targets.) 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 not depend on scarce reserves for their efficacy. On the contrary, I will argue below that they may very well require reserve *abundance*.

The most important administered rate is the interest rate the central bank pays on reserve balances held by commercial banks. 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

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<sup>71</sup> Federal Reserve, Policy Normalization Principles and Plans (press release), Sept. 17, 2014.

<sup>72</sup> Id. See also Ben S. Bernanke, Shrinking the Fed's balance sheet, blog post of Jan. 26, 2017 (“In short: rate increases first, balance sheet reduction later.”).

<sup>73</sup> 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, I use “administered rates” herein to refer 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.

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tax that reserve requirements ... impose on depository institutions.”<sup>74</sup> (I will have more to say about this “tax” below.) By contrast, IOER “gives the Federal Reserve an additional tool for the conduct of monetary policy.”<sup>75</sup> In fact, IOER has become the central lever for the conduct of monetary policy: “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.”<sup>76</sup>

Prior to the acute phase of 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 began doing soon thereafter.<sup>77</sup> 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. This is where the IOER rate remained throughout the seven years of ZIRP. 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%. 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%. The pattern has continued: with each subsequent increase in the federal funds target range (1.00% to 1.25% at this writing) the Federal Reserve has set IOER at the top end of the range (1.25% at this writing).

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

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<sup>74</sup> See Interest on Required Balances and Excess Balances, available at <https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm>. The Federal Reserve claims that “Paying interest on required reserve balances should essentially eliminate the opportunity cost of holding required reserves, promoting efficiency in the banking sector.” Board of Governors of the Federal Reserve System, Press Release (Oct. 6, 2008).

<sup>75</sup> *Id.*

<sup>76</sup> Federal Reserve, Policy Normalization Principles and Plans, *supra* note \_\_\_\_.

<sup>77</sup> 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. 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.

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fact, many at the Fed did initially expect<sup>78</sup>) 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”)<sup>79</sup> are permitted to hold reserve balances but are not legally eligible to receive interest on those balances. Consequently, the GSEs are willing to lend their reserve balances in the federal funds market at rates below the IOER rate. Now, 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, though, banks have proved unwilling to do so: The federal funds rate has remained substantially below the IOER rate (see Figure 5). 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 the 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, which goes by an unwieldy name: the “overnight reverse repurchase agreement rate,” or ON-RRP rate. A repurchase agreement or “repo” transaction—ubiquitous in the financial

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<sup>78</sup> See, e.g., Simon Potter, Executive Vice President, Federal Reserve Bank of New York, Dinner Address for the Bank of England–Federal Reserve Bank of New York Conference on Money Markets and Monetary Policy Implementation (Nov. 16, 2015) (“[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.”); Ben S. Bernanke & Donald Kohn, The Fed’s Interest Payments to Banks, Ben Bernanke’s Blog (Brookings Institution), Feb. 16, 2016 (noting that “many at the Fed expected” the federal funds rate to track the IOER rate).

<sup>79</sup> Namely, Fannie Mae and Freddie Mac, together with the federally chartered Federal Home Loan Banks.

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sector—consists of the sale of a security coupled with a forward purchase of the same security at a slightly higher price.<sup>80</sup> It 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,<sup>81</sup> whereas the Fed has plausible legal authority to enter into ON-RRP transactions with any counterparty it chooses. The Fed established the ON-RRP facility in September 2013 on a small scale; by April 2014 the facility was operating on a large scale.<sup>82</sup>

Why are two administered rates better than one? The Federal Reserve has said that the ON-RRP facility is designed to help it achieve its target federal funds rate.<sup>83</sup> This is doubtful. We saw above that 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

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<sup>80</sup> For a general overview of the repo market, see Marcia Stigum & Anthony Crescenzi, *Stigum’s Money Market* 531–579 (4th ed. 2007).

<sup>81</sup> See 12 U.S.C. § 461(b)(12).

<sup>82</sup> See Josh Frost et al., *Overnight RRP Operations as a Monetary Policy Tool: Some Design Considerations*, Finance and Economics Discussion Series 2015-010, Board of Governors of the Federal Reserve System (Feb. 19, 2015), chart 3.

<sup>83</sup> See, e.g., Board of Governors of the Federal Reserve System, *Policy Tools: Overnight Reverse Repurchase Agreement Facility* (available at [www.federalreserve.gov](http://www.federalreserve.gov)) (describing the ON-RRP facility as “a supplementary policy tool to help control the federal funds rate”).

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funds—that are neither commercial banks nor GSEs.<sup>84</sup> These institutions are ineligible to own reserve balances and hence do not participate in the federal funds market. Their inclusion can't possibly have anything to do with the federal funds rate.

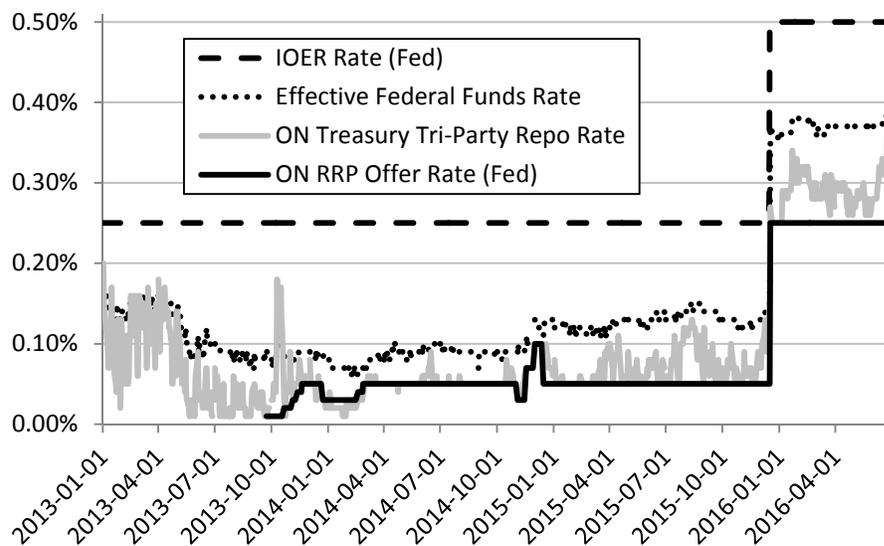
Figure 5 hints at a more likely explanation. Rather than being purely about supporting the federal funds rate, the ON-RRP facility appears to be designed to support *other* short-term market interest rates. As the figure shows, by April 2014 (by which time the facility was large) the ON-RRP rate appears to have established a very firm floor on the overnight Treasury tri-party repo rate.<sup>85</sup> It seems, then, that the Federal Reserve established the ON-RRP facility out of concern that IOER was not achieving sufficient *passthrough* from the federal funds rate to other money market rates (such as tri-party repo rates). The Fed thus chose to bypass holders of reserve balances—commercial banks and GSEs—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.

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<sup>84</sup> For the list of approved ON-RRP counterparties, see [https://www.newyorkfed.org/markets/rrp\\_counterparties.html](https://www.newyorkfed.org/markets/rrp_counterparties.html).

<sup>85</sup> The overnight Treasury repo rate is a private money market rate in which financial institutions borrow money, posting U.S. Treasury securities as collateral.

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**Figure 5. Selected Money Market Rates and Administered Rates**

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."<sup>86</sup> 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

<sup>86</sup> Michael Woodford, *Interest and Prices: Foundations of a Theory of Monetary Policy* 35 (2003) (emphasis added).

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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.<sup>87</sup>

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.”<sup>88</sup> They focus in particular on the role of imperfect competition 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.<sup>89</sup> 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.”<sup>90</sup> The basic idea is that imperfect competition in the deposit market suppresses deposit rates, which pushes more sophisticated cash investors into other money markets, lowering yields in those markets.<sup>91</sup> The paper is quite technical, but Duffie has explained the core takeaway in layman’s 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 to the broader economy and have the impact on inflation that the Fed’s looking for.

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<sup>87</sup> Id. at 35–6 (emphasis added).

<sup>88</sup> Darrell Duffie & Arvind Krishnamurthy, *Passthrough Efficiency in the Fed’s New Monetary Policy Setting 1* (2016).

<sup>89</sup> Id. at 5.

<sup>90</sup> Id.

<sup>91</sup> Id. at 23.

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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 regulation and imperfect competition in the banking market. So what we do is we question how effective they can be. Definitely they can move rates. [But] it might be somewhat messy, depending on the monetary policy framework.

It'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. ... Most of the messiness that I talked about ... won't be apparent until rates are higher.<sup>92</sup>

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 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—implicitly assume that raising administered rates causes more “funds” to be “stashed” at the central bank as opposed to being “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 evident from the discussion above that central bank reserves exist within a closed system; the central bank alone determines the quantity of base money outstanding.<sup>93</sup> There is no coherent sense in which increasing administered rates attracts more aggregate “funds” to the central bank.

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<sup>92</sup> Interview with Darrell Duffie, *The Bloomberg Advantage* with Corey Johnson and Carol Massar, Bloomberg Radio, Aug. 30, 2016.

<sup>93</sup> It is true that a higher bank deposit rate should at the margin induce currency holders to trade currency for bank deposits, but this effect is quantitatively insignificant in practice.

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Central bank liabilities *are* funds. 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. 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<sup>94</sup>) or in the commercial paper market (which then stood at \$2.2 trillion<sup>95</sup>) or for that matter in the market for bank deposits (which then stood at \$10 trillion<sup>96</sup>). Indeed, the Federal Reserve's experience with the ON-RRP facility has demonstrated that the facility's efficacy varies in proportion to its size.<sup>97</sup> In short, under administered-rate frameworks, size matters. Consequently, simplistic no-arbitrage arguments cannot establish that administered rates will determine market interest rates. Ironically, this analysis implies that, as the Federal Reserve gradually shrinks its balance sheet in pursuit of normalization—a development that one would normally associate 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 1.25% interest on their accounts with the Federal Reserve—a rate not available to ordinary citizens or nonbank businesses on their bank accounts. And 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, *ceteris paribus*.

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<sup>94</sup> See Financial Stability Oversight Council, 2014 Annual Report.

<sup>95</sup> Commercial paper data is available from the Federal Reserve Economic Database (series COMPOUT), available at <https://fred.stlouisfed.org/>.

<sup>96</sup> See Federal Deposit Insurance Corporation, Quarterly Banking Profile (Fourth Quarter 2007).

<sup>97</sup> See Frost et al., *supra* note \_\_, at 7–11.

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It is natural to ask whether administered rates produce a windfall or subsidy to their recipients at taxpayers' expense. The question has been a subject of some controversy. 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.<sup>98</sup> Yellen defended the payments as essential to effective monetary policy implementation. 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.”<sup>99</sup> 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%. Noting that the federal funds rate “is one reasonable measure of the marginal cost of funds to banks,” they concluded that “we can safely say that the subsidy to banks implicit in the Fed’s interest payments can be no greater than” this difference (0.13%), which they took to be quite small.<sup>100</sup>

The Bernanke-Kohn analysis is unconvincing. Reserve balances outstanding currently dwarf federal funds borrowings by a factor of 30 or so.<sup>101</sup> Consequently, the dollar amount of interest payments in the federal funds market is only a tiny fraction of the dollar amount of IOER payments over any given period. The Bernanke-Kohn argument hinges on the assumption that the federal funds rate reflects banks' marginal cost of funds. We saw above, however, that passthrough efficiency in the money markets is limited, arguably owing largely to imperfect competition. It is therefore impossible to reach any meaningful conclusions about the

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<sup>98</sup> Ann Saphir, *Yellen Draws Fire for Fed Policy to Pay Banks*, Reuters (Feb. 10, 2016). The dollar amounts are likely to be much higher in the future. The IOER rate was 0.25% for all but the last two weeks of 2015 and 0.50% for all but the last two weeks of 2016, and at this writing it is 1.25%. The rate will increase further if the Federal Reserve continues to tighten as currently expected. See Federal Reserve Economic Database, series IOER, available at <https://fred.stlouisfed.org/>.

<sup>99</sup> Bernanke & Kohn, *supra* note \_\_.

<sup>100</sup> *Id.*

<sup>101</sup> Federal funds volumes since March 1, 2016 are available at the website of the Federal Reserve Bank of New York, under Federal Funds Data Historical Research, available at <https://apps.newyorkfed.org/markets/autorates/fed-funds-search-page>. In the second half of 2016, daily volumes outstanding averaged about \$67 billion.

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existence or size of subsidies to banks by simply comparing the IOER rate with the federal funds rate. Any such conclusions must rest on an analysis of the *overall* structure of bank liabilities.

On top of that, from a distributional standpoint, adding the ON-RRP facility might make matters worse. In the Duffie-Krishnamurthy model described above, passthrough efficiency to the broader money markets does improve when the ON-RRP facility is added to IOER. 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.”<sup>102</sup>

How then should we 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.<sup>103</sup> 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.<sup>104</sup> With a large enough increase in reserve requirements, reserves would again be scarce, and the Fed could again control the federal funds rate using small open market operations. 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

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<sup>102</sup> Federal Reserve, Policy Normalization Principles and Plans, *supra* note \_\_\_\_.

<sup>103</sup> See, e.g., Bernanke, *supra* note \_\_\_\_.

<sup>104</sup> See, e.g., Frederic S. Mishkin, *The Economics of Money, Banking, and Financial Markets* 361 (10th ed. 2013).

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reserve requirements high enough to make reserves scarce again.<sup>105</sup> 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, but it has not 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.

This “reserve tax” merits critical scrutiny. Consider the current environment, in which reserves are superabundant. In the aggregate, commercial banks currently hold reserves on the order of 75 times the required minimum. If an individual bank voluntarily holds reserves equal to 75 times its required reserves, it is hard to see how the reserve requirement “taxes” the bank, any more than a requirement that everyone inhale at least once a day would “tax” anyone. Yet, since late 2008, the Federal Reserve has been paying interest (IORR) at a rate matching IOER to offset this supposed tax. Note that there is no sign that the Federal Reserve has sought to ascertain empirically the magnitude of the “tax” it is seeking to offset. Note also the curious asymmetry here: We are told that the failure to pay interest on reserves taxes banks, but the payment of such interest does not (cannot?) subsidize them.

But what about when reserves are scarce—are reserve requirements not then a “tax”? The claim carries rhetorical force, but it provides little illumination. In the United States, commercial banks have a legal monopoly on deposit creation.<sup>106</sup> They occupy a privileged position in our system of money and payments, one that is a source of significant profits.<sup>107</sup> This privilege comes with certain obligations, one of which is

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<sup>105</sup> See 12 U.S.C. § 461(b)(2)(A)(ii) (limiting reserve requirements to 14%). But see 12 U.S.C. § 461(b)(3) (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”).

<sup>106</sup> See 12 U.S.C. § 378(a)(2).

<sup>107</sup> This point is sometimes expressed by asserting that banks earn what amounts to seigniorage. See, e.g., Robin Greenwood, Samuel G. Hanson & Jeremy C. Stein, *A Comparative-Advantage Approach to Government Debt Maturity*, 70 *J. Fin.* 1683 (2015) (referring to the value derived from issuing money-like instruments as “seigniorage”);

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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*

In the Introduction I noted that, in the money paradigm, the institutional baseline is direct government provisioning of “account money,” just as the U.S. government currently supplies paper money. Commercial banks’ monetary function is then understood as an outsourcing or franchise arrangement. To trace the implications of this framework, it is useful first to envision an institutional setup in which everyone held his or her transaction account directly with the central bank and under which no private firms offered 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.<sup>108</sup>

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. Holding everything else constant, increasing administered rates reduces seigniorage, as each dollar

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Bindseil, *supra* note \_\_, at 8 (referring to “seigniorage income of banks”); Christine Desan, *Making Money: Coin, Currency, and the Coming of Capitalism* 414–21 (2014) (discussing private “seigniorage”); 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”).

<sup>108</sup> 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.

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of interest paid is one dollar less of government revenue from money creation.

Now suppose the government elects to outsource (never mind why<sup>109</sup>) 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.<sup>110</sup> Bank charters afford the valuable privilege of issuing account money ("deposits"), an especially cheap source of funding.<sup>111</sup> 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 more likely it would 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.

Observe that, 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 on the one hand and the government on the other is a matter of indifference. The monetary authority therefore retains the power to determine bank account rates in the conduct of monetary policy. Raising deposit rates reduces seigniorage revenue, but of course this would also be true in the fully insourced system—just as it is true with administered rates in today's framework, as shown above. When the government insourced, it received all the revenue generated by money

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<sup>109</sup> I have discussed rationales for outsourcing money creation in previous work. See Morgan Ricks, *Money and (Shadow) Banking: A Thought Experiment*, 31 *Rev. Banking & Fin. L.* 731 (2012); Ricks, *supra* note \_\_, at 145–63.

<sup>110</sup> See *infra* text accompanying note \_\_.

<sup>111</sup> This relates to what Gary Gorton has called "charter value of banks." Gary B. Gorton, *Bank Regulation When "Banks" and "Banking" Are Not the Same*, 10 *Oxford Rev. Econ. Pol.* 106, 107 (1994). The notion that money-like claims constitute "cheap" financing is increasingly accepted; see, for example, Jeremy C. Stein, *Monetary Policy as Financial Stability Regulation*, 127 *Q. J. Econ.* 57 (2012).

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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 my 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 FDIC have been “risk-based,” or keyed to the risk of the bank’s insolvency.<sup>112</sup> (Prior to that time, deposit insurance fees were one size fits all—they weren’t scaled to the risk of the institution.<sup>113</sup>) 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 fees are priced correctly, the deposit insurer expects to break even over time: incoming fees match payouts. The structure of U.S. deposit insurance reflects this expectation, as 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  $P$ .<sup>114</sup> 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.

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<sup>112</sup> See Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), Pub. L. No. 102-242, § 302(a)–(b), 105 Stat. 2236, 2345–49 (codified as amended at 12 U.S.C. §§ 1817(b)–(c)).

<sup>113</sup> 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, and Hassan Tehranian, “The Impact of Risk-Based Premiums on FDIC-Insured Institutions,” *Journal of Financial Services Research* 13, no. 2 (1998): 153–69.

<sup>114</sup> 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. The classic formal exposition is 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 (1977).

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$R_f$  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 revenue of  $R_f - D$ . 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 under the fully insured system.)

Second, this type of valuation exercise—determining the fair rate of return on capital—is the central, archetypal practice of infrastructure regulation. Infrastructure ratemaking involves regulatory commissions in setting regulated firms' product rates with a view toward generating a fair rate of return on invested capital.<sup>115</sup> “Specify[ing] the rate of return ... occupies much of the agenda of modern commissions,” notes Stephen Breyer.<sup>116</sup> 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.<sup>117</sup> “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.”<sup>118</sup>

The essential sameness of 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

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<sup>115</sup> See Stephen Breyer, *Regulation and its Reform* 36–59 (1982); Pierce & Gellhorn, *supra* note \_\_, at 94–8.

<sup>116</sup> Breyer, *supra* note \_\_, at 40.

<sup>117</sup> *Id.* at 47.

<sup>118</sup> *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 on the ground that “any system of estimating risk will have arbitrary elements in it”).

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regarded as the central problem of deposit insurance. Notably, public utility regulators face analogous problems. If allowed rates of return are too high, utility firms have an incentive to overinvest, expanding the rate base (“gold plating”).<sup>119</sup> More generally, 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 profits,” notes one expert.<sup>120</sup> “This creates potential moral hazard.”<sup>121</sup> The methods of dealing with these moral hazard problems are likewise quite similar as between bank regulation and public utility regulation. 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.<sup>122</sup> Analogously, public utility regulators disallow from inclusion in the rate base investments that are not “prudently incurred.”<sup>123</sup> Operating costs may also be disallowed, and “regulatory lag”—the fact that prices are not continuously adjusted—provides an additional incentive for regulated firms to keep costs down.<sup>124</sup> 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. We saw above that 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 it adds complexity and opacity to an already immensely complicated and opaque system. Moreover, the current approach raises distributional

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<sup>119</sup> 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 (1962).

<sup>120</sup> Paul L. Joskow, Incentive Regulation and its Application to Electricity Networks, 7 Rev. Network Econ. 547, 550–1 (2008).

<sup>121</sup> Id. at 551.

<sup>122</sup> See 12 U.S.C. § 24(Seventh) (stocks); 12 C.F.R. § 1.3 (junk bonds).

<sup>123</sup> See Joskow & Schmalensee, *supra* note \_\_\_, at 4–8.

<sup>124</sup> See id. at 14.

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concerns, as administered rates accrue to only 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 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 *in toto* of the regulatory package 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.”<sup>125</sup> Returns in excess of this amount constitute rent extraction.

To be sure, re-establishing regulatory controls over bank deposit rates would present administrative challenges, pertaining in particular to valuation. But these valuation challenges are already inherent in deposit insurance pricing, which rests at the core of 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 we have a longstanding, well-established regulatory model for this form of ratemaking in the area of infrastructure regulation.<sup>126</sup>

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

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<sup>125</sup> Federal Power Comm’n v. Hope Natural Gas Co., 320 U.S. 591, 603 (1949).

<sup>126</sup> Effective rate regulation of deposit interest rates would obviously require effective entry restriction into the creation of deposits and deposit substitutes. I have discussed the desirability and feasibility of such entry restrictions in other work. See *supra* note \_\_\_\_.

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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 the prospect of a rationalized, simplified, more transparent, and more efficient institutional environment for monetary policy.

### II. UNIVERSAL SERVICE AND THE UN- AND UNDER-BANKED

We now pivot from the rarefied sphere of monetary policy 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 8 percent of U.S. households—comprising 17 million adults and 9 million children—do not have a bank account.<sup>127</sup> 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 percent to 3.5 percent of face value.<sup>128</sup> By comparison, most banked households use direct deposit for paychecks, which is convenient and free.

To pay routine bills, the unbanked cannot avail themselves of efficient online bill payment. 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

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<sup>127</sup> See 2013 FDIC NATIONAL SURVEY OF UNBANKED AND UNDERBANKED HOUSEHOLDS 15 (2014).

<sup>128</sup> See Michael S. Barr & Rebecca M. Blank, *Savings, Assets, and Banking among Low-Income Households: Introduction and Overview*, in INSUFFICIENT FUNDS, ed. Rebecca M. Blank and Michael S. Barr, at 3 (2009).

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expensive wire transfer outlets, such as Western Union or Moneygram. In 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.<sup>129</sup> Prepaid cards have recently experienced service interruptions, leaving their users unable to access funds for days at a time.<sup>130</sup>

In short, for those lacking a bank account—a population that is disproportionately low-income, minority, and disabled—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.”<sup>131</sup> 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.”<sup>132</sup>

Bank accounts, as currently structured, are inhospitable or simply unavailable to these 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 in fact preclude access to a bank account: banks use the private ChexSystem to screen out users who have had problems with checking accounts in the

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<sup>129</sup> For example, see the fee chart for the RushCard Prepaid Visa, available at [www.rushcard.com/fee-chart](http://www.rushcard.com/fee-chart). See also Bureau of Consumer Financial Protection, Final Rule, 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 (2016).

<sup>130</sup> See Liz Moyer & Jessica Silver-Greenberg, *RushCard Breakdown Affects Thousands of Prepaid Debit Card Users*, N.Y. TIMES (Oct. 20, 2015); Stacy Cowley, *Senators Press for Answers After Prepaid Debit Cards Fail*, N.Y. TIMES (June 28, 2016). [Also cite Rush Card debacle]

<sup>131</sup> Barr & Blank, *supra* note \_\_, at 4.

<sup>132</sup> Barr & Blank, *supra* note \_\_, at 14.

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past.<sup>133</sup> 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.”<sup>134</sup>

It is not only the unbanked who are ill-served by the existing payments architecture. Another 20 percent of U.S. households—comprising 51 million adults and 17 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.<sup>135</sup> For example, these underbanked households, which are predominately low- or moderate-income, may resort to nonbank check cashing for reasons of convenience and immediacy of payment.<sup>136</sup>

The plight of the un- and underbanked has attracted intermittent regulatory and legislative attention in the United States, but without meaningful results. The percentage of Americans who were unbanked appears to have spiked around the time that deposit interest rate controls were phased out (early 1980s).<sup>137</sup> A number of analysts have inferred causality, suggesting that increased competition caused banks to eliminate unprofitable services and close branches in less prosperous areas.<sup>138</sup> Whatever the catalyst, consumer advocates drew attention to the issue in the mid-1980s.<sup>139</sup> 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

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<sup>133</sup> See generally James Marvin Pérez, *Blacklisted: The Unwarranted Divestment of Access to Bank Accounts*, 80 N.Y.U. L. Rev. 1586 (2005).

<sup>134</sup> See 2013 FDIC SURVEY at \_\_\_.

<sup>135</sup> See *id.* at 37.

<sup>136</sup> See Rachel Schneider & Balafama Longjohn, *Beyond Check-cashing: An Examination of Consumer Demand and Business Innovation for Immediate Access to Check Funds*, Center for Financial Services Innovation (June 2014).

<sup>137</sup> Ebonya Washington, *The Impact of Banking and Fringe Banking Regulation on the Number of Unbanked Americans*, 41 J. Human Res. 106, 112 (2006).

<sup>138</sup> See, e.g., Glenn B. Canner & Ellen Maland, *Basic Banking*, 73 Fed. Res. Bulletin 255, 255–6 (1987); John P. Caskey, *Fringe Banking: Check-Cashing Outlets, Pawnshops, and the Poor* 87–88 (1994).

<sup>139</sup> 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).

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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.”<sup>140</sup> 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.<sup>141</sup> Empirically, lifeline banking legislation had virtually no effect on the number of unbanked households in the relevant states.<sup>142</sup>

At the federal level, Congress has held hearings on lifeline accounts,<sup>143</sup> but no legislation has 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.”<sup>144</sup>) The U.S. Treasury Department has achieved limited success through its Electronic Transfer Accounts program, whereby it compensates federally insured banks for providing basic bank accounts to beneficiaries of

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<sup>140</sup> Federal Financial Institutions Examination Council, Interagency Policy Statement on Basic Financial Services, 52 Fed. Reg. 7,024, 7,024–5 (Mar. 6, 1987).

<sup>141</sup> See Joseph J. Doyle, Jose A. Lopez, and Marc R. Saldenberg, How Effective is Lifeline Banking in Assisting the Unbanked, 4 FRBNY Current Issues in Economics and Finance 1, 3–5 (1998).

<sup>142</sup> See Washington, *supra* note \_\_\_, at 108.

<sup>143</sup> See Government Check Cashing, “Lifeline” Checking, and the Community Reinvestment Act: Hearing on S. 906, S. 907, and S. 909 Before the Subcomm. on Consumer & Regulatory Affairs of the S. Comm. on Banking, Housing, & Urban Affairs, 101st Cong. (1989); Ways of Increasing Access of Low- and Moderate-Income Americans to Financial Services: Hearing Before the Subcomm. on Financial Institutions Supervision, Regulation & Deposit Insurance and Subcomm. on Consumer Credit & Insurance of the Comm. On Banking, Finance & Urban Affairs, 103d Cong. (1994).

<sup>144</sup> Martha R. Seger, Member, Board of Governors of the Federal Reserve System, Statement 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. Reserve Bulletin 550 (1989).

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government transfers.<sup>145</sup> Because this program supplies accounts only to recipients of federal benefits, however, its reach is necessarily limited.<sup>146</sup> Treasury has piloted another initiative, the First Accounts Program, to support private organizations that seek to assist the unbanked, but the program is very small.<sup>147</sup> In 2011 the Federal Deposit Insurance Corporation launched a Model Safe Accounts Pilot with nine financial institutions to explore the feasibility of offering stripped-down transaction accounts to meet the needs of underserved consumers, including the unbanked.<sup>148</sup> 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.<sup>149</sup> Scholarly treatments have therefore tended to eschew direct mandates in favor of other strategies, such as further deregulation (with the aspiration of reducing costs and spurring access to accounts),<sup>150</sup> or providing tax incentives to banks for providing basic accounts to underserved groups,<sup>151</sup> or direct government provisioning.<sup>152</sup> I will outline below what I believe to be 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.

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<sup>145</sup> See Notice of Electronic Transfer Account Features, 64 Fed. Reg. 38,510, 38,510 (July 16, 1999).

<sup>146</sup> See Pérez, *supra* note \_\_, at 1601.

<sup>147</sup> See *id.* at 1602.

<sup>148</sup> Federal Deposit Insurance Corporation, Final Report: Model Safe Accounts Pilot (2012).

<sup>149</sup> See, e.g., Rubin, *supra* note \_\_, at 224–6.

<sup>150</sup> See *id.* at 240–8.

<sup>151</sup> See Michael S. Barr, Banking the Poor, 21 *Yale J. Reg.* 121, 222–33 (2004).

<sup>152</sup> See Mehrsa Baradaran, How the Other Half Banks: Exclusion, Exploitation, and the Threat to Democracy 210–25 (2015).

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### *B. Bypassing Bank-Based Payments?*

Do banks need to be involved in payments at all? Can't nonbanks offer cheaper, more efficient payment solutions to underserved populations? Won't 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 hasn't yet worked its magic. It isn't clear how long one should wait for this Godot to show up. In fairness, enthusiasts for market solutions may respond that regulatory impediments are to blame. But this seems doubtful. I have written at length about the porous, ineffective nature of U.S. legal constraints on entering the money creation business.<sup>153</sup> My claim has been that it is vital to shore up these restrictions—for reasons having to do with financial instability, monetary control, and private capture of seigniorage—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,<sup>154</sup> whereas the unbanked have 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.<sup>155</sup>

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 the payments world for even longer. But these services cannot be said to 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 they both require users to have a bank or credit card account.<sup>156</sup> Apple Pay and

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<sup>153</sup> See Morgan Ricks, *Entry Restriction, Shadow Banking, and the Structure of Monetary Institutions*, 2 J. Fin. Reg. 291 (2016); Ricks, *supra* note \_\_\_, at 230–240.

<sup>154</sup> These costs escalated dramatically as a consequence of the USA Patriot Act of 2001, Pub. L. No. 107-56, 115 Stat. 272.

<sup>155</sup> See *supra* text accompanying note \_\_\_.

<sup>156</sup> 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

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Android Pay are general-purpose, but they too must be linked to an existing bank or credit card account. As a practical matter, these services are unavailable to unbanked households. Further, one shouldn't exaggerate the extent to which these new interfaces bypass the traditional, bank-centered payments system. All these consumer interfaces are "new technologies running on old rails."<sup>157</sup> They provide but a "mirage of disintermediation."<sup>158</sup>

A more serious case for a "market" solution can be mounted on behalf of prepaid cards, discussed briefly above.<sup>159</sup> 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 bank accounts, prepaid cards are expensive. According to one 2014 study, the median prepaid card user pays between \$120 and \$360 annually in card fees.<sup>160</sup> 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 year, these fees are a significant expense.

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.<sup>161</sup> More accurately, the bank issues an account to which the card is linked, in the same way that a debit card is linked to a bank deposit

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facilitate the use of conventional payment networks." Ronald J. Mann, *Payment Systems and Other Financial Transactions* (5th ed. 2011).

<sup>157</sup> Michael S. Barr, Howell E. Jackson, Margaret E. Tahyar, *Financial Regulation: Law and Policy* 796 (2016).

<sup>158</sup> Tom C. W. Lin, *Infinite Financial Intermediation*, 50 *Wake Forest L. Rev.* 643, 656 (2015).

<sup>159</sup> See *supra* at \_\_\_. The discussion here relates to so-called General Purpose Reloadable cards.

<sup>160</sup> The Pew Charitable Trusts, *Consumers Continue to Load Up on Prepaid Cards*, at 39 (Feb. 2014).

<sup>161</sup> Bureau of Consumer Financial Protection, *supra* note \_\_\_, at 83,939.

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account.<sup>162</sup> It is common to speak of “money” being “stored” or “loaded” on a prepaid card, but in fact the “money” consists of a bank deposit that is associated with the card. The bank account is established by the prepaid card program manager, which is typically a nonbank. The program manager manages the bank account on a pooled, custodial basis for all cardholders.<sup>163</sup> Obviously, either the program manager or the bank itself must demarcate each individual cardholder’s entitlement to a portion of the pooled account.<sup>164</sup> 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.<sup>165</sup> As the FDIC notes, “the access mechanism [i.e., the card itself] is merely a device ... The ‘deposit’ is the underlying money.”<sup>166</sup> From the FDIC’s standpoint, then, the prepaid card holder is the *actual owner* of a bank deposit account which is accessed by the card. One might fairly question what relevant distinction can be drawn between such a “prepaid card,” on the one hand, and a bank deposit account that lacks an overdraft feature and that is accessed via debit card, on the other. Unbanked households that use prepaid cards are, in this sense, banked—albeit in a high-cost way that is also subject to elevated operational risk.<sup>167</sup>

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—payment system access—gets allocated. The money paradigm points toward a different set of allocative considerations.

### *C. An Infrastructure Perspective*

As in Part I, we can organize our thinking about mainstream payment system access by first considering a fully *insourced* system in which

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<sup>162</sup> Hence the CFPB quite sensibly opts for the term “prepaid accounts” rather than “prepaid cards.” See *id.*

<sup>163</sup> See *id.* at 83,940.

<sup>164</sup> See *id.*

<sup>165</sup> Federal Deposit Insurance Corporation, Notice of New General Counsel’s Opinion No. 8, Insurability of Funds Underlying Stored Value Cards and Other Nontraditional Access Mechanisms, 73 Fed. Reg. 67,155, 67,156 (2008).

<sup>166</sup> *Id.* at 67,157.

<sup>167</sup> See Bureau of Consumer Financial Protection, *supra* note \_\_\_, at 83,939.

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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 monopolist. In the money paradigm, this is the institutional baseline—it is the natural starting point for analysis. How might the central bank in this insourced setting go about determining 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. Account holders must be supplied 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.<sup>168</sup> 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, what have you—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 somehow. One possibility would be to charge these costly 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

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<sup>168</sup> 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.

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economic theory, prices in competitive markets equilibrate to marginal cost.<sup>169</sup> Prominent experts have argued that, where rate regulation is called for, regulators should aim for marginal cost pricing.<sup>170</sup> The idea is to mimic the pricing structure and efficient resource allocation that would prevail under perfect competition.

The efficiency of marginal cost pricing is predicated upon the absence of externalities. However, broad access to transaction accounts should be expected to generate positive spillovers in at least two ways. First, the account-money system is associated with positive network externalities, meaning that adding new users makes the system more valuable to existing users.<sup>171</sup> 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 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 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]

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<sup>169</sup> See, e.g., N. Gregory Mankiw, *Principles of Economics* 312–3 (1998) [update to new edition].

<sup>170</sup> See, e.g., Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, vol. 1, 63–86 (1988).

<sup>171</sup> For general treatments of network effects that discuss legal and regulatory implications, see Mark A. Lemley & David McGowan, *Legal Implications of Network Effects*, 86 *Cal. L. Rev.* 479 (1998); Nicholas Economides, *Competition Policy in Network Industries: An Introduction*, in *The New Economy and Beyond: Past, Present and Future* (Dennis W. Jansen ed., 2006).

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are often ignored,” writes Richard Epstein.<sup>172</sup> 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.”<sup>173</sup> Writing three decades earlier, Carol Rose said much the same. “[C]ommerce is an interactive practice whose exponential returns to increasing participation run on without limit,” she wrote.<sup>174</sup> “The more people who engage in trade, the greater the opportunities for all to make valuable exchanges.”<sup>175</sup> 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 to a minimum, and perhaps be borne by the organized community at common expense. Nineteenth-century doctrine 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.<sup>176</sup>

Rose focused mostly 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.

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<sup>172</sup> Richard A. Epstein, *Freedom of Association and Antidiscrimination Law: An Imperfect Reconciliation*, The Online Library of Law and Liberty (Jan. 2, 2016).

<sup>173</sup> *Id.*

<sup>174</sup> Carol M. Rose, *The Comedy of the Commons: Commerce, Custom, and Inherently Public Property*, 53 U. Chi. L. Rev. 711, \_\_ (1986).

<sup>175</sup> *Id.* at \_\_.

<sup>176</sup> *Id.* at \_\_.

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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 meant 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.<sup>177</sup> 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. (Where positive spillovers are present, *underuse* is of much greater concern.) 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 be treated like paper money: an open-access resource whose costs are 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 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, universal service provisions can be included in the regulatory compact.

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. (I use “universal service” loosely to refer to any context in which regulated firms are required to serve some classes of customers at prices below cost, in order to promote broad access.) 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 necessitates unprofitable investment—and they may not charge higher prices to more remote consumers.<sup>178</sup> This

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<sup>177</sup> Such screening applies to bank accounts today. [Cite: Customer Identification Program regulations.]

<sup>178</sup> See, e.g., Pierce & Gellhorn, *supra* note \_\_\_, at 217.

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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.<sup>179</sup> The same principles apply to cable communications (television and broadband internet). In each of these cases, some consumers are served at 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 20<sup>th</sup> century—a dubious policy development, I will suggest—but a brief tour of how they worked is instructive. 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 1792<sup>180</sup> established procedures to ensure the rapid geographic expansion of the postal network, including routes that “could not possibly break even.”<sup>181</sup> The Act deliberately subsidized nonpaying remote areas, particularly in the South and West.<sup>182</sup> 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.<sup>183</sup> Since 1863, all U.S. domestic letter rates have been uniform (weight-based) irrespective of distance traveled.<sup>184</sup> This is a dramatic departure

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<sup>179</sup> Peter W. Huber, Michael K. Kellogg & John Thorne, *Federal Telecommunications Law* § 2.1.1 (2nd ed. 1999 & Supp. 2011).

<sup>180</sup> An Act to Establish the Post-Office and Post Roads within the United States, ch. 7, 1 Stat. 232 (1792).

<sup>181</sup> Richard John, *Spreading the News: The American Postal System from Franklin to Morse* 49 (1995).

<sup>182</sup> Richard John, *History of Universal Service and the Postal Monopoly* 21 (2008).

<sup>183</sup> *Id.* at 13. Another researcher has observed that, in contemplating postal reform in the 1840s, “the Congress unanimously believed that the government had a duty to provide postal service to non-paying frontier and rural areas.” George Priest, *The History of the Postal Monopoly in the United States*, 18 *J. L. & Econ.* 33, 65 (1975).

<sup>184</sup> United States Postal Service, *Universal Service and the Postal Monopoly: A Brief History* 5 (2008).

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from marginal cost pricing. Modern postal legislation<sup>185</sup> and official pronouncements<sup>186</sup> 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 “common carriers” and placed them under the Interstate Commerce Commission’s jurisdiction<sup>187</sup>—AT&T’s leadership explicitly committed the company to universal service.<sup>188</sup> Regulators followed suit. In the 1920s state public utility commissions adopted statewide rate averaging.<sup>189</sup> The resulting cross-subsidies promoted residential telephone service in less populous areas. The Communications Act of 1934, which created the Federal Communications Commission, made universal service an explicit federal policy.<sup>190</sup> By the early 1940s the F.C.C. had adopted a policy of equal charges for equal services, eliminating interstate rate differentials and leading soon thereafter to de facto nationwide average pricing.<sup>191</sup> This policy benefited rural and small-

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<sup>185</sup> See Postal Reorganization Act of 1970, Pub. L. No. 91-375, 84 Stat. 719, 761 (codified at 39 U.S.C. § 8623(d)) (mandating continuation of uniform nationwide rates for each class of mail); *id.* 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 “no 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”).

<sup>186</sup> See generally President’s Commission on the U.S. Postal Service, *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); United States Postal Service, *Annual Report 2* (2007) (“Our mission remains the same—providing trusted, affordable, universal service.”); *id.* at 59 (defining universal service as providing “uniform and reasonable rates to everyone, everywhere”).

<sup>187</sup> Mann-Elkins Act, ch. 309, § 7, 36 Stat. 539, 544–45 (1910).

<sup>188</sup> See Richard John, *Network Nation: Inventing American Telecommunications* 345 (2010).

<sup>189</sup> 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).

<sup>190</sup> Communications Act of 1934, Pub. L. No. 73–416, § 1, 48 Stat. 1064, 1064.

<sup>191</sup> See Vietor, *supra* note \_\_\_, at 46.

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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.<sup>192</sup> 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 deregulatory) pattern. Even before the Interstate Commerce Act of 1887<sup>193</sup>—the foundation stone of U.S. federal administrative regulation—railroad corporate charters specified the routes that they were required to serve.<sup>194</sup> Railroads could not freely discontinue service, even if continuation was unprofitable.<sup>195</sup> In 1906 the I.C.C. gained the power to regulate rates directly,<sup>196</sup> and in 1920 its powers were broadened to control entry and exit by issuing certificates of public convenience and necessity.<sup>197</sup> As before, notes one scholar, “carriers were often required to continue unprofitable services.”<sup>198</sup> Universal service in the railroad industry began its decline in 1958, when Congress passed legislation making it easier for rail companies to discontinue unprofitable *passenger* train service.<sup>199</sup> The legislation also endowed the I.C.C. with the authority to reverse state public utility commission denials of discontinuance applications.<sup>200</sup> Additional legislation from 1973 to 1980 eased exit on the *freight* side.<sup>201</sup> Since deregulation, service discontinuance and outright

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<sup>192</sup> See *id.* at \_\_; see also Breyer, *supra* note \_\_, at \_\_.

<sup>193</sup> Interstate Commerce Act of 1887, ch. 104, 24 Stat. 379.

<sup>194</sup> Theodore E. Keeler, *Railroads, Freight, and Public Policy* 20-21 (1983).

<sup>195</sup> *Id.* at 21.

<sup>196</sup> Hepburn Act of 1906, ch. 3591, 34 Stat. 584.

<sup>197</sup> Transportation Act, 1920 (Esch–Cummins Act), Pub. L. No. 66-152, § 402, 41 Stat. 456, 477–78.

<sup>198</sup> Keeler, *supra* note \_\_, at 25.

<sup>199</sup> Transportation Act of 1958, Pub. L. No. 85-625, §5, 72 Stat. 568, 571.

<sup>200</sup> 72 Stat. at 572.

<sup>201</sup> Regional Rail Reorganization (3R) Act of 1973, Pub. L. No. 93-236, 87 Stat. 985; Railroad Revitalization and Regulatory Reform (4R) Act of 1976, Pub. L. No. 94-210, 90 Stat. 31; Staggers Rail Act of 1980, Pub. L. No. 96-448, 94 Stat. 1895.

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rail line abandonment have been robust<sup>202</sup>—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 I.C.C.'s jurisdiction.<sup>203</sup> Regulation of rates and entry applied, and motor carriers were required to serve off-line points. The I.C.C. would suspend carriers' authority for failing to meet these universal service obligations.<sup>204</sup> Money-losing routes were balanced with more profitable traffic. Legislation in 1980 substantially liberalized entry, exit, and rates for trucking companies. Service to small communities and small shippers deteriorated.<sup>205</sup> 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.<sup>206</sup> As with railroads, it also let the I.C.C. reverse state P.U.C. denials of service discontinuance.<sup>207</sup> The president of Greyhound had predicted that "the rural areas are going to have to suffer" under bus deregulation.<sup>208</sup> He predicted correctly. Thousands of smaller communities lost intercity bus service in short order.<sup>209</sup> (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 just to get to the doctor or to the Social Security office."<sup>210</sup>)

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<sup>202</sup> See Frank J. Dooley & William E. Thoms, *Railroad Law a Decade After Deregulation* 46 (1994) (discontinuance of passenger trains after 1958); *id.* at 18 (rail line abandonment in 1970s and 1980s).

<sup>203</sup> Motor Carrier Act of 1935, Pub. L. No. 74-255, 49 Stat. 543.

<sup>204</sup> Paul Stephen Dempsey, *The Social and Economic Consequences of Deregulation* 28–29 (1989).

<sup>205</sup> See Rakowski, *Marketing Economies and the Results of Trucking Deregulation in the Less-Than-Truckload Sector*, *Transp. J.*, Spring 1988, at 11, 21.

<sup>206</sup> Bus Regulatory Reform Act of 1982, Pub. L. No. 97-261, 96 Stat. 1102.

<sup>207</sup> *Id.* § 16(a), 96 Stat. at 1115–1117.

<sup>208</sup> Quoted in Dempsey, *supra* note \_\_\_, at 205.

<sup>209</sup> Dempsey, *supra* note \_\_\_, at 206.

<sup>210</sup> Testimony of Alfred Kahn Before the California Public Utilities Commission 6247-48 (Jan. 31, 1989).

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Finally, the 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.<sup>211</sup> 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.<sup>212</sup> Airlines were awarded more profitable routes to balance their less profitable routes.<sup>213</sup> In the late 1970s this universal service model came to an end, first through administrative action<sup>214</sup> and then through legislation.<sup>215</sup> Comprehensive deregulation of airlines led to drastic service reductions to small and midsize cities.<sup>216</sup>

In each of the foregoing examples—electric and gas utilities, telecommunications, and transportation (railroads, motor carriers, and airlines)—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.<sup>217</sup> “[T]he commitments also have positive efficiency implications.”<sup>218</sup>

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.<sup>219</sup>

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<sup>211</sup> Civil Aeronautics Act of 1938, Pub. L. No. 75-706, 52 Stat. 973.

<sup>212</sup> Breyer, *supra* note \_\_\_, at 212.

<sup>213</sup> *Id.* at 213.

<sup>214</sup> See Dempsey, *supra* note \_\_\_, at 20.

<sup>215</sup> Airline Deregulation Act of 1978, Pub. L. No. 95-504, 92 Stat. 1705.

<sup>216</sup> See Andrew R. Goetz & Timothy M. Vowles, *The Good, the Bad, and the Ugly: 30 Years of U.S. Airline Deregulation*, 17 *J. Transp. Geography* 251 (2009); Phillip Longman & Lina Khan, *Terminal Sickness: How a Thirty-Year-Old Policy of Deregulation is Slowly Killing America’s Airline System*, *Washington Monthly* (March/April 2012).

<sup>217</sup> Brett M. Frischmann, *Infrastructure: The Social Value of Shared Resources* 223 (2012).

<sup>218</sup> *Id.*

<sup>219</sup> Richard Posner, *Taxation by Regulation*, 2 *Bell J. Econ. & Mgmt. Science* 22, 39 (1971).

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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. “Internal subsidization is one method whereby the expansion of the infrastructure services can be promoted,” Posner notes.<sup>220</sup> He concludes that the public-finance theory better accounts for the basic 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.<sup>221</sup> “The regulated industries are part of the ‘infrastructure’ of economic growth.”<sup>222</sup>

Cross-subsidies as a method of finance are controversial. (One noted scholar has described cross-subsidies in the postal context as “tumorous.”<sup>223</sup>) 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.<sup>224</sup> *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.<sup>225</sup> On top of that, Posner argues internal subsidization has certain advantages over taxation-plus-direct-subsidization.<sup>226</sup> 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 some the expenses of implementing a fine-grained rate structure. Third, it frees up legislative resources by delegating a minor taxing function to regulators.

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<sup>220</sup> Id. at \_\_\_\_.

<sup>221</sup> Id. at \_\_\_\_.

<sup>222</sup> Id.

<sup>223</sup> Priest, *supra* note \_\_\_, at 56.

<sup>224</sup> See Richard A. Posner, *Taxation by Regulation*, 2 *Bell J. Econ. & Mgt. Sci.* 22, 42 (1971).

<sup>225</sup> See *id.*

<sup>226</sup> See *id.* at 45.

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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 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 in order 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 expected to 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 20<sup>th</sup> 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 I, in a Demsetz auction framework, the government continues to accrue seigniorage revenue from chartered banks. Over any given period, this amount equates to  $R_f - D$ , where  $R_f$  is the risk-free rate corresponding to the bank's asset portfolio duration and  $D$  is the administered deposit rate. 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.

Implementation would present some challenges, but this is equally true in all the infrastructural contexts mentioned above. 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

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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, we see again 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’s up to the banks to decide which customers are profitable. Naturally, unprofitable customers don’t 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: one of the “specs” of the procurement 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.

## 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.”<sup>227</sup> So wrote Milton Friedman in 1960. He described regulated banks as “issuers of money.”<sup>228</sup>

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 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,

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<sup>227</sup> Friedman, *supra* note \_\_\_, at 74.

<sup>228</sup> *Id.* at 8.

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affords a way of organizing our thinking about these matters. It suggests grounds for superseding the price mechanism in this area. And traditional infrastructure regulation furnishes proof-of-concept that this regulatory model can succeed. Modern U.S. bank regulation has drifted ever-further away from the infrastructure model, with questionable results.