

The Money Problem

Rethinking Financial Regulation

MORGAN RICKS

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MORGAN RICKS is associate professor at Vanderbilt Law School. Previously, he was a senior policy advisor and financial restructuring expert at the US Treasury Department, a risk-arbitrage trader at Citadel Investment Group, and vice president in the investment banking division of Merrill Lynch & Co.

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One View of the Challenge

It is useful to begin by discussing a subject that might initially seem unrelated to monetary system design: “shadow banking.” This term has taken on a variety of meanings lately, but I will use it in a very precise way. For our purposes, a shadow bank is an entity that uses large quantities of short-term debt to fund a portfolio of financial assets and that is not a chartered deposit bank. The shadow banking system is just the set of entities that meet these two criteria.⁴

The concept of shadow banking, as used here, is more or less interchangeable with the (nondeposit) short-term debt of the financial sector. Practically speaking, they are the same thing. The markets for this short-term debt—often called the short-term funding markets, the wholesale funding markets, or just the funding markets—are described in some detail in chapter 1. These markets are huge, and they were at the center of the recent financial crisis. In 2007 and 2008 the short-term funding markets unraveled in a series of classic panics. From the perspective of finance practitioners and policymakers, these panics were virtually synonymous with the financial crisis. The panics themselves *were* the emergency, and they coincided with the start of a severe economic slump.

This book argues that, when it comes to financial stability policy, panics—widespread redemptions of the financial sector’s short-term debt—should be viewed as “the problem” (the main one, anyway). More to the point: *panic-proofing*, as opposed to, say, asset bubble prevention or “systemic risk” mitigation, should be the central objective of financial stability policy—at least insofar as financial stability policy is about preventing macroeconomic disasters. I will have much more to say about this later.

We do of course have a policy response to panics, but it has major problems. The modern answer to panics consists of an implicit commitment of open-ended public support for the financial sector’s short-term debt, via the lender of last resort and other facilities. The very prospect of public support introduces potentially severe distortions into the financial system. It encourages the growth of individual financial firms and the financial sector as a whole; it rewards high degrees of leverage and generates an oversupply of credit; and it perversely subsidizes the financial sector through artificially low funding costs. These are not novel claims, but they do suggest that our modern approach to fighting panics might *itself* bear substantial responsibility for many of the apparent pathologies of modern finance.

So what does the financial sector’s short-term debt (shadow banking) have to do with the monetary system? Gary Gorton, a leading expert in this area, has said that “the shadow banking system is, in fact, real banking.”⁵ This is an important insight. Shadow banking clearly bears a close resemblance to ordinary deposit banking. Both shadow banks and deposit banks hold portfolios of financial assets that they fund largely with very short-term IOUs. In deposit banking those IOUs take the form of deposit liabilities. In shadow banking those IOUs consist of the myriad instruments of the short-term funding markets. But the basic structure is the

same. Because of this heavy reliance on short-term debt funding, both business models are inherently susceptible to a liquidity crisis or “run” in which short-term claimants simultaneously seek to redeem.

So far so good; this comparison between shadow banking and deposit banking has become fairly standard. But the comparison can be taken one step further. It is a truism of finance that deposit banks are in the *money creation* business. Every student of introductory economics learns how this works. Deposit banks issue special instruments called “deposits” that function as money.⁶ This is a legally privileged activity: only chartered deposit banks are authorized to issue these instruments. And they issue them in amounts that far exceed their holdings of government-issued (or “base”) money. Deposit banks, then, really do augment the money supply.

Here we come to a threshold conceptual step. It turns out that the shadow banking system creates money too. The short-term IOUs that are issued by shadow banks are widely understood to be close substitutes for deposit instruments. For accounting and other purposes, these short-term debt instruments are called cash equivalents. Corporate treasurers and other businesspeople just call them cash. Economists sometimes refer to them as near money or quasi money. Central bankers include many of these instruments in their broad measures of the money supply. And, not coincidentally, the market for these short-term IOUs is known in the financial world as the *money* market, as distinct from the more familiar *capital* market in which stocks and ordinary bonds are traded.

Now, these cash equivalent instruments might not really seem like “money.” In particular, they are not typically used as a means of payment—a textbook attribute of money. In this respect cash equivalents look like ordinary bonds. An important task ahead will be to clarify what it means to say that cash equivalents have monetary attributes, whereas other financial instruments—like longer-term Treasury bonds, or shares in equity mutual funds—do not. The answer is not obvious, and it is not just a matter of asset “liquidity.” I will address this central topic in chapter 1.

Shadow banking, then, appears to be a *monetary* phenomenon, not just a financial one. This distinction might seem subtle, but it is conceptually significant. It implies that the shadow banking problem is bound up with the institutional structure of the monetary system. In other words, the question of what to do about shadow banking is inseparable from the question of how our monetary system should be designed. This recognition should not be very controversial; it emerges naturally from the analogy between shadow banking and deposit banking. Interestingly, though, shadow banking is seldom discussed in this way.

What would it mean to take this monetary perspective on shadow banking seriously? Deposit banks have long been viewed as special by virtue of their monetary function. In particular, disruptions in the deposit banking sector can and do inflict severe damage on the broader economy. In a classic analysis, Milton Friedman and Anna Schwartz argued that the Great Depression was largely the product of a monetary contraction caused by waves of banking panics.⁷ Those panics, they wrote, “were the mechanism through which a drastic decline was produced in the stock of money.” And the economic devastation that followed was “a tragic testimonial to the importance of monetary forces.” (Subsequent research on the Depression has stressed the causal role of the international gold standard. Note that these two explanations are complementary⁸—and both implicate the monetary framework.) The impact of Friedman and Schwartz’s study was profound. Ben Bernanke has described their achievement as “nothing less than to provide what has become the leading and most persuasive explanation of the worst economic disaster in American history, the onset of the Great Depression.”⁹ The relevance of the Friedman-Schwartz thesis to shadow banking is not hard to see. If the shadow banking system performs a monetary function similar to that of deposit banking, presumably it also presents similar macroeconomic risks.

This line of reasoning raises fundamental questions of institutional design. For the *legal* distinction between deposit banking and shadow banking is striking. Consider deposit banks first. In recognition of their special role in money creation, deposit banks have long been required to submit to a uniquely extensive regulatory regime. No other industry is subject to remotely comparable constraints and oversight. In the United States, deposit banks face detailed chartering criteria; strict limits on permissible activities and investments; leverage limits (capital requirements); special restrictions on affiliations and affiliate transactions; base money reserve requirements; extensive on-site supervision; a vigorous enforcement regime; special receivership in the event of failure; and so on. Deposit banks are also the beneficiaries of government stabilization facilities—central bank loans and deposit insurance—that are (normally) unavailable to other firms.

By virtue of submitting to this regulatory regime, deposit banks are endowed with an extraordinary legal privilege: they are licensed to issue deposit instruments. This privilege is accompanied by a logical corollary: enterprises *other* than chartered deposit banks are legally *prohibited* from issuing these instruments.¹⁰ This remarkable prohibition might be described, both logically and historically, as the “first law of banking.” It is

worth dwelling on this point for a moment. In formal terms, a deposit instrument is merely a variety of IOU. The first law of banking thus establishes a sweeping limitation on freedom of contract. Parties not licensed as deposit banks are legally ineligible to be obligors under this particular type of IOU. The authority to issue them is the very legal privilege that a banking charter conveys.¹¹

Contrast the shadow banking system. Shadow banking entities have no legal or regulatory status as such. Issuing cash equivalent instruments—the hallmark of shadow banking—requires no license. This activity takes place pursuant to generally applicable background rules of property and contract (maybe with a dash of commercial law and organizational law thrown in). It is not legally confined, nor is it surrounded by the elaborate institutional architecture of the deposit banking system. What justifies this differential legal status? Assume for the moment that the monetary function of deposits is, in one way or another, what justifies the extraordinary regulation of their issuers. If cash equivalents perform a monetary function too, then perhaps the law of banking rests on an arbitrary and formalistic distinction. That is to say, perhaps the starting point for banking law should be not the deposit instrument but rather the broad array of short-term IOUs that serve a monetary function.

This analysis reveals a basic point that has vital implications for monetary system design: *given* the existence of some established medium of exchange, entrepreneurs can set up a distinctive “money creation” business model whose liabilities consist largely of instruments that are redeemable for that existing money on demand or in the very near term. (Why entrepreneurs would want to use such a funding model will be discussed in chapters 2 and 3; the short answer is that it is very profitable.) The portfolios of these enterprises tend to consist mostly of longer-term financial assets like loans and bonds. This is the familiar business model of banking—or shadow banking, as the case may be. Crucially, *in the absence of any special legal impediments*, this business model can arise through the operation of standard rules of property and contract. The law of deposit banking, however, establishes just such a legal impediment. It is the first law of banking: no person or entity may issue redeemable instruments styled as “deposits” unless it has a special charter to do so.

One sometimes hears that banking regulation should be “extended” to the shadow banking system, but this argument misapprehends the basic structure of banking law. To see why, imagine what it would mean to “extend” banking regulation to, say, a big securities dealer that relies heav-

ily on short-term debt funding. I noted above that US deposit banks are strictly limited in their permissible activities and investments. Let's now be a little more specific. In the United States, deposit banks are basically limited to holding diversified portfolios of credit assets—loans and investment-grade bonds. They generally may not buy equity securities or junk bonds, for example.¹² So deposit banks are not allowed to own many of the kinds of assets that securities dealers hold as a part of their core business. More fundamentally, deposit banks are explicitly prohibited by statute from *engaging in securities dealing*, subject to very narrow exceptions.¹³ Simply put, if deposit banking regulation were “extended” to a securities dealer, it could no longer be a securities dealer.

One might argue that these activity and portfolio constraints should be relaxed in the case of a securities dealer. But this is a strange argument; those constraints are part of the very core of banking regulation! Remember, banking law starts by *confining* the issuance of deposit instruments to a class of specially chartered entities that must abide by all sorts of requirements, including strict activity and portfolio constraints. If cash equivalents function as deposit substitutes, then the natural question is whether their issuance should *also* be so confined. In other words, the question isn't whether banking regulation should be “extended” to (for example) securities dealers, but rather whether securities dealers should be *prohibited from issuing cash equivalents*, just as they are now prohibited from issuing deposits. We are talking here about updating the first law of banking—the general prohibition that is the starting point for banking law.

Here is another way of thinking about it. Imagine that the statutory definition of “deposit”¹⁴ were amended to encompass all the various types of short-term debt instruments on which the financial sector relies for funding. In that case, only chartered deposit banks would be authorized to issue such instruments. This would mean the end of “shadow” banking; the business of funding portfolios of financial assets with large quantities of short-term debt would be coextensive with the deposit banking system. We would then have a single set of chartered money creation firms, operating under terms and conditions established by the state.

It should now be apparent what it means to say that financial instability is a problem of monetary system design. The short-term IOUs of the financial sector are monetary instruments, and a panic—what Bernanke called a “generalized run by providers of short-term funding to a set of financial institutions”—is a defining feature of financial crises. To quote

University of Chicago economist Douglas Diamond, a leading theorist in this area, “Financial crises are everywhere and always about short-term debt.”¹⁵ This is perhaps an exaggeration, but only a slight one.

The Broader Context

This discussion has offered a glimpse of the kinds of questions this book is occupied with. To bring these questions fully into view, it is useful to situate the foregoing discussion within a more general context. Some taxonomy will help. Consider the “cash and equivalents” line on the asset side of the balance sheet of an operating company, say IBM. We tend to think of this as just “cash” or “money”—and that is what IBM’s managers surely call it—but of course in reality it consists of specific kinds of instruments. What are they exactly? There are three basic categories. First, there is government-issued physical currency; IBM has only a tiny amount of this. Second, there are (checkable) bank deposit instruments, which the company uses to make virtually all its payments. Third, there are the various instruments of the short-term funding markets: cash equivalents.

Let’s look more closely at these three categories. Table 1 summarizes some of their essential legal-institutional attributes (the focus here is on the United States, but other jurisdictions are similar). The first row, physical currency, has been lurking in the background so far; we can now bring it forward. In modern monetary systems, physical currency is “fiat” currency, meaning it lacks intrinsic value and isn’t redeemable for anything else.¹⁶ The table indicates that issuing physical currency is legally *privileged*: having issued currency, the state prohibits others from producing identical instruments. This of course is the subject of anticounterfeiting

TABLE 1. Characteristics of Existing Monetary Instruments

Monetary Instrument	Privileged Issuance?	Sovereign vs. Private
Physical currency	Yes	Sovereign
Bank deposits	Yes	Sovereign (insured) and Private (uninsured)
Cash equivalents	No	Private (mostly)

law.¹⁷ Physical currency is also *sovereign* in status. This just means it represents a “commitment” of the state and not of any private entity.

Next consider bank deposits, which are the predominant medium of exchange in modern economies. We have already seen that their issuance is a privileged activity, inasmuch as it is legally confined to a class of specially chartered entities. In addition, most deposit instruments—those that are federally insured—are sovereign in status, meaning the government commits to honor them. Uninsured deposits, on the other hand, are private obligations and are susceptible to default.

The third category is cash equivalents. As we saw above, their issuance generally is *not* a legal privilege. Most cash equivalent instruments have no legal or regulatory status as such. They are issued (in immense quantities) pursuant to standard rules of property and contract. There are no legal restrictions on issuing cash equivalents, and they reside outside the purview of monetary authorities. In addition, cash equivalents generally are private obligations and are susceptible to default.

These three categories of monetary instruments roughly correspond to conventional measures of the money stock: the “monetary base,” “M1,” “M2,” and “M3.” Physical currency belongs to the monetary base, which under current arrangements is issued directly by the central bank. Bank deposits that are payable on demand belong to M1, which consists of types of money commonly used for payment. Some important cash equivalents are included in M2 and M3, which are broader measures of the money stock. The Federal Reserve stopped reporting M3 in 2006, but other central banks, including the European Central Bank, do report M3 measures (see chapter 1).

The taxonomy in table 1 raises some basic questions of institutional design. The most fundamental question is why the government should involve itself in monetary matters to begin with. We can safely stipulate that money serves a vital function in a market economy: it makes exchange much easier. But it doesn’t follow that the state needs to have a role here. The state could exit the monetary business altogether—including the issuance of physical currency—leaving it entirely to “the market” to establish a monetary framework.

In the area of money, however, the pure *laissez-faire* approach has few advocates.¹⁸ Even the most ardent proponents of *laissez-faire* usually concede that “the market” (as constituted by the legal institutions of property and contract) should not be expected to generate satisfactory monetary arrangements through some kind of spontaneous process. Consider

the views of Milton Friedman, a champion of laissez-faire in other areas: “Something like a moderately stable monetary framework seems an essential prerequisite for the effective operation of a private market economy. It is dubious that the market can by itself provide such a framework. Hence, the function of providing one is an essential governmental function on a par with the provision of a stable legal framework.”¹⁹ More recently, another Nobel Prize-winning economist with equally impeccable laissez-faire credentials made a similar argument. “The market will not work effectively with monetary anarchy,” wrote James M. Buchanan. “Clearly some defined process and institutional structure must be established” over monetary affairs.²⁰

If the government is going to establish a monetary framework, it must decide how best to do so. In this regard it faces some fundamental design choices. An initial set of choices is evident in the “privileged issuance” column in table 1. Let’s suppose the state has successfully put some amount of fiat paper money into circulation, by whatever means. Assume also that it has established anticounterfeiting laws and is enforcing them adequately. As we have already seen, *given* the existence of this established medium of exchange, entrepreneurs can set up a money creation business (in other words, a bank) using generally available legal technologies. A threshold question for the state is whether to impose any limitations on this private activity.

The notion that the state should leave this activity unhindered—a proposal that sometimes goes by the name free banking—embodies a commitment to freedom of contract in this area. Note, however, that both theory and history suggest this business model is prone to damaging panics. (We will examine this topic in detail in part 1.) Perhaps for this reason, free banking has not been the historical norm. The issuance of deposit instruments and their historical predecessors, bank notes, has almost always been a legal privilege.²¹

Suppose the state were to conclude that free banking is dubious—that legal constraints should be placed on issuing redeemable instruments that function as money. (This is the first law of banking.) The state might then adopt the familiar licensing approach, permitting only selected third parties to issue these instruments under specified terms and conditions. But if the state sees problems with this activity—problems that justify curtailing freedom of contract—why let any third parties do it at all? After all, the state could make itself the *exclusive* issuer of monetary instruments, whether through a state-owned “bank” or through some other in-

stitutional arrangement. This would mean prohibiting all third parties from creating money; money creation would be a public monopoly. Lest this idea seem far-fetched, it is worth noting that one version of this proposal, called “100% reserve banking,” has a very distinguished intellectual lineage.²²

Either way—whether the government grants the privilege of issuing monetary instruments to selected third parties or retains it exclusively for itself—the government needs to specify the precise contours of the privilege. A legal privilege logically implies a legal prohibition; parties without the privilege are prohibited from doing *something*.²³ So what, exactly, is the government prohibiting? Is it just the issuance of redeemable instruments styled as “deposits”? Or should the prohibition extend to issuing cash equivalents, defined on some functional basis? This is the question we encountered above in the shadow banking discussion: whether there is a respectable basis for the differential legal status of deposits and cash equivalents. It is clear now that this is just one aspect of a broader design challenge.

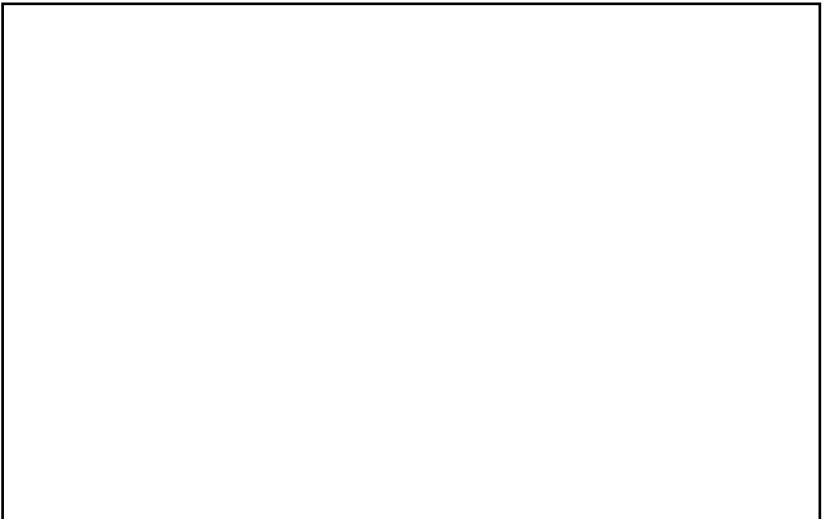
Turning to the “sovereign vs. private” column, we encounter another set of design choices. Government-issued fiat money is inherently sovereign in status; dollar bills are not susceptible to default. But if the government chooses to license third parties to issue redeemable monetary instruments, those instruments are another matter. The state has two options here. The first would be to leave such instruments as private (defaultable) contractual obligations. The second would be to accord them sovereign status: think deposit insurance.

This is a much debated topic. Historically, deposit insurance systems seem to have had remarkable benefits in preventing banking panics. At the same time, such systems give rise to well-known incentive problems, encapsulated by the term moral hazard. Whether such incentive problems can be successfully mitigated through various regulatory techniques is an important question. A related question is whether the government should limit the scope of its commitment. Under the current US system, federal deposit insurance is capped at \$250,000 per account.²⁴ This coverage limit reflects a consumer protection philosophy; small retail account holders presumably lack the capacity to monitor bank solvency. But if we view deposit insurance through the lens of panic prevention instead of consumer protection, then the justification for coverage limits becomes far murkier. As we will see in future chapters, sophisticated institutional accounts are far *more* likely than small retail accounts to redeem en masse, precisely

because they are paying closer attention. If panic prevention is a key goal, then coverage limits may very well undermine it.²⁵ Finally, the subject of cash equivalents arises here too. If the government sees fit to accord sovereign status to “deposit” instruments, does the same logic apply to cash equivalents?

Still other questions suggest themselves. If the government chooses to license third parties to engage in money creation, under what terms and conditions should they operate? How should we think about the relation between this activity and the direct issuance of base money by an arm of the state, such as a state-owned central bank? And how (if at all) should the government exercise control over the supply of monetary instruments? These questions subsume a variety of others: about the operation of monetary policy; about the administrative independence of the monetary authority from the fiscal authority; about the mechanics of the payment system; and about “seigniorage,” or government revenue that arises from money creation.

It should be clear that we are dealing with a multifaceted institutional design challenge. Given the importance of the topic, one could be forgiven for assuming that these issues must already have been fully thought through. Surprisingly, they have not. The basic legal-institutional design considerations that are pertinent to the establishment of a monetary system have never been well articulated. Look, for instance, at the standard textbooks on money and banking, on macroeconomics, and on bank regulation. This is where one might expect to see a systematic treatment of these issues, but it is not to be found.



Taking the Money Market Seriously

Pure money . . . is nothing else but the most perfect type of security. Bills of short maturity form the next grade, being not quite perfect money, but still very close substitutes for it. . . . The rate of interest on these securities is a measure of their imperfection—of their imperfect “moneyness.”—John Hicks, 1946¹

Are the instruments of the money market—the short-term debt instruments we have been calling cash equivalents—really *money*? The question seems to invite a semantic debate. It obviously depends on how one defines “money.” Still, semantic debates can sometimes be useful; they can help to sharpen concepts. This is one of those cases.

Start with the textbook definition of money. That definition can be rehearsed by any student of introductory economics. Money is conventionally defined as the set of assets that can be readily used in transactions. In this regard the *medium of exchange* function of money is commonly said to be paramount. But cash equivalent instruments, unlike checkable bank deposits, generally do not function as a medium of exchange. Rather, they must be converted into the medium of exchange—by selling them or waiting for them to mature—before they can be used in transactions. In this respect, cash equivalents resemble other (nonmonetary) financial assets like stocks and longer-term bonds.

So, under the textbook definition, cash equivalents are not money. And some experts—perhaps many—favor sticking to this usage. Consider the following observations from a prominent macroeconomist regarding the Federal Reserve’s (now discontinued) M₃ monetary aggregate, which consisted of several important classes of cash equivalents: “Economists define ‘money’ as an asset that is used to pay for transactions. . . . I have to confess that in a quarter century of teaching and research, I never had any

occasion to make use of M_3 . It always seemed to me that this unambiguously failed the definition of an asset that is used to pay for transactions. If you're going to include such assets in your concept of 'money,' why stop there?"²

Along the same lines, another well-known monetary economist recently had this to say about "money market": "I know that finance people and business people frequently use the words 'money market' to mean the market for short term bonds/loans. But when you are talking about models of monetary exchange, it is a really bad idea to use the words 'money market' in that way. What you really mean is 'bond market.'"³ This same economist has also said that "money market" is "just a weird slang name for the market in short-term bonds."⁴ And two other influential economists recently opined that referring to short-term debt as money is "an abuse of the word 'money.'"⁵ To all these experts we are dealing with a binary categorization. An instrument either is used in transactions or is not; it is either money or something else, such as a bond.

Other monetary theorists, however, have defined money rather differently. Milton Friedman and Anna Schwartz devoted part I of their 1970 book, *Monetary Statistics of the United States*, to the "Definition of Money."⁶ They remark that it is "tempting . . . to try to separate 'money' from other assets on the basis of a priori considerations alone." They go on to note that "perhaps the most common" version of the a priori approach "takes as the 'essential' function of money its use as a 'medium of exchange.'" But Friedman and Schwartz decline to tie their definition of money to this function: "We see no compelling reason to regard the literal medium-of-exchange function as the 'essential' function of the items we wish to call 'money.'" They conclude instead that "the definition of money is an issue to be decided, not on grounds of principle as in the a priori approach, but on grounds of usefulness in organizing our knowledge of economic relationships." Friedman and Schwartz see varying degrees of what they call "moneyness" in different assets.

They are not alone. It has long been common, both within economics and in the broader financial and commercial world, to use "money" in reference to assets that are *not* a medium of exchange. Invariably such assets have consisted of various kinds of short-term debt. They are commonly seen as occupying a kind of intermediate status between cash and bonds. Hence economists sometimes call them "near money," a term that is roughly synonymous with cash equivalent or money market. Moreover, as we will see shortly, many nondeposit short-term debt instruments are

commonly classified “as if” they were cash (and differently from stocks and longer-term bonds) in a variety of legal, accounting, and financial market contexts.

This broader usage stands in tension with the binary, textbook definition of money we saw above. The textbook definition does not admit of gradations; it does not envisage a spectrum of moneyiness. Is this just a matter of loose terminology, or is something more at stake? This chapter suggests that this terminological ambiguity points toward something that is economically significant. For there *is* something special about cash equivalents; they have a property that distinguishes them from longer-term bonds and other financial instruments. This property can be usefully described as moneyiness—but the challenge is to specify precisely what this means in functional terms.

So what does it mean to say that cash equivalents are “money,” or that they are “moneylike,” or that they have “moneyiness,” even though they are not a medium of exchange? A common answer is that these instruments are very *liquid*: they can be traded quickly and cheaply for the medium of exchange. But this can’t be the whole story. All sorts of financial assets apart from cash equivalents are extremely liquid. Ten-year Treasury securities, many large-cap stocks, and interests in equity mutual funds all exhibit high liquidity. They can be exchanged for cash at a moment’s notice and at negligible cost. Yet unlike cash equivalents, these other liquid instruments are not classified with cash in any of the myriad contexts alluded to above. So liquidity alone doesn’t seem to be the answer.

Another common answer is that cash equivalents are *safe*. Now, this gets us into the right zone—or so this chapter will argue—but it is important to specify just what is meant by safe. This is not entirely obvious. After all, high-quality *long-term* bonds are often said to be “safe” assets, but they are not generally thought to be cash substitutes. At the same time, cash itself isn’t necessarily “safe” over any given period; it may fall in value relative to other things.

This chapter offers a specific, functional explanation. It starts with the observation that economic agents generally find it desirable to hold an inventory of liquid assets to facilitate near-term transactions, which we will call a “transaction reserve.” (Milton Friedman called it a “temporary abode of purchasing power.”)⁷ And this chapter argues that, in a monetary economy where prices tend to be “sticky” in the short run, agents will generally want their transaction reserves to have a very stable value *in relation to* cash. Cash equivalents have this special property: unlike, say,

longer-term Treasuries, they have practically no nominal price risk. For this reason they make particularly good transaction reserve assets. This leads to a seemingly paradoxical conclusion: the expectation of potential near-term transactions is one source of demand for cash equivalents, even though cash equivalents are not a medium of exchange.

I believe there is novelty in this argument,⁸ but the more important contribution of this chapter is something else. I aim to bring together various fragmentary pieces of theory and institutional practice into a coherent and integrated account of the role of short-term debt in the financial system. There is a remarkable lack of any unified treatment of these matters in the existing literature. Consequently, many discussions in this area are characterized by vagueness, inconsistent usage of terminology, and occasional confusion. The topics discussed here are a cornerstone for the rest of the book.

This chapter concludes that cash equivalents serve a function that can usefully be described as monetary: they satisfy an aspect of money demand. When drawing a line between money and bonds, it sometimes makes sense to place cash equivalents on the money side of the line. A corollary is that the moneyness property of short-term debt disappears on default. The latter point is straightforward enough, but this idea plays a crucial role in the next chapter, so it needs to be stated explicitly.

Bear in mind that the proposition that cash equivalents are moneylike has *not* been taken seriously in the actual design of our monetary institutions. We saw this in the introduction. Issuing deposits (the predominant medium of exchange) is a privileged activity. You need a special charter to do it, and chartered entities are surrounded by an elaborate institutional apparatus. Issuing cash equivalents, by contrast, is not a legal privilege but a legal right. Cash equivalents have no legal-institutional status as such; their issuance is a matter of property and contract. A key inquiry for this book's design project is whether there is a respectable policy rationale for the stark institutional dichotomy between deposits and (nondeposit) cash equivalents.⁹ This chapter begins the task of calling that dichotomy into question.

The Contemporary Monetary Landscape

We can start by looking at the universe of US dollar-denominated money-claims, a term that was defined in the introduction as, essentially,

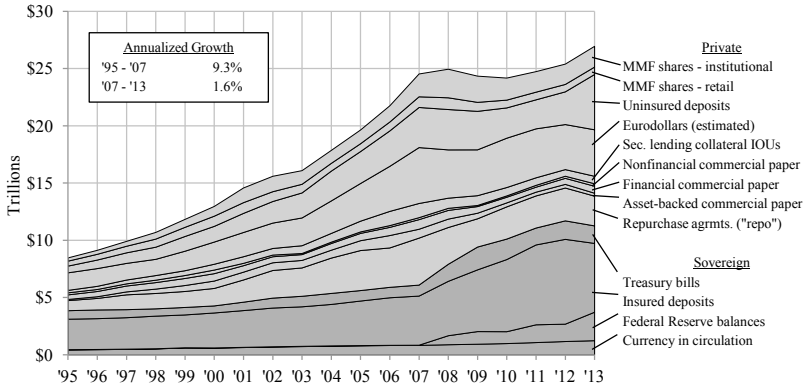


FIGURE I.1. Gross money-claims outstanding

Source: See chapter appendix.

short-term debt instruments apart from trade credit.¹⁰ Figure I.1 shows the evolution of this asset class over the past two decades. The top nine series (lighter shading) represent *private* money-claims, in that the issuer (obligor) is a private firm, not a public institution. The bottom four series (darker shading) are *sovereign* money-claims, meaning the federal government is either issuer or guarantor.

Some of these instruments are more familiar than others. Details about them are supplied in the appendix to this chapter, but the details are not important. All these instruments are quite simple. They are dollar-denominated short-term debt. (Whether currency in circulation is properly viewed as a form of “debt” is a subject of debate—a largely metaphysical one at that—but I include it here for completeness.) The maturity cutoff is one year. Note that the figure is underinclusive, inasmuch as several categories of private money-claims are absent because data are not available.¹¹

I should emphasize that the figure depicts *gross* quantities: every distinct instrument is counted. That is to say, the figure doesn’t “net out” those money-claims that are held by issuers of money-claims. For example, the figure includes money market mutual fund (MMF) shares, even though MMF portfolios consist almost entirely of other types of instruments that appear in the figure. If the figure were presented on a net basis, it would include MMF shares but exclude instruments held by MMFs. Unfortunately, the data required to present each series on a net basis are not available. The figure therefore can’t be compared apples to

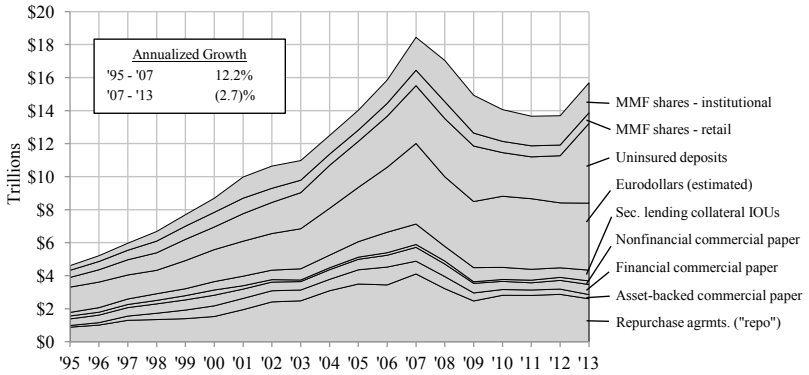


FIGURE 1.2. Gross private money-claims outstanding
Source: See chapter appendix.

apples with standard measures of the money stock, which employ netting. While net quantities would be useful for certain purposes, gross quantities are instructive in their own right. The use of gross quantities should not be confused with “double counting.” The figure counts each distinct instrument exactly once: this is single counting. The figure might be said to reflect double counting if any of the relevant issuers were mere pass-through entities, but this is not the case. MMFs, for example, issue demandable (zero maturity) claims, whereas the weighted average maturity of their assets may be as high as sixty days. Accordingly, their shares are distinct instruments and belong in a gross aggregate.

Figure 1.1 gives rise to a few immediate observations. First, the market for US dollar–denominated money-claims is huge, exceeding \$25 trillion on a gross basis. (By way of comparison, total outstanding US mortgage debt is about \$14 trillion.) Second, this market grew rapidly in the run-up to the financial crisis. The 9.3% annualized growth rate of this market from 1995 to 2007 far exceeded the 5.4% annualized growth rate of nominal GDP over the same period. Third, this is primarily an institutional market, not a retail one. Apart from deposits, MMF shares, and physical currency, very few of these instruments are held directly by individuals.

It is worthwhile to look separately at the private and sovereign components of this asset class. As shown in figures 1.2 and 1.3, from 1995 to 2007 private money-claims grew at an annualized rate of 12.2%, far outstripping the 3.9% growth rate of sovereign money-claims over the same period. This trend reversed itself with the government’s intervention during the financial crisis. The private aggregate plunged after 2007, while the sovereign aggregate soared. Interestingly, most of the crisis-related

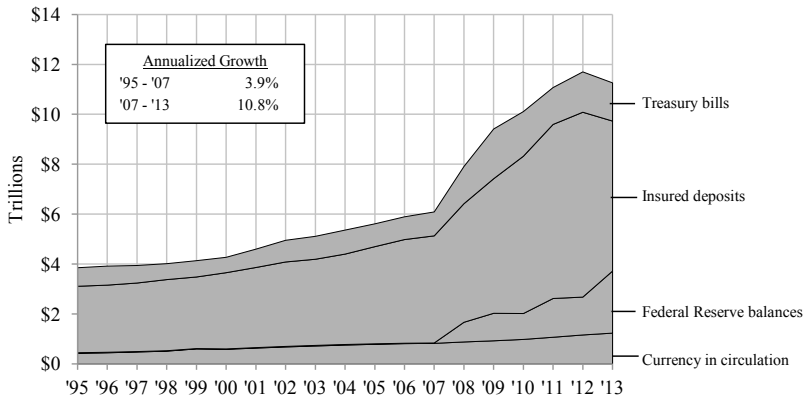


FIGURE I.3. Gross sovereign money-claims outstanding
 Source: See chapter appendix.

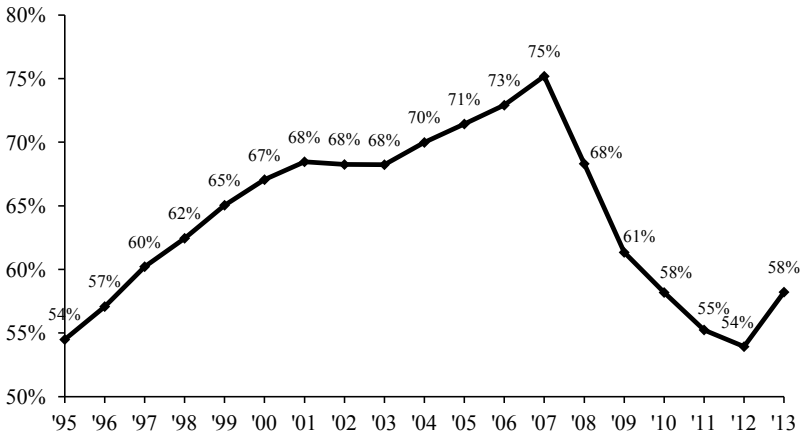


FIGURE I.4. Private money-claims as percentage of total
 Source: See chapter appendix.

growth in sovereign money-claims came not from the Federal Reserve’s balance sheet expansion—indeed, the figures reveal the modest size of the Fed’s balance sheet (the bottom two sovereign series) in relation to the overall market for money-claims—but rather from emergency increases in deposit insurance coverage.¹² Still, as shown in figure I.1, the postcrisis growth in sovereign money-claims was insufficient to offset the massive contraction in private market money-claims over the same period.

During the years preceding the crisis, private money-claims came to represent a steadily increasing share of the total. Figure I.4 illustrates this

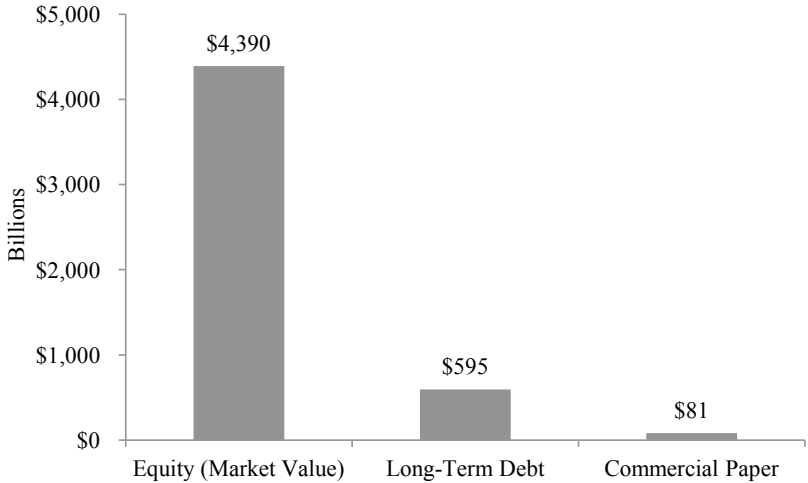


FIGURE 1.5. Selected sources of financing for the twenty-five largest US nonfinancial public companies by equity market capitalization

Source: Company 10-K filings for the 2013 fiscal year.

Note: General Electric is excluded on account of its large financial operations (GE Capital).

trend and its sudden reversal with the onset of the crisis. The increasing private share from 1995 to 2007 can be understood as an increasing privatization of the broad money supply in the precrisis years.

The figures above highlight an additional fact that is crucial from an institutional design perspective: for at least the past two decades, practically all money-claims have been issued by the financial sector and the government. That is to say, nonfinancial (commercial or industrial) issuers have been virtually nonexistent. In particular, only one series in figure 1.1 above—nonfinancial commercial paper—represents issuance by commercial or industrial firms. And that market is trivial—it is by far the smallest series in the figure. This fact comes as a surprise even to many financial specialists. It is commonly supposed that the money market consists largely of commercial paper issued by real-economy firms to finance their working capital. This could hardly be further from the truth.¹³

But isn't commercial paper nonetheless an important source of financing for the nonfinancial sector? The answer is no. Figure 1.5 shows selected sources of financing for the twenty-five largest nonfinancial US public companies. It is apparent that commercial paper is not a significant source of financing for corporate America today.¹⁴ This will be important later in

the book, when we discuss the practical implications of imposing legal restrictions on money-claim issuance.

Finally, the figures above raise an important conceptual point. It is typical to think of “money” as a neutral, default-free, uniform asset. But the figures show that the reality is more complicated. A large institution doesn’t have the luxury of holding its entire cash balance in the form of insured deposits; the \$250,000 cap on deposit insurance coverage makes this impracticable. And a large *uninsured* bank account presents unacceptable credit risk.¹⁵ The “cash and equivalents” line on the balance sheet of any large institution therefore consists of some combination of the instruments shown in figure 1.1. This is the institutional reality of money today.

What’s Different about the Money Market?

I noted above that even though cash equivalents do not generally function as a medium of exchange, they are nonetheless classified with cash (and differently from longer-term bonds) in a variety of disparate settings. Before turning to a fuller discussion of why this might be, it is useful to do a quick survey of what those settings are. We will first look at four contexts: accounting, financial markets, law, and monetary aggregates. We will then take a closer look at how this issue is treated within the field of economics, including the curious stance of the standard textbooks.

First there is accounting. “Cash equivalents” is an accounting term of art. The accounting definitions are instructive and worth reproducing substantially in full. Under US generally accepted accounting principles, the definition is as follows:

Cash equivalents are short-term, highly liquid investments that are both: (a) Readily convertible to known amounts of cash [and] (b) So near their maturity that they present insignificant risk of changes in value because of changes in interest rates. Generally, only investments with original maturities of three months or less qualify under that definition.

Examples of items commonly considered to be cash equivalents are Treasury bills, commercial paper, money market funds, and federal funds sold (for an enterprise with banking operations). Cash purchases and sales of those investments generally are part of the enterprise’s cash management activities rather than part of its operating, investing, and financing activities, and details of those transactions need not be reported in a statement of cash flows.¹⁶

The corresponding definition under international accounting standards is similar:

Cash equivalents are held for the purpose of meeting short-term cash commitments rather than for investment or other purposes. For an investment to qualify as a cash equivalent it must be readily convertible to a known amount of cash and be subject to an insignificant risk of changes in value. Therefore, an investment normally qualifies as a cash equivalent only when it has a short maturity of, say, three months or less from the date of acquisition. Equity investments are excluded from cash equivalents unless they are, in substance, cash equivalents, for example in the case of preferred shares acquired within a short period of their maturity and with a specified redemption date.¹⁷

To classify as a cash equivalent under either of these accounting standards, it is not enough that an instrument be liquid; it must also have an insignificant risk of changes in price. This means we are talking about short-term debt, since long-term debt fluctuates in price with changes in market interest rates. The maturity cutoff is three months.¹⁸ An instrument with a longer maturity is not a cash equivalent but an investment security. The financial reporting implications are significant. Unlike investment securities, cash equivalents are classified with checkable deposits and currency on the balance sheet. Furthermore, purchases and sales of cash equivalents (unlike investment securities) need not be reported in the statement of cash flows; they are treated as exchanges of cash for cash. Both of the accounting standards above indicate that cash equivalents are held as part of the cash management function rather than for investment purposes. In fact, corporate treasurers, institutional investors, and other businesspeople typically refer to cash equivalents as just cash.

Second, consider financial markets terminology. “Money market”—which obviously suggests monetary attributes—has long been used in the financial and business world to signify the market for debt instruments that mature in a year or less. The market for longer-term claims, such as stocks and longer-term bonds, is of course called the *capital* market. A similar distinction prevails in the international financial markets. The international market for short-term debt instruments that are issued by financial institutions and denominated in nondomestic currencies is called the “Eurocurrency” market—again suggesting a functional similarity to cash.¹⁹ By contrast, the “Eurobond” market generally consists of longer-term obligations. Thus financial markets terminology distinguishes

between short-term and long-term debt. In these cases the customary maturity cutoff is one year.

Third, consider the law. US federal securities and investment company laws accord special status to short-term debt. Debt securities are generally exempt from registration under the Securities Act of 1933 so long as their maturities do not exceed nine months.²⁰ This exemption aligns the treatment of nondeposit short-term debt with that of bank deposits for securities registration purposes.²¹ Obligations that mature in nine months or less are also generally exempt from the Securities Exchange Act of 1934, including its antifraud provisions.²² Likewise, under the Investment Company Act of 1940, holders of short-term paper (maturity of nine months or less) are not counted in determining whether an issuer qualifies for the private issuer exemption (generally available only to entities with a hundred or fewer securities holders).²³ Moreover, the Securities and Exchange Commission staff has indicated that when interpreting the term “cash items” in the Investment Company Act, the “essential qualities” it looks for are “a high degree of liquidity and relative safety of principal”²⁴—a characterization that basically tracks the accounting definition of cash equivalent quoted above. Note that the essential quality of a cash item is *not* that the instrument function as a medium of exchange.

Fourth, consider the treatment of short-term debt in monetary aggregates. Central bankers have long included various types of short-term debt in their broad measures of the money stock. In particular, M₃ monetary aggregates consist of some categories of nondeposit cash equivalents, albeit not all of them. The Federal Reserve stopped reporting its M₃ aggregate in 2006, but other central banks, including the European Central Bank (ECB), do still report M₃ measures. The ECB’s M₃ aggregate includes debt instruments with maturities of up to two years that are issued by what it calls “monetary financial institutions” (MFIs). The ECB refers to MFIs located in the euro area as the “money-issuing sector.” According to the ECB, “Broad money (M₃) comprises M₂ and marketable instruments issued by the MFI sector. Certain money market instruments, in particular money market fund (MMF) shares/units and repurchase agreements are included in this aggregate. A high degree of liquidity and price certainty make these instruments close substitutes for deposits.”²⁵ Note the reference here to “price certainty” as an essential feature. As with the accounting standards, liquidity is not enough.

Now let’s return to economics. This chapter began by noting a definitional tension. Some economists reject using “money” to refer to instru-

ments that do not function as a medium of exchange; they have called it “weird slang,” “an abuse of the term,” and “unambiguously” wrong. Other economists, though, have taken a different view. We saw that Milton Friedman used a broader conception of money. Notably, so did Henry Simons, another towering figure in University of Chicago economics. “Much is gained by our coming to regard demand deposits as virtual equivalents of cash,” Simons wrote in 1934. “But the main point is likely to be lost if we fail to recognize that savings-deposits, treasury certificates [short-term Treasury securities], and even commercial paper are almost as close to demand deposits as are demand deposits to legal-tender currency.”²⁶ Simons opined that “short-term debts . . . are . . . closely akin to money and demand deposits, since they provide in normal times an attractive and effective substitute medium in which the liquid ‘cash’ reserves of individuals may be held.”²⁷

This broader usage is common within economics today. Consider a few examples from prominent thinkers. Robert Lucas and Nancy Stokey observe that certain types of securities are “close to cash” and that the repo market performs for large institutions “the same function that commercial banks perform for smaller depositors.”²⁸ Paul Krugman says that “repo and other kinds of short-maturity obligations are, from an economic point of view, more or less equivalent to deposits.”²⁹ Gary Gorton refers to various types of short-term debt as “forms of money” and “private money.”³⁰ Jeremy Stein says that the financial sector’s short-term debt obligations are a form of “private money” and offer “monetary services.”³¹ Marvin Goodfriend says that short-term debt instruments offer “monetary services.”³² John Cochrane says that “short-term debt *is* money.”³³ In short, many leading economists use terms like money and cash in reference to short-term debt instruments that are not a transactions medium.³⁴ Their usage aligns with the accounting, legal, and financial markets usage I described above.

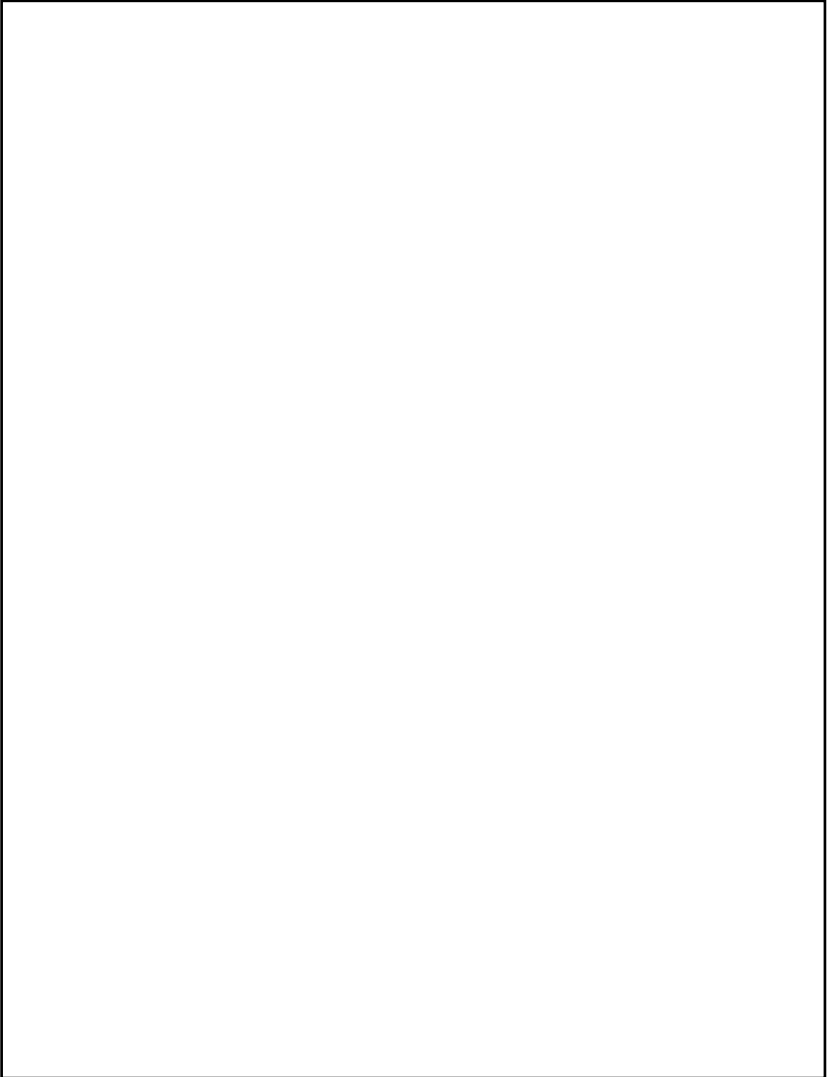
Given this widespread recognition that nondeposit short-term debt serves a monetary function, one might expect this topic to receive some attention in the leading textbooks on macroeconomics and on money and banking. Interestingly, this is not the case. Consider the leading macro text, Gregory Mankiw’s *Macroeconomics*.³⁵ That text devotes an early chapter to the monetary system, including discussions of money supply measurement, the role of banks in money creation, and central banking operations. The institutional setting is very much front and center here. Yet a reader of Mankiw’s textbook never learns of the existence of cash equivalents,

by this or any other name (“near money” doesn’t appear either). Having defined money as the stock of assets used for transactions, the text informs us that “the quantity of money is the quantity of those assets.” While Mankiw’s textbook does acknowledge that there can be some ambiguity in determining which assets to include in measures of the money supply, it mentions only two examples of close calls: savings deposits that “are almost as convenient [as demand deposits] for transactions” and MMF accounts that offer check-writing privileges and therefore “can be easily used for transactions.” The emphasis here is clearly on the medium of exchange function. After briefly mentioning these borderline cases, the textbook turns to an extended description of the institutional structure of the monetary system—one in which currency and demand deposits are presented as the only components of the money supply. Cash equivalents and their issuers make no appearance.

The leading money and banking text, Frederic Mishkin’s *The Economics of Money, Banking, and Financial Markets*,³⁶ offers a very similar analysis. That text devotes a chapter to the question, “What is money?” It defines money as anything that is generally accepted in payment for goods and services, more or less in line with Mankiw. Promisingly, the chapter notes that “the problem of measuring money has recently become especially crucial because extensive financial innovation has produced new types of assets that might properly belong in a measure of money.” Curiously, though, the chapter contains no discussion of cash equivalents or near monies. It merely notes in passing that the Federal Reserve includes in its broadest monetary aggregate certain assets “that have check-writing features” and other assets “that can be turned into cash quickly at very little cost.” The latter phrase is suggestive, but it is vague—after all, many *equity* securities can be turned into cash quickly at very little cost—and there is no elaboration. Readers learn nothing here about cash equivalents/near monies. When the Mishkin text turns to an analysis of institutional structure of the monetary system, the money supply again consists exclusively of currency and checkable deposits, and cash equivalents and their issuers are completely absent.

What is particularly interesting about the Mishkin textbook is that it *does* offer a fairly detailed description of the money markets. However, that description appears in a separate chapter that surveys the financial system. It is completely disconnected from the discussions of the attributes of money, the measurement of the money supply, and the institutional structure of the monetary system. Organizationally, the discussion of the

money markets is treated as a matter of finance, not money; there is no recognition that the money markets and money might be related in some way. Indeed, Mishkin goes out of his way to emphasize that they are different things. “Note that the term *market for money* refers to the market for the medium of exchange, money,” he writes. “This market differs from the *money market* referred to by finance practitioners, which, as discussed in [another chapter], is the financial market in which short-term debt instruments are traded.”



Notes

Preface

1. Ben S. Bernanke, “Reflections on a Year of Crisis,” remarks at the Federal Reserve Bank of Kansas City’s Annual Economic Symposium, Jackson Hole, Wyoming, August 21, 2009.

2. For example, see Paul Krugman, “Six Doctrines in Search of a Policy Regime,” *The Conscience of a Liberal* (blog), *New York Times*, April 18, 2010. “Rather oddly,” wrote Krugman, “there hasn’t been much discussion of formally extending something like deposit insurance to the short-term liabilities of shadow banks.” See also Edward Conard, *Unintended Consequences: Why Everything You’ve Been Told about the Economy Is Wrong* (New York: Portfolio/Penguin, 2012), chap. 7.

3. I borrow “thingify” from a classic work of legal realism: Felix Cohen, “Transcendental Nonsense and the Functional Approach,” *Columbia Law Review* 35, no. 6 (1935): 811. The legal realists were influenced by William James, who remarked on “our inveterate human trick of turning names into things.” William James, *Pragmatism* (1907), in *Pragmatism and The Meaning of Truth* (Cambridge, MA: Harvard University Press, 1978), 46.

4. “The only simplicity for which I would give a straw,” Holmes wrote, “is that which is on the other side of the complex—not that which never has divined it.” Letter from Oliver Wendell Holmes Jr. to Georgina Harriet Pollock, October 24, 1902, in *Holmes-Pollock Letters: The Correspondence of Mr. Justice Holmes and Sir Frederick Pollock, 1874–1932*, ed. Mark DeWolfe Howe (Cambridge, MA: Harvard University Press, 1941), 1:109.

5. Quoted in Walter Isaacson, “How Steve Jobs’ Love of Simplicity Fueled a Design Revolution,” *Smithsonian Magazine*, September 2012.

Introduction

1. Alexis de Tocqueville, “Paris on the Morrow of the 24th of February and the Next Days” (1850), in *The Recollections of Alexis de Tocqueville* (1893), trans. Alexander Teixeira de Mattos (New York: Macmillan, 1896), 101.

2. For example, see Henry C. Simons, “A Positive Program for Laissez Faire: Some Proposals for a Liberal Economic Policy” (1934), in *Economic Policy for a Free Society* (Chicago: University of Chicago Press, 1948); Lauchlin Currie, “A Proposed Revision of the Monetary System of the United States: Submitted to Secretary of the Treasury Henry Morgenthau” (1934), in *The Supply and Control of Money in the United States* (1935; repr., New York: Russell and Russell, 1968); Irving Fisher, *100% Money* (1935), 3rd ed. (New Haven, CT: City Printing, 1945).

3. Hyman P. Minsky, *Stabilizing an Unstable Economy*, rev. ed. (New York: McGraw-Hill, 2008), 194.

4. “Shadow banking” was coined in the early stages of the recent crisis by Paul McCulley, who used the term in reference to a class of investment conduits that funded themselves with short-term debt. See Paul McCulley, “Teton Reflections,” *PIMCO Global Central Bank Focus*, August/September 2007.

5. Gary B. Gorton, *Slapped by the Invisible Hand: The Panic of 2007* (New York: Oxford University Press, 2010), 15.

6. Some readers may be unaccustomed to thinking of a deposit as an “instrument” that a bank “issues,” but that’s what it is. See chapter 2.

7. Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States, 1867–1960* (Princeton, NJ: Princeton University Press, 1963), 351, 300.

8. See Barry Eichengreen, *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939* (New York: Oxford University Press, 1992), 18.

9. Ben S. Bernanke, “On Milton Friedman’s Ninetieth Birthday,” address at the Conference to Honor Milton Friedman, University of Chicago, November 8, 2002.

10. See 12 U.S.C. § 378(a)(2).

11. If a deposit bank were to replace its deposit obligations with bond financing, it would be transformed into an ordinary finance company—a business model requiring no special charter.

12. See chapter 8 for a description of US deposit bank portfolio constraints.

13. See 12 U.S.C. § 24(Seventh).

14. See 12 U.S.C. § 1813(1).

15. Douglas W. Diamond, remarks at the Panel Discussion on Financial Regulation, Becker Friedman Institute, University of Chicago, November 6, 2010 (comment appears at the eight-minute mark).

16. The concept of “intrinsic” value is admittedly rather slippery. I’m just making the self-evident point that a twenty-dollar bill is worth more than the paper it’s printed on. This book does not address the merits of commodity-based money. The difficulties with a commodity standard have been dealt with extensively elsewhere.

For example, see Milton Friedman, “Should There Be an Independent Monetary Authority?” in *In Search of a Monetary Constitution*, ed. Leland B. Yeager (Cambridge, MA: Harvard University Press, 1962), 220–24; Paul Krugman, “The Gold Bug Variations,” *Slate*, November 22, 1996; Ben S. Bernanke, *The Federal Reserve and the Financial Crisis* (Princeton, NJ: Princeton University Press, 2013), 10–14.

17. See 18 U.S.C. §§ 470–477.

18. There are exceptions; for example, see Friedrich A. Hayek, *Denationalisation of Money*, 3rd ed. (London: Institute of Economic Affairs, 1990). Other laissez-faire perspectives include George A. Selgin, *The Theory of Free Banking: Money Supply under Competitive Note Issue* (Lanham, MD: Rowman and Littlefield, 1988), and Lawrence H. White, *The Theory of Monetary Institutions* (Malden, MA: Blackwell, 1999).

19. Milton Friedman, *A Program for Monetary Stability* (New York: Fordham University Press, 1960), 8. Friedman and his coauthor Anna Schwartz later revisited these comments and reached a somewhat ambiguous conclusion. See Milton Friedman and Anna J. Schwartz, “Has Government Any Role in Money?” in *Money in Historical Perspective*, ed. Anna J. Schwartz (Chicago: University of Chicago Press, 1987). The authors expressed openness to the idea that a commodity-based currency might arise through market forces alone. Nonetheless, they concluded on a note of pragmatic conservatism, declining to advocate government withdrawal from monetary affairs.

20. James M. Buchanan, “The Constitutionalization of Money,” *Cato Journal* 30, no. 2 (2010): 251, 256.

21. The period from 1836 to 1863 is called the Free Banking Era in US banking history, but as many others have pointed out, this is a misnomer. Banks during that period were subject to strict portfolio constraints and other regulatory requirements at the state level.

22. Proponents have included Irving Fisher and Milton Friedman. See chapter 6 for a discussion.

23. I believe this insight is attributable to Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning* (New Haven, CT: Yale University Press, 1919), 36.

24. 12 U.S.C. § 1821.

25. In the midst of the recent crisis, the Federal Deposit Insurance Corporation insured noninterest-bearing transaction accounts to an *unlimited* amount on an emergency basis. This was the FDIC’s “Transaction Account Guarantee.” See 12 C.F.R. § 370.4.

26. Article-length treatments have understandably addressed selected topics in isolation rather than approaching the monetary framework holistically, as an integrated design project. Notable entries in this literature include Christina D. Romer and David H. Romer, “Institutions for Monetary Stability,” in *Reducing Inflation: Motivation and Strategy*, ed. Christina D. Romer and David H. Romer (Chicago:

University of Chicago Press, 1997); Alan S. Blinder, “Monetary Policy Today: Sixteen Questions and About Twelve Answers,” in *Central Banks in the 21st Century*, ed. Santiago Fernández de Lis and Fernando Restoy (Madrid: Banco de España, 2006); Ricardo Reis, “Central Bank Design,” *Journal of Economic Perspectives* 27, no. 4 (2013): 17–44.

27. By “deposit banks” I mean all chartered depository institutions—banks, thrifts, and credit unions—whether chartered at the state or the federal level.

28. The world may be moving in this direction anyway. For example, see Associated Press, “Sweden Moving towards Cashless Economy,” CBSNews.com, March 18, 2012. See also Kenneth S. Rogoff, “Costs and Benefits to Phasing Out Paper Currency,” *NBER Macroeconomics Annual* 29, no. 1 (2014).

29. Friedman and Schwartz make a similar observation, noting that the word “deposit” is “misleading” because it “connotes the placing of something in safekeeping, as in a 100 per cent reserve banking system.” Milton Friedman and Anna J. Schwartz, *Monetary Statistics of the United States: Estimates, Sources, Methods* (New York: National Bureau of Economic Research, 1970), 59n4.

30. See chapter 5.

31. Nick Rowe aptly describes this structure as one of “asymmetric redeemability.” Nick Rowe, “What Makes a Bank a Central Bank?” *Worthwhile Canadian Initiative* (blog), October 29, 2009.

32. Along similar lines, a leading commercial law scholar writes that “underlying much of the oddity of negotiable instruments law is our unthinking assumption that paper matters.” James Steven Rogers, *The End of Negotiable Instruments: Bringing Payment Systems Law Out of the Past* (New York: Oxford University Press, 2012), 64.

33. Of course, member banks would need to own some real and personal property to conduct their business. They would also be allowed to enter into derivative contracts for hedging purposes.

34. When I refer in this book to the “desired” money supply, I am not advocating anything like money supply targeting. I just mean that any approach to monetary policy will result in some positive quantity of money outstanding. The (endogenous) quantity of money that emerges from “good” monetary policy—whatever one’s conception of good monetary policy might be—is all I mean by the desired money supply.

35. “Trade credit” refers to IOUs issued in exchange for bona fide goods or services. For accounting purposes, trade credit generally appears as “accounts payable” (for the obligor) or “accounts receivable” (for the creditor) rather than as “borrowings” or “loans.”

36. See 15 U.S.C. § 1.

37. I am referring to the US Bankruptcy Code’s automatic stay. See 11 U.S.C. § 362. As a formal matter the automatic stay applies to contractual remedies as opposed to rights, but surely everyone agrees that rights without remedies are illu-

sory. The classic statement of this point is Oliver Wendell Holmes Jr., “The Path of the Law,” *Harvard Law Review* 10, no. 8 (1897): 457–78.

38. Consequently there would be no such thing as, for example, a money market mutual fund (MMF). Instead there would be a single system of money creation firms (member banks) operating under a single set of terms and conditions and within a single regulatory and supervisory apparatus. The reformed monetary system would get the Securities and Exchange Commission (which regulates MMFs) out of the monetary business, which falls outside its expertise and core competency.

39. See Banking Act of 1933, Pub. L. No. 73-66, §§ 20–21, 48 Stat. 162, 188–89.

40. See Gramm-Leach-Bliley Act, Pub. L. No. 106-102, § 101, 113 Stat. 1338, 1341 (1999).

41. See Federal Reserve Act §§ 23A–23B, 12 U.S.C. §§ 371c–371c-1.

42. The proper calibration of these fees is an important question and is addressed in future chapters. Essentially, the fees are designed to replicate the financing costs that member banks would incur were they to replace their monetary liabilities with longer-term borrowings in the private markets.

43. Before the enactment of the Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010), the FDIC was required to declare “dividends” from the deposit insurance fund to participating deposit banks once the fund reached a certain size in relation to outstanding insured deposits. Dodd-Frank gave the FDIC discretion to suspend or limit the declaration of dividends. See Dodd-Frank Act § 332, 12 U.S.C. § 1817(e). Even as modified, though, the deposit insurance system does not function as a source of government revenue.

44. Chapter 5 will qualify this conclusion; we will see that “fiscal smoothing” considerations may provide an independent rationale for imposing risk constraints on member banks in this system.

45. Cap adjustments are just one tool of monetary policy in the reformed system, analogous to reserve requirement adjustments in the current setup. Other tools exist, particularly for fine-tuning. See chapter 9.

46. To be clear, this book is agnostic on monetary policy *rules* and *operating targets*. I assume that the monetary authority operates under a broad macroeconomic policy mandate, such as the Federal Reserve’s current dual mandate of full employment and price stability. See Federal Reserve Act § 2A, 12 U.S.C. § 225a.

47. Intraday credit is institutionally distinct from the discount window. For a technical overview, see Federal Reserve System, “Guide to the Federal Reserve’s Payment System Risk Policy on Intraday Credit,” July 2012.

48. In practice, sovereign debits would need to be slightly more expensive than r-currency liabilities to give member banks an incentive to service accounts. See chapter 9.

49. In bank regulatory parlance, they have a “0% risk weight.”

50. Friedman, *Program for Monetary Stability*, 38.

51. For a good description of this funding structure, see Darrell Duffie, “The Failure Mechanics of Dealer Banks,” *Journal of Economic Perspectives* 24, no. 1 (2010): 51–72.

Chapter One

1. John Hicks, *Value and Capital*, 2nd ed. (1946; repr., Oxford: Clarendon Press, 2001), 168, 163.

2. James Hamilton, “M₃ or Not M₃?” *Econbrowser* (blog), May 30, 2006.

3. Nick Rowe, “Money, Barter, and Recalculation,” *Worthwhile Canadian Initiative* (blog), December 13, 2010.

4. Nick Rowe, “The Return of Monetarism,” *Worthwhile Canadian Initiative* (blog), March 3, 2009.

5. Anat R. Admati and 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.

6. Milton Friedman and Anna J. Schwartz, *Monetary Statistics of the United States: Estimates, Sources, Methods* (New York: National Bureau of Economic Research, 1970), 90, 137, 104.

7. Milton Friedman, *The Optimum Quantity of Money* (1969; repr., New Brunswick, NJ: Transaction, 2006), 3.

8. David Laidler makes a seemingly similar argument about the relation between precautionary money holdings and price stickiness, though his argument is not easy to decipher. See David Laidler, *Taking Money Seriously and Other Essays* (Cambridge, MA: MIT Press, 1990), 9–14.

9. For a prescient analysis of this institutional dichotomy, see Jonathan R. Macey and Geoffrey P. Miller, “Nondeposit Deposits and the Future of Bank Regulation,” *Michigan Law Review* 91, no. 2 (1992): 237–73.

10. I will elaborate on this definition in chapter 9 for purposes of establishing an operative legal category.

11. Omitted categories include interests in enhanced cash funds and cash plus funds; prime brokerage free credit balances; federal funds purchased; auction-rate securities; and variable-rate demand notes.

12. This increased coverage was attributable to two policy measures: first, the statutory increase in the deposit insurance cap from \$100,000 to \$250,000 (see Emergency Economic Stabilization Act of 2008 § 136, 12 U.S.C. § 5241; Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 335, 124 Stat. 1376, 1540 (2010)); and second, the Federal Deposit Insurance Corporation’s Transaction Account Guarantee, which temporarily removed the deposit insurance cap for noninterest-bearing demand deposit obligations (see 12

C.F.R. § 370.4). The termination of the latter program is responsible for the uptick in uninsured deposits and the corresponding downtick in insured deposits after 2012.

13. One expert notes that only about 3% of prime MMF assets are invested in paper issued by nonfinancial firms. See David S. Scharfstein, “Perspectives on Money Market Mutual Fund Reforms,” testimony before the Committee on Banking, Housing, and Urban Affairs, US Senate, June 21, 2012.

14. Similarly, Scharfstein calculates that commercial paper represented only 1.6% of the liabilities of nonfinancial firms as of early 2012. *Ibid.*

15. For a nuanced discussion of this issue, see Zoltan Pozsar, “Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System,” IMF Working Paper 11/190, August 2011.

16. Financial Accounting Standards Board, “Statement of Cash Flows,” Statement of Financial Accounting Standards 95, §§ 8–9.

17. International Accounting Standards Board, “Statement of Cash Flows,” International Accounting Standard 7, § 7.

18. This book uses “cash equivalents” slightly more loosely than the accountants would have it, inasmuch as I am not adhering to a three-month cutoff.

19. The “Euro” prefix is misleading, since the issuer need not be European. See chapter 9 for an analysis of this market.

20. See Securities Act of 1933 § 3(a)(3), 15 U.S.C. § 77c(a)(3).

21. Securities issued by deposit banks are exempt from registration. See Securities Act of 1933 § 3(a)(2), 15 U.S.C. § 77c(a)(2).

22. See Securities Exchange Act of 1934 § 3(a)(10), 15 U.S.C. § 78c(a)(10).

23. See Investment Company Act of 1940 §§ 3(c)(1) & 2(a)(38), 15 U.S.C. §§ 80a-3(c)(1) & 80a-2(a)(38).

24. Securities and Exchange Commission, No-Action Letter, Willkie Farr & Gallagher, October 23, 2000.

25. European Central Bank website.

26. Letter from Henry Simons to Irving Fisher, July 4, 1934, quoted in Ronnie J. Phillips, *The Chicago Plan and New Deal Banking Reform* (New York: M. E. Sharpe, 1995), 90.

27. Henry C. Simons, “A Positive Program for Laissez Faire: Some Proposals for a Liberal Economic Policy” (1934), in *Economic Policy for a Free Society* (Chicago: University of Chicago Press, 1948), 320n7.

28. Robert E. Lucas Jr. and Nancy L. Stokey, “Liquidity Crises: Understanding Sources and Limiting Consequences; A Theoretical Framework,” *Region*, June 2011, 2, 12.

29. Paul Krugman, “The Amnesiac Economy,” *The Conscience of a Liberal* (blog), *New York Times*, October 26, 2011.

30. Gary B. Gorton, *Misunderstanding Financial Crises: Why We Don't See Them Coming* (New York: Oxford University Press, 2012), 5; Gary B. Gorton and

Guillermo Ordoñez, “Collateral Crises,” *American Economic Review* 104, no. 2 (2014): 343.

31. Jeremy C. Stein, “Monetary Policy as Financial Stability Regulation,” *Quarterly Journal of Economics* 127, no. 1 (2012): 58.

32. Marvin Goodfriend, “Money Markets,” *Annual Review of Financial Economics*, no. 3 (2011): 120.

33. 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 (Stanford, CA: Hoover Institution Press, 2014), 224.

34. Notable recent contributions to this literature include Pozsar, “Institutional Cash Pools”; Zoltan Pozsar and Manmohan Singh, “The Nonbank-Bank Nexus and the Shadow Banking System,” IMF Working Paper 11/289, December 2011; Adi Sunderam, “Money Creation and the Shadow Banking System,” *Review of Financial Studies* 28, no. 4 (2015): 939–77.

35. N. Gregory Mankiw, *Macroeconomics*, 8th ed. (New York: Worth, 2013), 85–86.

36. Frederic S. Mishkin, *The Economics of Money, Banking, and Financial Markets*, 10th ed. (Boston: Pearson, 2012), 59, 60, 104n4.

37. James Tobin, “The Interest-Elasticity of Transactions Demand for Cash,” *Review of Economics and Statistics* 38, no. 3 (1956): 241.

38. This is a standard account of cash management practices; see Stephen A. Ross, Randolph W. Westerfield, and Jeffrey Jaffe, *Corporate Finance*, 8th ed. (Boston: McGraw-Hill/Irwin, 2008), 752–54.

39. See Mankiw, *Macroeconomics*, 12–13.

40. Marcia Stigum and Anthony Crescenzi, *Stigum’s Money Market*, 4th ed. (New York: McGraw-Hill, 2007), 479.

41. Timothy Q. Cook and Robert K. Laroche, eds., *Instruments of the Money Market*, 7th ed. (Richmond, VA: Federal Reserve Bank of Richmond, 1998), 1.

42. Robin Greenwood, Samuel G. Hanson, and Jeremy C. Stein, “A Comparative-Advantage Approach to Government Debt Maturity,” *Journal of Finance* 70, no. 4 (2015): 1718, 1687.

43. Specifically, the figure shows “the average spread, over the period 1983–2009, between actual Treasury-bill yields (‘on-cycle’ Treasury bills with maturities from 1 to 26 weeks) and fitted yields, based on a flexible extrapolation of the Treasury yield curve.” *Ibid.*, 1688.

44. John Maynard Keynes, *The General Theory of Employment, Interest, and Money* (1936; repr., San Diego, CA: First Harvest/Harcourt, 1964), 167. This quotation commits a small act of poetic license; Keynes actually defined the interest rate as the reward for parting with “liquidity.” As we are about to see, though, Keynes used “liquidity”—at least in this context—to refer to assets with negligible price risk.

45. Stigum and Crescenzi, *Stigum’s Money Market*, 456.