

# **Banks *Are* Intermediaries of Loanable Funds**

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Banks *are* Intermediaries of Loanable Funds

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## Banks *are* Intermediaries of Loanable Funds

“I cannot help thinking that the nature and functions of deposit banking were much better understood forty years ago than they are now.”

Edwin Cannan (1921, 28)

Some bad ideas are as hard to kill as crabgrass. In the field of monetary economics, the real-bills doctrine is a notorious example (Humphrey 1982; Laidler 1983).<sup>1</sup> Less notorious, but no less obnoxious, is the claim that banks aren't financial intermediaries. Those who say so maintain that, instead of having to finance their lending by borrowing from others, as genuine intermediaries must, banks create all the funding they need “out of thin air.” James Tobin (1963) once called this the “Fountain Pen” theory of banking, alluding to its implication that bankers only needed fountain pens to be able to “write up” as many loans as they liked. Since fountain pens are themselves no longer used in granting credit, let's just call it the “Thin Air” theory.

This essay defends the supposedly naïve “Intermediation” theory of banking against its lately *de rigueur* “Thin Air” rival. It holds that the Intermediary theory of banking comes much closer to describing the workings of actual banking systems than the Thin Air alternative.

In making this case, there are several points about the Intermediary theory I find it especially necessary to stress. They are:

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<sup>1</sup> The real-bills doctrine holds that, so long as commercial and central banks confine their lending to the discounting of short-term commercial bills, supposedly representing goods under production, that lending can never result in inflation.

- (1) That the difference between it and the Thin Air theory is not a matter of “mere semantics”: both theories rely upon essentially the same understanding of what it means to say that banks are intermediaries, so that the difference between them is substantive;
- (2) that the Intermediary theory doesn’t suppose that banks must receive deposits of “physical” stuff (e.g., commodity money or fiat currency) to make loans, or (for that matter) that they ever have to deal in physical stuff at all, whether by taking it in or by handing it out;
- (3) that it is not contradicted by the fact that banks can “create” money in the form of their own transferable IOUs, and specifically in the form of current deposit account balances, or by the fact that the quantity of bank-created money at any time tends to be much larger than the quantity of base or high-powered money;
- (4) that it doesn’t require that banks rely *exclusively* upon retail deposits for funding;
- (5) that it doesn’t require that banks have sufficient funds of *any* sort on hand *before* they arrange loans;
- (6) that it is not the same thing as the textbook “multiplier” account of bank lending and deposit creation;
- (7) that it does not apply to fiat-money issuing central banks, the powers of which are more or less those that the Thin Air theory wrongly assigns to ordinary (commercial) banks.

I stress these points because a failure to appreciate some or all of them plays a prominent if not crucial part in arguments against the Intermediation theory and in favor of the Thin Air alternative.

### **Is the Thin Air Theory “Modern”?**

Luis Angeles (2019, 381) defines an intermediary as a firm that’s “in the business of collecting money from savers and transferring it to borrowers.” An alternative definition says that intermediaries are institutions that hold financial claims on others, which they finance by selling claims on themselves. The Intermediary theory of banking claims that banks fit these descriptions. In contrast, the Thin Air theory says that banks “are better viewed as institutions in the business of financing borrowers via money creation,” where their ability to create money is “independent of the actions of the general public” (ibid.). According to this view, bankers can grant credit simply by tapping away at computer keyboards, without also having others lend some of their real savings to them.

Angeles himself favors the Thin Air theory. And he is far from alone. That theory, which resembles thin neckties in its tendency to become fashionable every few decades, has recently gained support from some mainstream economist at the Bank of England (Keen 2022). Michael McLeay, Amar Radia, and Ryland Thomas (2014, 15) got things rolling with an article in the Bank’s *Quarterly Review* by calling the belief that banks are “simply...intermediaries, lending out deposits that savers place with them” a “common misconception” that “ignores the fact that, in reality in the modern economy, commercial banks are creators of deposit money.” The Thin Air theory got a much bigger boost soon afterwards, when Zoltan Jakab and Michael Kumhof emphatically declared, in the title of a Bank of England working paper, that “Banks are Not

Intermediaries of Loanable Funds,” “simply” or otherwise. “The only ‘resource’ banks require to make a loan,” they say in the most recent version of that paper (Jakab and Kumhof 2019, 4n9), “is a keyboard or, in earlier times, a pen.” Jakab and Kumhof call the Thin Air theory the “FMC” theory, where FMC stands for “financing through money creation.” They call the Intermediary theory the “ILF” theory, where ILF stands for “Intermediation of Loanable Funds.” The ILF theory, they say, is “counterfactual, and unrealistic in its implications” (ibid., 2).

Although Jakab and Kumhof’s working paper has given the Thin Air theory a new lease on life, that theory had already been around for a century when it first appeared. Back in 1921, it was popular enough for Edwin Cannan to make the first of several better-known attempts to counter it. In “The Meaning of Bank Deposits.” Cannan (1921) complained that

Instead of the old doctrine [that banks] can lend out their own capital *plus* what solvent customers lend to them (*alias* deposit with them), we have journalists and popular writers and chairman of large joint-stock banks persuading the public that banks have themselves created...thousands of millions of pounds by lending something which did not before exist to borrowers, who proceed to pay it to other people, who in their turn deposit it in the banks, and who could not have so deposited it unless the banks had lent.

Despite Cannan’s protest, by the early 1960s, many economists were agreeing with the non-economists whose opinions Cannan had complained about. All a bank needed to make a loan, according to James Tobin’s (1963, 1) description of what was then an orthodox or “old” view, was “‘fountain pen money’—money created by a stroke

of the bank president's pen when he approves a loan and credits the proceeds to the borrower's checking account." Bankers, this view held, "possess the widow's cruse," a "key to unlimited expansion" that has to be artificially restrained.<sup>2</sup> "The preferences of the public normally play no role in determining the total volume of deposits or the total quantity of money" (*ibid.*). This is, of course, precisely what today's Thin Air theorists maintain.

Tobin himself rejected the then "old" view in favor of a "new" one then being championed by John G. Gurley and Edward S. Shaw (1960)—a view that once again treated banks as intermediaries, much as Edwin Cannan and most other economists had done decades before. Thanks to Gurley, Shaw, and Tobin's efforts, the Thin Air theory of banking fell out of favor again for another half a century.

That there's nothing new about current versions of the Thin Air theory isn't itself a shortcoming of that theory. However, I hope to show that it is also as true today as it was when Tobin wrote that, all things considered, "It would seem well to return to the nineteenth century doctrine that banks receive money from one set of people and lend it to another" (*ibid.*, 35).

### **What is an Intermediary?**

To decide whether banks qualify as intermediaries or not, its necessary to understand clearly what intermediation means and the ways in which banks do and do not differ from other firms generally recognized as intermediaries.

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<sup>2</sup> A "cruse" is a pottery jar or jug used to store foodstuffs. The expression "widow's cruse," referring to an inexhaustible supply, derives from the Biblical story, in 1 Kings 17, of a widow Elijah was sent to for a meal. Although the widow's cruse had had very little in it when Elijah showed up, for the occasion God saw to it that it never run out.

Financial intermediation can take many forms, and banks might engage in some of them but not others. But in their discourse both those who subscribe to the Intermediation theory and that theory's critics have a particular sort of intermediation in mind, namely, intermediation between savers and borrowers, or "investment intermediation." (Recall, for example, Luis Angeles's definition of an intermediary quoted earlier.) In any economy there are people who wish to spend or invest beyond their current earnings and others who wish to spend less. Persons in the first set may borrow to satisfy their wants; those in the second save by accumulating either debt-based financial assets, including informal IOUs, promissory notes, and bonds, or equity-based assets such as common stock. Savings may be invested in these assets either directly or through middlemen or brokers, also known as investment intermediaries.

Savings invested in debt-based assets are *lent*. Investment intermediaries that deal in debt borrow from savers and lend in turn to other borrowers. A venture capital firm that supplies seed money to a startup by purchasing an equity stake in it is an equity-based investment intermediary. A firm that supplies seed money to a startup by lending to it—that is, by supplying "venture debt" rather than venture capital—is no less obviously a debt-based investment intermediary. The same goes for a bond mutual fund. It's generally understood that these firms' investment capacity is determined by their ability to gather real savings from others.

Commercial banks were once considered equally obvious examples of debt-based investment intermediaries. But as I've noted, many people, including some economists, now say that modern banks don't qualify. "Bank financing of investment



projects,” Kumhof and Jakab (2015, 53) say, in a brief article summing-up their working paper,

does not require prior saving, but the creation of new purchasing power... Once purchases have been made and sellers (or those further down the chain of transactions) deposit the money, they become savers in the national account statistics, but this saving is an accounting consequence—not an economic cause—of lending and investment.

Of course, the “savings” Jakab and Kumhof refer to here are nominal savings only. So even in the long run, according to their thinking, bank lending is independent of banks’ access to *real* savings. The Intermediary theory maintains, in contrast, that ordinary banks’ lending capacity is generally constrained by their need to tap into *real* savings—savings that they are unable to create, either individually or collectively, out of thin air.<sup>3</sup>

Note that critics and defenders of the Intermediary theory all agree concerning what it means to call a bank an intermediary. Rather than being a matter of semantics, the disagreement between them is substantive. It is a disagreement concerning what *real resources* banks do or do not require in order to make loans, and make them profitably. It is substantive, and it is also important, for as I hope will become clear, whether or not banks are intermediaries has important implications for both monetary and bank regulatory policy.

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<sup>3</sup> This is not to say that there are no exceptions to the general rule. I will refer to these in due course.

## **Must Intermediaries Deal in “Physical Savings”?**

Jakab and Kumhof offer at least two distinct reasons for holding that banks differ from genuine investment intermediaries. One, which is common to most statements of the Thin Air theory, is that banks’ liabilities serve as money. The other, which is given particular emphasis by Jakab and Kumhof, is that banks’ dealings consist of “purely financial or bookkeeping transactions...as opposed to physical transactions.” Jakab and Kumhof (2019, 1) claim that, because banks can make loans without first receiving “physical savings,” they don’t need to fund their lending with savings at all. A complementary argument holds that, to allow that a bank’s funding may consist not just of “physical savings” surrendered to it but of transfers from other banks is merely to implicitly concede the merit of the Thin Air theory, for what are such transfers if not so much “recycled” Thin Air, that is, funds that owe their existence to the fact that somewhere, some time ago, a banker created deposits with the stroke of a pen or by tapping away at a keyboard.

Taken literally, Jakab and Kumhof’s “physical savings” argument proves too much, for if dealing in “physical” commodities is what distinguishes genuine investment intermediaries from banks, then there have been few genuine investment intermediaries, bank or nonbank, since the days of the gold standard! Nor does letting irredeemable paper currency qualify as a physical commodity alter this conclusion: venture capital firms and bond mutual funds, no less than banks, deal in ledger entries, not paper money, and certainly not commodities in the ordinary sense of the term. The same may be said of practically all non-bank investment intermediaries. Even during the days of the gold standard, financial firms’ dealings in gold were sometimes quite limited. In well-developed financial systems, gold was mainly used in international

transfers and to settle interbank dues; and where settlement took place on the books of private clearinghouses or central banks, very little gold was needed even for that purpose.

Jakab and Kumhof's belief that, to qualify as an intermediary, a firm must deal in physical savings, causes them to conclude that "the only possible interpretation" of the Intermediation theory is one that sees banks as "akin to warehouses" (ibid.). But that conclusion is a non-sequitur: whether it deals in "physical savings" or not, the one thing an intermediary *isn't* is a warehouse. A firm *either* stores someone's property—which is what warehouses typically do—*or* it acquires it in order to lend most of to someone else. It cannot offer to store someone's property *and* lend it out—not legally, anyway. This is so because warehouse contracts differ fundamentally from bank deposit contracts. A warehouse stores, but does not take ownership of, property placed in it; its relationship with those who surrender property to it is that of bailer and bailee, not debtor and creditor. In contrast, a bank receiving a deposit becomes the rightful owner of the deposited sum, which it pays for with its IOUs.<sup>4</sup> Jakab and Kumhof's identification of bank-intermediaries with warehouses is therefore incoherent.

It's possible, though, that all Jakab and Kumhof really mean is that, to qualify as intermediaries, banks must pay out every loan they make in cash, meaning gold (in a gold standard system) or fiat currency (in a modern one), at the moment the loan is granted. In that case they would then have to have ("physical") cash on hand sufficient

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<sup>4</sup> This is not to deny that banks can offer separate intermediation and warehouse services, as banks do by both accepting ordinary deposits and providing their clients with safe-deposit box services. Nor does it rule out the possibility that banks started out as money warehouses that then discovered that they could get away with lending some of the coin they'd promised to store. That story, so often told about London's goldsmith bankers, appears nonetheless to be a myth (Selgin 2012).

to cover every loan granted, and they would be correspondingly dependent on deposits of such cash: recycled “fountain pen” money wouldn’t do. But they would not have to be “warehouses”: instead of promising to store deposited cash as so many warehouses might, they would merely gave depositors the right to have their cash back on demand.

This alternative notion of what it takes for banks to be intermediaries, meaning firms that lends no more than what others lend to them, isn’t incoherent. However, as I hope to show, it also isn’t correct.

### **What’s Really Different About Banks?**

Unlike the fact that banks deal in ledger entries, the fact that some of those ledger entries—those consisting of bank deposits—are “money,” meaning generally-accepted exchange media, really does distinguish banks from firms everyone considers to be investment intermediaries. Most arguments for the Thin Air theory, including Jakab and Kumhof’s, treat this feature of bank deposits as the key to banks’ supposed ability to lend without having to borrow from others. “Because banks’ liability to deliver current funds *is* current funds,” Jakab and Kumhof (2019, 4) say, “banks create their own funding in the act of lending.... No real resources need to be diverted from other users, by other agents, in order to be able [sic] to lend.” The only thing needed is the public’s “acceptance of the new purchasing power” banks create in payments, which acceptance “is never in question so long as bank deposits remain the universally accepted medium of exchange” (ibid., 4).

When a bank makes a loan, Thin Air theorists emphasize, it doesn’t hand the borrower a sack of coins, or bundles of paper money. Instead, the bank simply credits the borrower’s deposit account—a brand new account, if the borrower didn’t have one already—by the amount of the loan. In the discussion immediately to follow, I take this

for granted. Furthermore, I assume that the public doesn't hold currency at all, but instead employs bank deposits alone in making payments. Base or high powered money therefore consists solely of bank reserves in the form of ledger entries on a central bank's balance sheet. I will also assume, for the time being, that the total quantity of such reserves is fixed. It follows from this that banks alone are able to add too or subtract from the sum total of bank deposits, through changes in their lending activity. However, as I hope to show, it does *not* follow that the public's willingness to accumulate real bank deposits isn't a crucial determinant of the volume of bank lending.

Although Thin Air theorists sometimes treat the "writing up" of deposits that goes hand-in-hand with bank lending as something they've discovered, thereby suggesting that those who consider banks intermediaries are unaware of this,<sup>5</sup> there's no basis for this claim. One need only glance at Edwin Cannan's 1921 article to appreciate this. Where Cannan and other economists who consider banks intermediaries differ with Thin Air theorists isn't in assuming that banks make loans by handing out bags of coins or paper money. It's in denying that banks' ability to write up loans allows them to profitably extend credit without also having to borrow from others.

### **When is a Payment Finished?**

To appreciate why banks must borrow, it isn't sufficient to note that they have the material ability to credit borrowers' accounts with any sum they may desire. One must consider what happens *after* they do so; and doing this in turn requires that one understands how payments are accomplished using bank deposits.

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<sup>5</sup> Werner (2014) is an especially egregious example of this.

Although it has long been standard to regard such deposits, and current account balances in particular, as “money,” there was a time when they were instead considered money “substitutes,” and when the unqualified term “money” was reserved for the stuff banks promised to pay holders of their liabilities if asked. Once upon a time, that stuff consisted of precious metal coins. Today it means fiat paper money or deposits at a central bank, also known as “base” money.

The modern view is a natural counterpart of the definition of “money” as any “generally accepted medium of exchange.” Yet there are times when it’s worth recalling the old-fashioned distinction between bank liabilities that serve as such and “real” (“base”) money, one of which is when trying to understand how modern payments are accomplished.

When Jane swipes a debit card through the card reader at her grocer’s check-out counter, she may suppose that she’s paid for her groceries. But all she has really done is to send instructions to her bank to transfer funds from her account to the grocer’s. The actual payment consists of that transfer, which, if the grocer banks elsewhere, isn’t complete until Jane’s bank settles accounts with the grocer’s bank. Such settlement usually takes place at the end of each business day, though it may happen sooner and, with the advent of “real-time” payments, can even happen almost instantly. Were Jane to pay for her groceries by writing a check, on the other hand, her payment might not be completed, or made “final,” for several days, depending on how long the grocer takes to deposit the check, whether he does so early in the week or at week’s end, how long his bank takes to present the check to Jane’s bank for payment, and how long it then takes Jane’s bank to settle-up with the grocer’s bank. In any event, until interbank settlement occurs the possibility remains that the check will bounce for lack of funds in

Jane's account, or even that Jane's bank will go under. However low the odds of either event might be, when they do happen, they drive home the fact that bank-issued money is still in some respects not "real" money, and that payments made using it aren't complete until some "real" money changes hands.<sup>6</sup>

It follows from this understanding of payments made using bank deposits that it's only in a very superficial sense that banks can be said to "fund" their loans simply by creating such deposits. What really matters is whether they have, or will shortly have, "real" money enough to honor the IOUs they create. When Kumhof and Jakab (2016, 51, my emphasis) write that banks

fund new loans by creating new deposit money. *In other words*, whenever a new loan is made to a customer, the loan is *disbursed* by creating a new deposit of the same amount... ,

they confuse "disbursement"—the bookkeeping transaction that grants a borrower the right to start drawing on the lending bank—with "funding" of a loan in the meaningful sense of that term. This is hardly better than claiming that, because Jane has a bank account, a blank check, and a pen, she is able to "create" all the "funds" she needs for her purchases. It's of course true that Jane can make a check out for any amount, and that she may make a purchase using it. To that extent, she may be said to exercise her own per se "create" money. But if Jane makes the check out for more than the value of her bank account balance, it will bounce. Likewise, if a bank writes up a loan without

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<sup>6</sup> This is, admittedly, a very cursory treatment of rules that can become quite complicated in practice, depending on particular laws. For details concerning payments finality in the United States context, see Geva (2008).

either having borrowed, or arranging to borrow in short order, funds enough to back it up, it risks failing at settlement.

In short, as James Tobin understood, ordinary banks' no more possess a widow's cruse than Jane herself does.

### **What Happens When a Bank Lends without Borrowing?**

To see this more clearly, let's consider the fate of a bank—call it the Air Bank—that makes Jane a loan with no reserves on hand, and without being able to take advantage of an excess real demand for its IOUs, which for the moment we'll treat as identical to its deposits. Let's also assume that the *total* stock of bank reserves is given. Because we are dealing with an isolated bank, we can assume that the price level is independent of the bank's lending activities. (Later I'll consider what happens if banks attempt to lend in unison.)

Suppose the Air Bank credits Jane's account to the tune of \$5,000. If Jane is like most bank borrowers, she hasn't gone to the trouble of getting a loan for the sake of having money in the bank. Bank borrowers, Edwin Cannan (1921, 31) says, "do not borrow with the intention of retaining the article borrowed till repayment, but with the intention, which they carry out immediately...of parting with it in exchange for other things." Tobin (1963, 5) likewise observes that "Borrowers do not incur debt in order to hold idle deposits... The borrower pays out the money, and there is of course no guarantee that any of it stays in the lending bank." What Cannan and Tobin say is at least implicitly granted by Thin Air theorists as well, for to the extent that bank borrowers *do* hold on to borrowed bank balances, they both borrow those balances and lend them "back" to their bank. The case does not, therefore, contradict the claim that banks' capacity to lend is constrained by their access to real savings. (It does serve,



however, to neatly demonstrates the fact that acquisition of such savings is not the same thing as acquisition of “physical savings.” )

We have in any case assumed there is “no outstanding, excess demand” for the Air Bank’s IOUs, thereby ruling out possibility that Jane chooses to sit on the sum credited to her account. So she spends it. Let’s suppose that she buys a used Honda from Larry’s Lemons for \$5,000. Were Jane try to withdraw \$5,000 from the Air Bank so as to to pay in cash, it might fail at once. But since the Thin Air theory rests upon the assumption, which I also take for granted, that bank deposits are as good as cash, we’ll suppose that Jane instead makes a mobile payment and that the Air Bank approves the transfer. Now the bank Larry’s Lemons deals with—call it the Other Bank—has a \$5,000 claim against Jane’s bank, payable to Larry’s account. If its managers are feeling generous, they may allow Larry’s Lemons immediate access to the promised funds.

Were *this* the whole story, the Air Bank might lend money ‘til kingdom come without going bust. But we aren’t finished. Instead, at the end of the business day, the Air Bank has to settle up with all the other banks out there, including Other Bank.<sup>7</sup> Assuming that accounts would have balanced before Jane got her loan, this means having to come up with \$5,000 in “real” (base) money, meaning (to be current) Federal Reserve dollars—money that, by hypothesis, it doesn’t have. So, either the Air Bank manages to get a last-minute loan itself, or it defaults. In other words, it finds itself in the same situation it would have been in had Jane tried to cash-out her loan.

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<sup>7</sup> And the central bank: although the Fed and other central banks allow commercial banks to overdraw their accounts (that is, to have “negative” reserve balances) during the day, they usually charge a penalty for overnight borrowing, assuming they allow banks to resort to it at all.

It's easy to complicate the simple story just told. But as long as banks routinely settle their interbank obligations in “real” money, as they must in any competitive banking system in which bank deposits are redeemable on demand, it isn't easy to do so in a way that salvages the Thin Air theory. Suppose, for example, that Larry's Lemons also happens to bank at the Air Bank, and that it is happy to increase its balance there by the \$5,000 Jane paid it. Then the Air Bank wouldn't have to worry about being short \$5,000 at settlement time; but it wouldn't have to worry because “somewhere in the chain of transactions initiated by the borrower's outlays are found depositors [at the lending bank] who wish to hold deposits equal in amount to the new loan” (Tobin 1963, 6). The complicated story is, in other words, yet another violation of our assumption that there is no outstanding, excess demand for the Air Bank's IOUs, which is to say that it supposes that people are prepared to supply the bank with more real savings with which to fund its loans. It is therefore perfectly consistent with the claim that banks are intermediaries.

Jakab and Kumhof seem to completely overlook the implications of interbank settlement. In their working paper they use the term “settlement” only once, and then only in noting that central banks supply settlement media. They never suggest that banks actually *need* such media, let alone explain why they need them.

More temperate critics of the Intermediation theory allow that banks must be prepared to settle accounts with one another without seeming to realize the extent to which this fact weakens their critique. Thus McLeay, Radia, and Thomas (2019, 16), having claimed that, because they create money, banks are not “simply intermediaries,” and having also denied that “banks can lend out their reserves,” allow two pages later (1) that a bank that creates deposits in making a loan “may well ‘lose’ the deposits it has

created to...competing banks”; (2) that “this is likely to be problematic for the bank since it would increase the risk that it would not be able to meet all of its likely outflows”; and (3) that “if a given bank financed all of its loans this way, it would soon run out of reserves.” McLeay, Radia, and Thomas then say that a bank seeking to lend more will “try to attract additional liabilities” (presumably meaning more deposits) because having more will allow it to “increase its lending without running down its reserves” (ibid.). In other words, there is an important sense in which banks *do* “lend out their reserves,” by giving claims to base money which, once received by rival banks, entitle them to as many reserves. In other words, “in order to make loans, banks must borrow the necessary funds. In other words, banks are intermediaries.”<sup>8</sup>

To conclude, as James Tobin observed long ago, instead of being of crucial importance, the fact that banks, unlike generally recognized investment intermediaries, can “write up” deposit credits that qualify as money is something “superficial and irrelevant.”

### **How About a Real-World Illustration?**

Were banks really able to fund their lending by means of pen strokes and such, Edwin Cannan (1921, 33) observed, then absent strict reserve requirements and other such artificial constraints, “every little bank would soon be a big one.”

Some little banks have actually tried to become big banks by doing just what the Thin Air theory says banks can do. The 1772 failure of a real-world “Ayr Bank” (note the spelling), so known because its headquarters was in the town of Ayr, Scotland (its official name was Douglas, Heron & Company) may be the most striking example of

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<sup>8</sup> So far as the merit of the Intermediation theory is concerned, it doesn’t matter whether banks are intermediaries “simply,” whatever that means, or not.

this. Founded in 1769, the Ayr Bank was managed from the start much like the fictitious “Air Bank” discussed earlier—and with similar consequences. In just three years, thanks to its generous lending policies, it became a “colossus,” accounting for 40 percent of Scottish bank assets (Rockoff 2009, 18).

But, having employed its fountain pens and printing press (for the Ayr was a note-issuing bank) so much more generously than its rivals, the Ayr was also hemorrhaging reserves. As Hugh Rockoff reports (*ibid.*), it tried replenishing them “by drawing on London, and then redrawing when its drafts came due, thus piling up a large short-term debt in London.” But that desperate tactic merely delayed the inevitable by a few weeks, while compounding the Ayr’s ultimate losses. By proceeding as though the Thin Air theory were valid—that is, as if it could create credit “out of thin air”—the Ayr Bank tested that theory. And the theory failed as spectacularly as the bank itself.

The Ayr Bank case illustrates the general point that, even if it isn’t confronted with a run—that is, by depositors’ requests to withdraw “physical savings”—a bank can suffer by losing reserves to rival banks. This can happen, as it did in the Ayr Bank’s case, because the bank is overgenerous in lending. It can also happen simply because depositors choose to bank elsewhere. Finally, though less obviously, if the overall desire for bank deposits declines, the banking system as a whole will suffer, just as any industry must suffer from a decline in the real demand for its products or services. This will be so even if the total quantity of reserves in the banking system doesn’t change: in that case, the reduced overall demand for bank deposits will increase their velocity and,

with it, bank's demand for precautionary reserves (concerning which more anon), and this in turn will encourage banks to let their balance sheets shrink.<sup>9</sup>

In short, no bank or banking system can stay in business if no one wants to supply it with real savings, and no bank or set of banks can escape from this harsh reality by creating nominal deposits. So says the Intermediary theory of banking. And so says any perusal of the history of banks and banking.

### **What if Banks Lend in Unison?**

Some versions of the Thin Air theory aren't so obviously at odds with the stern realities of the banking business. One holds that, while adverse interbank settlements will eventually punish an individual bank that tries to get big by means of nothing but "a keyboard or...a pen," banking systems as a whole are subject to no like constraints. While any solitary bank that tests the Thin Air theory risks going broke, a coordinated expansion won't confront any of them with adverse clearings. Instead, each bank will find the amount due to it from other banks rising just as much as the amount it owes to them; and this will be so no matter how much credit they collectively create.

Thus McLeay, Radia, and Thomas (2014, 19), having admitted that individual banks cannot extend credit safely without borrowing from others, observe that

*if all banks simultaneously decide to try to do more lending, money growth may not be limited in quite the same way. Although an individual bank may lose deposits to other banks, it would itself be likely to gain some deposits as a result of the other banks making loans.*

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<sup>9</sup> If, on the other hand, the banks somehow managed to avoid shrinking in nominal terms, the increased velocity of deposits would lead to a rise in prices, which would reduce the real value of their balance sheets, and their shareholders' wealth, just as much.

Proponents of the Thin Air theory of banking view such “in concert” bank lending, as I refer to it elsewhere (Selgin 2001), not just as a hypothetical possibility but as a routine occurrence. Luis Angeles (2019, 387), for example, assumes that banks *typically* expand credit at the same time and to the same extent. (He also says, absurdly, that this assumption involves no “loss of generality”!) The assumption allows Angeles to demonstrate that bank loans are ultimately funded not by the public’s willingness to *hold* bank liabilities but by its mere willingness to *accept* them as money.” It follows that “The aggregate banking system...has no such financing worries” as confront an individual bank lending independently of the rest (ibid., 389).

But in a scarce-reserve system—I will come to the abundant-reserve case shortly—in-concert expansion is both highly unlikely and generally unprofitable for the banks that take part in it. Even if they succeed in coordinating their lending to keep the *mean* of their net settlements at zero, random variations in payments will confront banks with settlement “shocks”—non-zero net settlement obligations around that mean—where the size of the shocks increases with the overall scale of payments: In the simplest case, where the number of payments stays the same but prices increase, the size of both the average payment and of settlement shocks will increase to the same extent. Otherwise—if some of the extra spending instead takes the form of an increase in the *number* of payments—settlement shocks will still get bigger as the overall scale of payments increases, but less than proportionately.

In a scarce-reserve system banks can and do borrow from other banks to cover adverse xclearings they cannot meet using their reserve balances. But banks have only a limited appetite for such last-minute borrowing. Once that appetite has been satisfied, they prefer to respond to reserve shortfalls by limiting their lending. Just as one

participant in a three-legged race can't stumble without his or her partner stumbling, retrenchment of some banks forces the rest back into line.

Another way to understand the point made here is by noting that, even absent legal reserve requirements, banks' demand for reserves typically includes a "precautionary" component, the purpose of which is precisely that of settling unanticipated adverse clearings. The received microeconomic theory of banks' precautionary reserve demand implies that banks will seek to hold larger reserve cushions, relative to the total size of their balance sheets, as payment activity increases. This implies that, for any given stock of reserves *and real demand for bank deposits*, they will only lend so much, in-concert or otherwise.<sup>10</sup> (Below I will address the claim that central banks are bound to supply banks with all the reserves they need to expand credit indefinitely.)

Banks can, on the other hand, increase both their lending and the nominal quantity of bank reserves, despite a fixed quantity of reserves, in response to an increase in the public's real demand for bank deposits or, what amount to the same thing, an increase in the public's desire to have banks intermediate their real savings. Critics of the Intermediary theory often deny that this is possible, on the grounds that the public's attempts "to save more money in bank accounts comes simply at the expense of deposits that would have otherwise gone to companies in payment for goods and services" (McLeay, Radia, and Thomas (2014, 15). Although it's true that the companies whose earnings decline may choose to reduce their own holdings of bank

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<sup>10</sup> For the theory of the precautionary demand for money, and banks' demand for precautionary reserves in particular, see Whalen (1966), Tsiang (1969), Olivera (1971), Baltensperger (1974), and Knobel (1977). For a relatively recent and pertinent empirical study, referring to events during 2007-2008, see Ashcraft, McAndrews, and Skeie (2011).

deposits, forcing their banks to lend less and offsetting to that extent the increased lending of banks that experience an increased demand for their deposits, it remains the case that the *total* quantity of funds available for banks to lend depends on the *total* real demand for bank deposits. An overall increase in that demand will manifest itself, in the first instance, in a decline in the velocity or turnover of deposits, which leads, other things equal, to a decline in banks' demand for precautionary reserves. That decline in turn supplies the banking system with surplus reserves, which, in the absence of regulatory restrictions, will suffice to inspire such extra lending and associated deposit creation as will suffice to accommodate the public's increased demand for deposits. In short, the public's excess real demand for bank deposits tends, other things equal, to translate into an excess supply of bank reserves, with additional bank lending serving to once again clear both markets.

### **Is the Intermediary Theory Inconsistent with Profit Maximization?**

It is also not necessary for a bank to have more savings come its way *before* it arranges a new loan in order for it to qualify as a strict intermediary. A bank can also book a loans and *then* come up with the necessary funding. It might turn to wholesale markets for needed funds. Or it cover its settlement dues by borrowing from other commercial banks, or from a central bank. Because the last two options tend to be relatively costly, they are generally only resorted to cover unexpected reserve shortfalls. When central banks charge "penalty" rates, their loans can carry a stigma, making banks especially reluctant to rely on them. But the main point is that the loan has to be financed by *some sort* of borrowing by the lending bank.

Ultimately, of course, all that matters to any bank that's considering making a loan isn't whether it has spare reserves on hand to cover a loan, or (to use Jakob and



Kumhof's words) whether sufficient "deposits of physical saving" are on hand to cover it, but simply whether it expects the loan to be profitable, that is, to return them more than the costs of making it. Some Thin Air theorists imagine that this fact contradicts the Intermediary theory. That it is in fact entirely consistent with that theory becomes obvious once one allows that the most important cost banks must cover in making a loan consists of the costs of *funding* it.

Here again, while appearing to support their claim that banks are "simply intermediaries," McLeay, Radia and Thomas (2014, 21; my emphasis) actually suggest that they are precisely that. Instead of depending on whether or not they find themselves in possession of excess reserves, they say, banks' decisions to extend credit "are based on the availability of profitable lending opportunities" where "the profitability of making a loan will depend on a number of factors...*one of [which] is the cost of funds that banks face.*"

"Cost of funds"? Were banks not intermediaries—were they able to fund loans simply by creating deposits—they wouldn't have to *pay* for funds. Instead, they'd find it profitable to make any loan that promised to more than cover the *non-interest* costs of lending. As Tobin noted long ago, if those costs are themselves trivial, almost any loan might be profitable, and there might be no "natural economic limit to the scale of the commercial banking industry" (Tobin 1963, 6).

Indeed, it is not stretching a point much to say that, were the Thin Air theory correct, banks would be in a position similar to that of counterfeiters whose operation is so efficient that they face no risk of getting caught. They'd have the same ability to profit by buying any asset worth more than the materials and labor it takes to create the nominal money balances required to purchase it.

## Why is there So Much Bank-Created Money?

That banks' ability to lend is constrained by their ability to borrow, meaning their access to *real* savings, isn't at all inconsistent with the fact that, in scarce-reserve systems especially, the quantity of bank deposits is usually several times the quantity of bank reserves, or with the fact that the deposit creation by one bank can itself be a source of not just nominal but real funding to others. Suppose that Joe is considering investing \$100 either by lending it directly to Sam by employing the services of a nonbank intermediary, which will instead lend it to Kate. The direct loan to Sam creates a \$100 liability: Sam's IOU to Joe. The indirect one generates liabilities worth \$200: Kate's \$100 IOU to the intermediary, and the intermediary's \$100 IOU to Sam. So intermediation of *any* sort at least doubles outstanding IOUs. But one need only allow that Kate may in turn place some of her borrowings with another intermediary, or that she pays them to someone who does the same, so see how the multiple can get bigger.

In this example with nonbank intermediaries, none of the liabilities created are themselves money. Joe's intermediary might hand him a \$100 non-negotiable bond, while acquiring a similar bond from Sam, who then buys a non-negotiable bond from Kate. But the fact that banks might engage in virtually identical transactions, the only difference being that their IOUs *do* function as money, should make it clear that the "multiplication" of such IOUs isn't *necessarily* inconsistent with the Intermediary theory. (I'll refer later to some important instances where it *is* inconsistent.) It's for this reason that Edwin Cannan (1921, 3031) and other economists of his era and before who regarded banks as intermediaries

never supposed...that anyone would make a difficulty about the aggregate of deposits (1) exceeding the aggregate of cash held by the banks, or even (2)

exceeding the aggregate of all cash held by all persons and institutions, including the banks.

### **Does Intermediation Imply a Textbook “Money Multiplier”?**

The point example just described resembled the notorious textbook “money multiplier” story, both for describing how deposits can multiply and because it assumes that intermediaries fund their lending in advance, and do so using only deposits brought to them in the ordinary course of business. The story also assumes that banks keep reserves equal to a fixed share of deposits they receive, mechanically lending the rest, and never lending otherwise—and assumption that makes changes in the total extent of (nominal) bank lending possible only in response to changes in the available quantity of bank reserves. The retail deposits banks receive, according to this mechanical theory, enter banks, and by doing so push out a not-quite-equal sum of bank credit.

Showing that this mechanical textbook story isn’t realistic is as easy as falling off a log. But such a demonstration doesn’t itself prove that banks’ aren’t intermediaries, because the textbook story is but one of many possible accounts of how bank intermediation works. The Intermediary theory is also consistent with others, including stories in which banks’ preferred ratio of reserves to deposits varies in time and from bank to banks, stories in which banks “write up” loans before they acquire the necessary funding, and stories in which banks rely on sources of funding other than retail depositors. Once again, all that the Intermediary theory claims is that the amount of lending banks can profitably engage in is constrained by the amount of the public’s real savings they are able to get hold of. Banks that acted only in strict accordance with the textbook story would actually be *incapable* of making full use of real savings at their

disposal. That the Intermediation theory of banking is sometimes identified with the textbook account is of course not the theory's fault.

Jakab and Kumhof's ILF model of banking is actually a version of the textbook multiplier model—one in which the volume of bank lending can only change in response to changes in banks' receipt of retail deposits, where banks have relatively little influence upon the volume of such deposits, growth in which supposedly depends on "accumulation[s] of physical savings" that "should be smooth and gradual" (Jakab and Kumhof 2019, 30). It's mainly for this reason that their ILF model cannot replicate some of the "rapid changes in the size of bank balance sheets" (ibid., 3) that take place in reality—changes that their alternative, FMC model *can* account for. But the fact that Jakab and Kumhof's FMC model outperforms their particular ILF model says nothing about whether it would also outperform a model that allows banks to function as intermediaries, not just by acquiring and lending in turn deposits of "physical savings," but in numerous other ways we've considered. By treating their ILF model as representative of the way real-world bank intermediation works, Jakab and Kumhof throw the Intermediary Theory of banking baby out with the textbook money multiplier bathwater. The same may be said for other writings that, in attempting to counter the textbook story, are too quick to assume that by doing so they are also showing that banks aren't intermediaries.

### **Is the Quantity of Reserves Irrelevant?**

Although the Intermediary theory doesn't claim that banks must have funds on hand, acquired through customer deposits or otherwise, before they can extend credit, it recognizes that primary, and especially "core" (primary retail) deposits have long been the most important source of bank funding. The theory also implies that, the

more such deposits a bank attracts, other things being equal, the more loans it can make. The Thin Air theory, in contrast, implies that bankers should not care whether deposits come their way or not. Suppose, Jakab and Kumhof (2019, 2) say, that A, who banks at Bank A, receives and deposits a check from B, drawn on Bank B. According to them, this transaction

does not give Bank A additional funds to lend, because by double-entry bookkeeping the new deposit is automatically lent to Bank B the moment it is received, in the form of an accounts receivable claim for the collection of funds in the form of central bank reserves.

Here is another example of how Thin Air theorists go wrong when, instead of mentally following a payment process through to completion, they consider only part of the process. In practice Bank A's loan to Bank B is of fleeting importance only. Banks don't tend to hold on to demandable claims against their rivals. Instead, they return them routinely, and rapidly, for collection. In this instance Bank A will deliver B's check, or an electronic copy, to the clearinghouse or central bank, which will then debit Bank B's settlement account and credit Bank A's account by the amount of the check. Once that happens, Bank A certainly *will* have "additional funds to lend," because it will have more reserve balances to employ in paying net settlement dues to other banks. It is difficult to see why Jakab and Kumhof would choose to suggest otherwise, unless they are somehow unaware of how banks handle "accounts receivable" from other banks.

It is, if anything, even harder to understand Jakab and Kumhof's claim that "central bank money deposited with banks" also "does not represent loanable funds" that banks can lend in turn (ibid.). The Intermediary theory holds, in contrast, that

until the relatively recent advent of “abundant reserve” or “floor” systems of monetary control (discussed below), commercial bank lending was ultimately constrained by the scarcity of bank reserves, so that any increases in the total quantity of such reserves allowed for more lending, *ceteris paribus*, even if it didn’t do so in the mechanical way many textbooks describe. To be sure, the loanable funds in this case may be, and often are, *nominal* loanable funds only, unmatched by any increase in the public’s real demand for money balances: the case is one of several exceptions (discussed below) to the general rule that bank lending is constrained by the public’s *real* demand for bank deposits. Nevertheless, so far as ordinary banks are concerned, fresh central bank reserves are as good as an increase in the real demand for bank deposits when it comes to allowing them to lend more. It follows from this view—but *not* from Jakab and Kumhof’s alternative perspective—that to avoid unwanted inflation central banks must resist creating too many reserves.

### **Does the Thin Air Theory Apply to Central Banks?**

I say “resist” because central banks, and fiat-money issuing central banks especially, *do* possess a widow’s cruse. That’s to say that, unlike ordinary banks, they are capable of extending credit without heed to the public’s limited real demand for their IOUs. In the case of past central banks operating specie standards, this followed—albeit in the short run only—from other banks’ ordinary tendency to treat their notes and deposits as perfect substitutes for specie. In the case of modern central banks that issue free-floating fiat monies, it follows from the fact that, instead of consisting of

redeemable claims to “real” money, the economy’s final means of payment, the money they create is real money itself.<sup>11</sup>

So central banks really *do* “create their own funding.” When a central bank creates more base money balances than the public or ordinary banks wish to hold, given the existing level of prices, instead of being returned to it for payment, the excess base money units become so many “hot potatoes,” to be tossed around (and here the textbook story has some merit) until prices rise sufficiently to make the nominal quantity of base money demanded once again equal the nominal quantity in existence. At this point the central bank’s credit creation can be said to be “funded” by corresponding *nominal* savings, despite the lack of any lasting increase in real savings at its disposal. But such funding is distinct from what ordinary banks must rely upon, for unless they are themselves responding to inflationary central bank reserve injections, ordinary banks can only increase their lending in response to growth in the public’s *real* demand for their deposits and other IOUs.

Jakab and Kumhof don’t say that modern central banks aren’t capable of creating funds *ex nihilo*: it would be odd indeed if they denied the privileged issuer of an economy’s final means of settlement a power they attribute to ordinary banks! However, they insist “that central bank reserves do not quantitatively constrain the ability of [commercial] banks to extend loans” (ibid., 14.), and go on to exclude central banks

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<sup>11</sup> This last point is true notwithstanding that modern central banks’ deposits and currency are still classified for accounting purposes as central bank “liabilities.” In fact, as Willem Buiter (2023, 16) observes, “Central bank money is a liability of the central bank and the state in name only. It is an undoubted asset to the holder, but it is irredeemable. The holder of central bank money can demand its exchange only for the same amount of central bank money. Central bank money is therefore not in any meaningful sense a liability of the issuer.”

from their formal models on that ground.<sup>12</sup> This denial of central banks' importance follows from Jakab and Kumhof's assumption that, absent legal requirements, and assuming that paper currency is "dominated" by interest-earning bank deposits, banks have no *need* for reserves ("final means of settlement"), which in turn implies that the extent of commercial bank lending and deposit creation are entirely independent of the available quantity of bank reserves or prevailing central bank lending rates.

So it doesn't really matter, according to Jakab and Kumhof, whether or not central banks themselves possess a widow's cruse, or it matters only in the presence of statutory reserve requirements and other regulations that serve to artificially link commercial banks' lending capacity to central bank actions. In the absence of such artificial constraints, merely making reserves more or less abundant accomplishes nothing, because it doesn't allow banks to do anything they couldn't do anyway, by drawing from their own widows' cruses.<sup>13</sup>

Jakab and Kumhof rest their case that, absent special regulations, banks have no need for central bank reserves, on the fact such reserves "cannot be lent to non-banks, only to other banks" (ibid.).<sup>14</sup> Thus the fact that bank *borrowers* have no need for central bank money (recall that we are assuming that they don't want currency) is taken to imply that banks themselves have no need for it.

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<sup>12</sup> Richard Werner (2017) declares, in the same spirit, that "We don't need central banks. Since 97% of the money supply is created by banks, the importance of central banks is far smaller than generally envisaged."

<sup>13</sup> An ironic twist here is that, if the link consists of statutory reserve requirements, the limits to bank lending start looking a lot like those depicted in naive textbook multiplier stories Thin Air theorists scorn.

<sup>14</sup> Although this is mostly true at present, it will cease to be so if retail CBDCs become popular.



Here again, Jakab and Kumhof fail to appreciate the implications of routine interbank settlement. A more profound understanding reveals that, in a crucial sense, in fiat systems, commercial banks lend nothing *but* central bank money. Of course they don't hand paper currency to borrowers. But by crediting borrowers' accounts, they initiate a process that generally increases their gross settlement dues by the amount of the loan, which is to say that, *ceteris paribus*, their lending results in a transfer of reserves from the lending bank to the bank or banks that end up receiving the payments orders the loan generates. That's why, Jakab and Kumhof's denial notwithstanding, a bank that has more central bank reserves on hand can lend more, other things equal.

### **Are Central Banks Passive?**

Jakab and Kumhof's argument is actually one of two that Thin Air theorists employ to deny that commercial bank lending is constrained by the scarcity of central bank reserves. The other, which originated in Post-Keynesian writings (Moore 1988; Wray 2001), holds that, while commercial banks may indeed need central bank reserves to support their own lending and deposit-making, that need poses no real constraint because central banks tend to passively supply as many reserves as banks require to support whatever scale of lending they wish to engage in. According to this "horizontalist" view, central banks, and particular central banks that target interest rates, the supply of bank reserves is endogenous in a sense meaning that it is really ordinary rather than central banks that determine the quantity supplied.

Thus Luis Angeles (2019, 391) claims that, instead of "impos[ing] any quantitative limit on bank reserves," central banks that target interest rates, as most of

them do, essentially leave the determination of the total nominal scale of bank lending up to the bankers themselves:

The private banking system and bank borrowers [Angeles says], jointly decide on how much money will be created by entering into loan agreements, which creates a need for additional bank reserves. These will be supplied by the Central Bank on demand.

It supposedly follows that “the capacity of commercial banks to create money is not under the direct influence of the Central Bank.” Instead of posing a meaningful limit upon the growth of bank lending, central bank reserve creation is itself controlled by the bankers. “Causality runs from the private banking system to the Central Bank” (ibid.). McLeay, Radia, and Thomas (2014, 21) make the very same argument, as do Scott Fullweiler (2012) and many other Modern Monetary Theorists.

Like the Thin Air theory itself, the “endogenous” or “horizontal” theory of the supply of bank reserves is superficially appealing, yet fundamentally misleading. It is of course true that any central bank interest-rate target implies a reserve supply schedule that’s horizontal at the targeted rate. It’s also true that, *as long as it remains committed to a particular target rate*, a central bank must allow the stock of reserves to adjust passively with the quantity demanded at that rate.

But if monetary policy means anything in a rate-targeting regime, it means that the central bank routinely *reconsiders* its rate target, shifting the horizontal reserve supply schedule up or down whenever it sees fit to do so for the sake of meeting its macroeconomic objectives; and this ability leaves it no less in *ultimate* control of the

outstanding quantity of reserves than it would be were it to instead target that quantity itself.

Imagine, for example, two central banks that differ only in their intermediate policy targets, with one targeting the overnight interest rate, and the other targeting bank reserves. Suppose they operate in otherwise identical economies, and that both are committed to maintaining a two-percent rate of inflation. Finally, suppose both are confronted by the same change in banks' demand for reserves and that each accurately estimates the change. In theory, the equilibrium values for the overnight rate and outstanding quantity of bank reserves will be the same in both cases. The only difference is that in one case the result is achieved through a central-bank initiated change in the outstanding stock of reserves, while in the other it is achieved through a change in the central bank's chosen interest rate target.<sup>15</sup> It follows that it really makes no difference whether one chooses to *conceive* of what is in practice merely a *short-run* reserve supply schedule as being horizontal, vertical, or upward sloping. Fullweiler (*ibid.*), for one, more-or-less accepts this conclusion. "Central banks," he says,

stand ready to provide reserve balances *at some price* always. They can adjust this price up or down if they are concerned about the expansion of credit or monetary aggregates, and this increase in price can be passed onto borrowers who may then not want to borrow. But this means that the manner in which a central bank can exert control over credit expansion is indirectly through its

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<sup>15</sup> This is not to deny that interest-rate targeting on one hand and reserve targeting on the other each has its particular practical advantages and disadvantages. I am only making the theoretical point that, *provided* either could be implemented perfectly, with identical policy objectives in mind, they'd have identical outcomes.

interest rate target, not through direct control over the quantity of reserve balances.

But as the example above suggests, controlling the price of central bank reserves and controlling their quantity are really two equally “direct” ways of regulating reserve *scarcity*, and in a scarce reserve system, that scarcity is all that central banks need to control to regulate the extent of commercial bank lending and money creation. Given a demand curve for reserves against its policy rate, the central bank’s choice of P implies a choice of Q, and vice-versa.

Angelis (2019, 391) also comes close to conceding this point. “To be sure,” he writes, “the target interest rate imposed by the Central Bank is one among several factors influencing bank lending.” But, he adds, “This degree of influence notwithstanding, it is far more accurate to say that bank reserves endogenously adapt to the requirements of the private sector rather than the other way around.” But just how is it “more accurate”? Changes to central bank interest-rate targets aren’t just a “factor” influencing bank lending: in most circumstances (binding zero lower bounds being the notorious exception) they allow central banks as much control over bank lending as reserve targeting might. So, while commercial banks can have all the reserves they want from a rate targeting central banks, so long as they can only have them at whatever *price* their central banks wish to charge, those central banks may be said to rule the roost.

### **Do Banks Need Depositors?**

In light of all that’s been said, it’s hardly surprising that Thin Air theorists have little to say about the bearing of consumers’ preferences on bank survival. Even approaching the subject is awkward. What little they do say is question-begging. For

example, after declaring that “New loans are funded by the ex nihilo creation of new-ledger deposits,” Jakab and Kumhof (2019, 5) add that “The fact that a newly created deposit may subsequently be withdrawn from a particular bank and deposited with another bank does not change this fact, it merely changes the identity of the deposit holder.” Do Jakab and Kumhof really mean to suggest here that it’s a matter of indifference to a bank whether people bank with it or some other bank? If so, do they also suppose that the same bank would have no reason to be concerned if *all* of its deposit holders, and not just those whose deposits are on loan from it, chose to take their money elsewhere? Their adherence to the Thin Air theory, with its neglect of what happens when deposits move from one bank to others, would seem to give them little choice; and that, I should think, is so much the worse for that theory.

Jakab and Kumhof do at least allow that banks’ lending capacity and, presumably, their ability to survive, is limited by “their own and their customers’ potentially volatile expectations regarding future profitability and solvency” (ibid.). But in granting even this much they beg the question. Why should a bank worry that its customers expect it to go bust, unless it’s because they might quit lending to it? And why should they, or it, be troubled by the prospect of loans turning sour, if the bank has no more need for the amounts deadbeat borrowers owe it than it has for savings more generally? There is, after all, plenty of thin air to go around.

Why, indeed, should banks want to have deposit-holding customers (as opposed to borrower-customers) at all? For if primary deposits, as opposed to those a bank creates on the spot, aren’t needed to fund loans, as the Thin Air theory claims, they are surely a nuisance, for even when such deposits bear no interest, managing them costs real resources. It follows that a Thin Air bank should not merely not care whether

deposits come its way, or whether those it creates stay with it: it should *prefer* to have people only borrow from it without otherwise banking with it.

This, too, is hard to square with experience.

### **What if Reserves aren't Scarce?**

My discussion so far has mostly taken a “scarce reserve” or “corridor” central bank operating regime for granted. In such a regime, the rate of return on bank reserves is set below a central bank’s policy rate target. Banks therefore tend to maintain or acquire only such reserves as suffice to cover their net settlement and precautionary needs. In equilibrium the real quantity of reserves will equal the (well-defined) real quantity demanded, and except in the special cases mentioned above banks will be able to expand credit further as the real demand for their liabilities increases. Otherwise, their attempts to expand will cause the available quantity of reserves to fall short of the quantity demanded.

Until the 2008 financial crisis, scarce-reserve arrangements were the norm. But during that crisis many central banks switched to abundant-reserve or “floor” systems (Selgin 2018). In a floor system the return on reserves is set equal to, if not above, the central bank’s policy rate target, and the opportunity cost of reserve holding is reduced correspondingly. Banks therefore become willing to accumulate reserves beyond their settlement and precautionary needs. To the extent that they do, they are not reserve constrained in the usual sense of that expression, that is, they might extend credit independently of any increase in the real demand for their liabilities without having to resort to costly overnight loans to cover their settlement dues. On the other hand, under a floor system even large-scale additions to the monetary base and bank reserves might not sponsor any corresponding increase in bank lending and deposit creation.

Noting the inconsistency of post-2008 arrangements with the mechanical multiplier story of money creation told in many textbooks, many commentators saw the fact as proof, not that banks didn't operate the way those textbooks said they ought to, but that banks also weren't investment intermediaries, as if the textbook story were the only one consistent with their being such.

Yet commercial banks operating in a floor system are no-less intermediaries than their corridor system counterparts. The only difference is that, whereas in corridor systems banks usually find it more profitable to invest savings entrusted to them in assets apart from central bank reserve balances, in a floor system those balances dominate other short-term investments. In both regimes banks are constrained by interest costs they incur when they expand credit arbitrarily. But whereas in a scarce-reserve system that cost consists of the cost of overnight borrowing, either from other banks or from the central bank, at rates exceeding what banks can earn on the underlying loans, in an abundant-reserve system it consists of the interest foregone by having to part with reserves that yield more, at the margin (allowing for risks and the non-interest costs of lending) than loans and investments of like duration. Hiking the rate paid on reserves in a floor system is the counterpart of reducing the outstanding stock of reserves in a corridor system. In both cases, reserves become relatively scarcer. And it is the scarcity of reserves rather than their abundance, that is, rather than the real stock outstanding, that matters. Consequently, banks in floor systems are no more equipped with widows' cruses than those in corridor systems.

It's true, on the other hand, that so long as the interest rate paid on reserves is held constant, an increase in the public's demand for bank liabilities will not tend to elicit any increase in bank lending, because it won't itself make reserves any less scarce.

To that extent at least, banks in such a system will not be strict intermediaries. But the same may be said of banks in a corridor system in which the central bank's rate target is kept constant in the face of changes in the public's demand for bank deposits. In that case, any tendency on the banks' part to loosen their lending terms will tend to be countered by corresponding contraction of the stock of bank reserves. In both cases, it is the central banks' insistence upon a fixed policy rate target, rather than commercial bank conduct per se, that drives a wedge between changes in the public's willingness to fund bank lending and the extent of such lending; and no proponent of the view that commercial banks are intermediaries has ever denied that central banks can influence the extent of their lending independently of the public's savings decisions.

### **Are Banks Perfect Intermediaries?**

I've argued that banks' ability to extend credit is limited by the concurrent real demand for their IOUs, and especially the real demand for deposit balances. But I don't mean that banks are *strict* or *perfect* intermediaries. Not in the short run, at least. Instead, there are circumstances, not all of them rare, in which banks' ability to lend to others isn't strictly geared to the public's willingness to lend to banks.

The fact that central banks, and central banks that issue floating-rate fiat monies especially, are themselves capable of expanding or contracting their balance sheets independently of any changes in the public's demand for money is the most important reason why commercial banks also fail to function as strict intermediaries. While commercial banks aren't themselves able to fund loans with thin air, they *can* fund them with extra central bank reserves that come their way. Central bank actions that alter the scarcity of bank reserves, either by altering their outstanding nominal quantity (corridor systems) or by influencing banks demand for them (floor systems),



thus tend to inspire sympathetic changes in bank lending that are also unmatched by like changes in the public's real demand for bank IOUs.

The neoclassical notion of “forced” savings becomes relevant here (Hayek 1932; Hansson 2018). When, starting from a state of overall monetary equilibrium, with a zero excess supply of both bank reserves and broad money at the existing price level, a central bank expands the stock of reserves, those extra reserves can be said to masquerade as an increase in real savings. Banks will respond to their creation by expanding their own balance sheets much as if the public's real demand for holdings of their deposits and IOUs had increased. But because, *ex hypothesi*, the real quantity of money demanded hasn't changed, the expansion causes a proportional increase in prices. The increase amounts to a “tax” on pre-existing money balances. Forced savings are another name for this tax; and it is such savings, rather than any true increase in the public's real demand for bank deposits, that finances those real investments that occur as a result of additional central-bank sponsored bank lending.

Ironically, although episodes of forced savings are by far the most most important instances in which ordinary banks cease to function as strict intermediaries, they are instances that Jakab and Kumhof *don't* recognize. For as we've seen, those theorists *deny* that the changes in the nominal quantity of central bank reserves have any bearing upon ordinary banks' lending capacity. But were they, and were other, critics of the Intermediation theory to recognize this most important failure of banks to intermediate real savings, they could not take much comfort in it for a simple reason: just as a rising tide lifts all boats, central bank reserve creation that allows banks to expand credit independently of the public's willingness to lend to them allows *all* financial intermediaries to do so. It follows that, to deny that banks are investment

intermediaries on account of this particular failing, one must deny that there is any such thing as an investment intermediary!

Modern banks can also fail to properly intermediate real savings that takes the form of a demand for paper currency or token coins, and can do so even if that demand has nothing to do with the public's lack of confidence in them. The simply reason for this is that banks aren't allowed to issued notes and coins of their own, and so must count on public authorities to meet the public's needs instead. It follows that, when this sort of intermediation failure happens, the fault lies with those authorities, not the banks.

Intermediation can also break down if either the public or commercial banks choose to hoard central-bank money, as happened in the 1930s, and central banks fail to increase their lending sufficiently to accommodate the hoarding and avoid deflation. But here again, it is the central banks rather than the commercial banks themselves that fail to act as strict intermediaries.

Departures from perfect intermediation can and often do occur as a consequence of various bank regulations, obvious examples being statutory liquidity and capital requirements. They can also result from either government-inspired or private-sector payment innovations, such as changes in clearing and settlement arrangements.<sup>16</sup> Finally, they might be due to changes in payments patterns that inform banks' demand

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<sup>16</sup> The advent of fractional-reserve banking, which in a closed economy must lead to a general reduction in the demand for reserve money, with a corresponding increase in the quantity of money and other nominal magnitudes unlinked to a corresponding growth in the public's real demand for bank IOUs, was an especially important historical example of such an innovation. The widespread adoption of real-time gross settlement systems since the 1980s is a more modern example.

for precautionary reserves, including changes that don't involve any change in the public's real demand for bank IOUs.

There are other situations in which commercial banks don't behave as the Intermediary theory suggests. But none has them extending credit profitably without the help of either real public savings or central bank reserve creation. In any event, the question isn't whether that theory is flawless. It's whether it's a better guide to the determinants of bank lending than the Thin Air alternative, with its implication that banks can create all the funding they need to finance their loans and other undertakings, and can do so even without being egged on by central banks.

### **Is Banking Less “Real” Than Other Businesses?**

Some paragraphs ago I pointed to some circumstances in which banks may extend credit beyond amounts consistent with the savings voluntarily placed at their disposal, including situations in which central banks equip them with more reserves or make their existing reserves less attractive. Yet there's a fundamental sense in which banks are *strictly* intermediaries. It is the sense one gains by thinking in terms of real, long run or general equilibrium magnitudes. That is, by thinking of banking in the same way economists think of other industries.

That changes in the nominal quantity money are at least roughly “neutral” in the long run is perhaps the most fundamental tenet of neoclassical monetary economics. It doesn't mean that monetary expansion never has important real short-run consequences: most obviously, it can lower unemployment when the cause of that unemployment is a lack of aggregate demand. But it doesn't generally alter the relative size of particular industries, or of firms within them. Instead of depending on the nominal quantity of money, firms and industry's success or failure depends on the real

demand for their products. Danbury, CT, was once a thriving center of men's hat-making. But fashions changed, and the hat factories are long gone. Nor could any amount of monetary expansion alone have saved any of them.

It is the same with banks and the banking industry. No amount of monetary expansion, whether banks alone are to blame for it or not, can keep any bank alive in the absence of a *real* demand for that bank's IOUs: in nominal terms bank balance sheets may grow willy-nilly; but real (deflated) balance sheets will not. When, starting in the 1970s, depositors at the City Trust Bank of Danbury, Connecticut (est. 1912) were obliged to start drawing down their balances with it because they'd lost their hat factory jobs, easy money could no more have saved it than it could have saved the hat factories themselves. (In fact, by the 1980s the hat factories were all gone, and City Trust—later Citytrust—finally gave up the ghost in 1991.) Nor is it the case that a bank can only fail if the public insists on converting its deposits into paper money—something only central banks supply nowadays. Funds have only to be redirected electronically from some banks to others to cause the first group to suffer, and this will be so even if no one ever refuses to accept troubled banks' liabilities in payment up to the moment of its demise.

The real size of the banking industry likewise depends on the real, and not simply the nominal, extent of the market for bank liabilities. "Given the wealth and the asset preferences of the community," Tobin says (1963, 6-7),

there is at any moment a natural economic limit to the scale of the commercial banking industry. ... Eventually the marginal returns on lending and investing, account taken of the risks and administrative costs involved, will not exceed the marginal cost to banks of attracting and holding additional deposits.

In short, show me a bank that no one wants to bank at, and I will show you a failed bank. Show me a place where no one cares to hold bank deposits at all, and I will show you one that can't support a banking industry.

To repeat: these conclusions are mere instances of the doctrine of long-run monetary neutrality. But when applied to banking, and allowing that the “market” that matters in banks' case is the market for bank-created IOUs, that doctrine *implies* that, whatever they may be in the short run, banks are ultimately intermediaries. Whatever their other shortcomings, theories that deny banks' status as intermediaries inevitably fail to consider the long-run, equilibrium disposal of real resources, harping instead on short-run relationships or nominal magnitudes or both. That is, they look only at the veil of money, instead of looking behind it, thereby missing the fact that it is ultimately savers' willingness to grant bankers access to real resources that allows bankers to grant their borrowers the ability to lay claim to those resources.

### **What's the Bottom Line?**

The bottom line is that, although banks are money creators, they are also intermediaries. Arguments that assume that banks must either be one thing or the other are fundamentally unsound. The fact that banks can technically create money with some keystrokes, if not “out of thin air,” doesn't mean that they can generally extend credit without borrowing from others, where “borrowing from others” means borrowing not merely nominal but *real* savings—savings that banks aren't capable of creating themselves.

Although there are important exceptions to the rule that ordinary banks are intermediaries, these are not so important as to justify an alternative theory that suggests that such banks are as able to expand credit independently growth in the

public's willingness to direct real savings their way as central banks are. Indeed, the most important exceptions to the rule that ordinary banks are intermediaries arise when central banks supply them with reserves beyond their precautionary requirements. And in these exceptional cases the problem isn't that ordinary banks can create credit out of thin air: it's that central banks supply them with resources beyond what the public would provide them on its own. Confusing the powers of central banks with those of ordinary commercial banks makes for bad monetary *and* bank regulatory policies.

Champions of the Thin Air theory imagine that, because they realize that bankers make loans by crediting borrowers' accounts, they've arrived at a more profound understanding of the workings of modern banking systems than that possessed by Edwin Cannan, James Tobin, and countless other fuddy-duddies. But their theory, and the false "intermediaries or money creators" dichotomy it rests upon, aren't deep: they are shallow, and they belong in the same mulch heap as the real-bills doctrine.

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