

## ARC Course on Money Creation Session Three

**Lesson 3** Working title: “[Money from nothing](#)”  
or “Pure Credit Creation”

Subject: Modern money

Theme: Modern money comes into existence by acts of “pure credit creation” in commercial banks, sometimes induced by central bank policy.

Contrast: Many people think only the central bank creates money (including [ChatGPT](#))  
(Stack articles [here](#) and [here](#))

Welcome back to the black hole of economics! Sorry we had to skip last week, but not to worry, we will regain momentum today.

In Lesson Two, we learned about money creation under a gold standard, where gold serves as the standard money and a commercial bank creates additional money by lending out more claims to gold than the actual gold held in the bank. We also covered the surprising fact that banks still create new money the same way, even though the gold standard was abandoned long ago and replaced by a fiat reserve standard.

Under a gold standard, “standard money” originates from outside the banking system (i.e., from a gold mine. This standard money, gold, can circulate in the economy without a banking system (a money creation system) if that is what the gold holders decide to do.

By contrast, under our fiat reserve system, all money originates from inside the banks. Fiduciary media is created first, and then it is, in effect, transformed into standard money by the central bank. If that sounds like the tail wagging the dog, I agree, it is. We’ll see how that works today.

Today, we will delve into the essential mechanics of how this system works. **The theme for today’s lesson is: In today’s monetary system, all money, even standard money, is created “ex nihilo,” which means “from nothing” in Latin. Hence the title of this lesson, “Money from Nothing.”** To put it another way: **Our monetary system is a system of pure credit creation.**

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Today we want to answer four questions.

1. **How do banks increase and decrease the money supply?**
2. **How does paper money come into existence?** (All federal reserve notes, except the new ones exchanged for old ones, start life as a bank deposit, and all bank deposits begin life as an asset purchased by a commercial bank.)

3. How do central banks determine the quantity of cash reserves, or standard money, they need to create for the banking system?
4. How do central banks cause commercial banks to create new money? (i.e., the mechanics of quantitative easing).

Time permitting, I'll also introduce a standard measure of what central bankers call the "broad money supply," or M2.

### 1. HOW BANKS INCREASE AND DECREASE THE MONEY SUPPLY

The best way to understand banks is to use simple examples, so let's try one. You are going to borrow money for a vacation, buy a plane ticket, withdraw some cash for shopping, then pay back the loan. At every step, we'll look at how your actions affect the overall money supply. We'll do all this step by step. So, let's start our little vacation project.

		Your Bank		+	All Other Banks		=	All Banks		Change in Money Supply (bank deposits + currency in circ)	
		Assets	Liabilities		Assets	Liabilities		Assets	Liabilities		
1	Your Bank lends you money	+2000 loan	+2000 deposit					+2000 loan	+2000 deposit	+2000	new deposit is new money

**Step One:** You know you will soon get a quarterly bonus from your employer, but you want to take a vacation now, so you plan to borrow \$2000 from Your Bank, go on vacation, then pay off as soon as you receive the bonus. You sign an IOU saying you will pay the bank \$2000 plus interest within the next year or sooner. (We will ignore interest payments to keep the accounting clear and straightforward.)

This exhibit shows the changes in the balance sheets of Your Bank and all other banks resulting from your transactions with the bank. We are looking at the changes in the balance sheets of your bank and all other banks. **The money supply is defined as all deposits in all banks, plus currency in circulation (paper money).** Bank deposits plus paper money. All Banks include Your Bank plus All Other Banks. Therefore, the total money supply change from this loan transaction was the amount of new deposits in Your Bank, or \$2000.

(Notice that the bank didn't need any prior deposit to give you the loan. No other banks are involved in creating this new money. Notice also that the bank did not lend you money they were holding in their vault. **Your Bank was the sole source of new money, created specifically for your use.** They credited your account with fresh money, which you are now free to spend. **The total money supply in the economy has increased solely due to the loan you have just received.**

This is what people mean when they say it's "money from nothing" or "money from thin air." (Whether these pejorative terms are warranted is a question we will keep open for now and will answer fully in the next lesson.)

	Your Bank		+	All Other Banks		=	All Banks		Change in Money Supply	
	Assets	Liabilities		Assets	Liabilities		Assets	Liabilities	(bank deposits + currency in circ)	
1 Your Bank lends you money	+2000 loan	+2000 deposit					+2000 loan	+2000 deposit	+2000	new deposit is new money
2 You purchase airline ticket	-1000 cash reserves	-1000 deposits		+1000 cash reserves	+1000 deposits				0	no change, money moved to other banks

**Step Two:** Your mission is to take a vacation, so the first thing you do is buy an airline ticket for \$1000. Let's say you write a check to the Airline Company. Your check reads, "Pay to the order of Airline Company \$1000." This document (the check) directs Your Bank to transfer a \$1000 "promise to pay standard money" from your account to the Airline Company. You could have done the same by paying with a bank card or a payment app like Venmo or Zelle, which are communication channels telling your bank to direct some of your deposit money to the Airline Company.

Under our previous simplifying assumption of One Big Bank, the Airline would also have an account at Your Bank. In that case, paying for your ticket would be a simple matter of telling Your Bank to transfer your deposit from your account to the Airline's account at the same bank. **But today, we're going to drop the One Big Bank assumption** because many banks are involved in money creation, and this is an excellent time to learn how money moves from bank to bank.

Airline Company deposits your check in their account at their bank, which is included in the accounts of "All Other Banks." When the airline's bank accepts your check, Your Bank's promise to pay out standard money is no longer a promise to you; it is now a promise to the Airline Company because that is what you told the bank to do on your check. The Airline company could cash the check at Your Bank for standard money in the form of paper currency. But instead, for many good reasons, the Airline company wants to use its bank.

The Airline company presents this payment order (your check) to its bank, which accepts it as a deposit. In accepting the deposit, the Airline's bank has assumed the obligation to pay out standard money on demand to the Airline. But that obligation still depends on Your Bank's promise to pay out standard money on demand to the Airline's Bank, which holds your check.

So, at this point, the Airline Company has a claim against its bank, but the Airline's bank has an equal claim against Your Bank. However, the Airline's bank does not want to permanently hold a claim to standard money from another bank: The airline's bank wants standard money, that is, full and final payment. So the Airline's Bank presents the check to Your Bank, demanding payment. Your bank then sends cash reserves (standard money) to the Airline's bank, fulfilling its promise to pay standard money on demand.

**The result is that \$1000 in deposits have moved from your account at Your Bank to the Airline company's account at its bank, and an equal number of cash reserves have moved from Your Bank to the Airline Company's bank.**

In short, when bank customers make payments using bank deposits, cash reserves move from bank to bank along with the deposits.

[Pause to let it sink in; ask questions. Do they understand the money movement?]

In other words, when the Airline's bank accepts your check for deposit, the first thing that happens is that Your Bank now owes this amount of standard money to the Airline's bank but no longer to you. Within a very short time (in banking, by the end of the day), Your Bank fulfills that promise by paying standard money to the Airline's Bank. The money has changed from a promise to pay standard money from Your Bank into a promise to pay from the Airline's Bank. The Airline's Bank was happy to assume this obligation **as long as it received an equal amount of standard money from Your Bank.**

In the banking industry, hundreds of millions of payments between bank customers and their banks settle and clear in this manner every day. Rather than clear these payments individually, banks net out all their transactions and clear the differences by moving cash reserves around almost continually. Because banks are constantly processing payments, withdrawals, and deposits, cash reserves and total deposits at any individual bank don't change much in a typical day. In this way, a network of banks acts just like the One Big Bank we assumed in Lesson Two.

Notice that **cash reserves and deposits in the banking system (All Banks) did not change** because of this transaction; they transferred from one bank to another. **The money creation occurred when the original loan was made. The new money and an equal amount of cash reserves was then moved to another bank.** Payments between banks do not affect the total money supply and do not affect total cash reserves in the banking system.

Notice the results so far. \$2000 of new money was created. Your Bank still has a \$ 2,000 loan as an asset but has lost \$1000 in cash reserves and \$1000 in deposits. Airline's Bank has gained \$1000 in cash reserves and \$1000 in deposits. The total assets and liabilities remain the same in the banking system ("All Banks"). The money supply is not changed due to purchasing the plane ticket.

[pause for questions]

**Step Three.** OK, let's continue our vacation spending spree. Having spent half your borrowed money on an airline ticket, you have \$1000 left in your checking account. Let's say you want to withdraw \$500 in paper currency to do some shopping.

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### Changes in bank balance sheets and money supply.

	Your Bank		+	All Other Banks		=	All Banks		Change in Money Supply	
	Assets	Liabilities		Assets	Liabilities		Assets	Liabilities	(bank deposits + currency in circ)	
1 Your Bank lends you money	+2000 loan	+2000 deposit					+2000 loan	+2000 deposit	+2000	new deposit is new money
2 You purchase airline ticket	-1000 cash reserves	-1000 deposits		+1000 cash reserves	+1000 deposits				0	no change, money moved to other banks
3 You withdraw currency	-500 cash reserves	-500 deposits					-500 cash reserves	-500 bank deposits	+500 -500 0	currency in circulation bank deposits no net change

You head to the nearby ATM. Using your bank card, you instruct Your Bank to give you some paper money in place of a bank deposit. **In doing so, you are simply holding the bank to its promise to pay out standard money on demand.** You ask the teller or ATM for \$500, and out drops the \$500 in paper cash. This is \$500 in “standard money,” the same as cash reserves, representing full and final payment. The bank has kept its promise to pay out standard money on demand, reducing its outstanding promises by \$500 and its cash reserves by \$500. At the instant this money drops into your hands, it becomes currency in circulation, which is exchanged outside and independent of the banking system, Currency in circulation increases by the same amount as the decrease in your bank deposits.

**Your Bank still has the \$2000 loan asset. It has relinquished \$1500 in cash reserves and \$1500 in deposits. All other banks (which include the Airline’s Bank) have gained \$1000 in deposits and \$1000 in cash reserves. All Banks combined have lost \$500 in cash reserves, which was converted to paper currency: \$500 of fiduciary media converted to \$500 in standard money, in the form of paper currency, when you exercised your right to receive it. This \$500 has left the banking system entirely but is still part of the money supply.**

The money supply has remained the same since the point where the loan was made and new money was created. **So far, the only transaction that has affected the total money supply is the \$2000 loan.**

[questions, comments]

## 2. HOW DOES PAPER CASH COMES INTO EXISTENCE?

Our last transaction, the withdrawal, illustrates how paper cash comes into existence.

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**All federal reserve notes (except new ones exchanged for old ones) start life as a bank deposit.**

**All bank deposits start life when a commercial bank purchases an asset.**

**Therefore, all federal reserve notes start life when a commercial bank purchases an asset.**

Let's consider the paper currency you just withdrew from your bank. Economists call this "currency in circulation." Currency in circulation is standard money, full and final payment, that was converted from bank vault cash, which came to the bank when it requested that some of its accounts at the central bank be converted from an account-entry deposit form to paper bills or notes and shipped to the commercial bank.

In the modern banking system, **a bank's cash reserves are of these two kinds: vault cash and deposits held in account entry form at the central bank.** At any time, the commercial bank can call on the central bank to convert some of their "on account" cash reserves to paper "vault cash" reserves by shipping paper bills to the bank.

But these cash reserves, whether in account-entry form or vault cash, are not yet a "commonly accepted medium of exchange" because they are not yet "circulating," i.e., they are not used for economic transactions. **This is why circulating currency is the only form of standard money counted in the broad money supply.** This makes sense because money has no value unless it can be spent for economic goods, and it cannot be spent until it leaves the bank vault.

The paper currency you withdrew from Your Bank is now money circulating physically outside the banking system. There is a lot of this stuff out there – about 10% of the total US broad money supply. It is accounted for as a "liability" of the Federal Reserve, and by law, it is legal tender or full and final payment for all monetary debts or obligations.

Circulating currency can be re-deposited in the bank, although that is relatively uncommon. Once withdrawn from the bank, most currency stays outside the banking system. This is because people like the privacy and convenience of its use in certain kinds of transactions.

Through this example, you can see how paper currency comes into existence. The paper note sitting in the bank vault was previously part of the bank's cash reserves but was not part of the money supply. It became part of the money supply when the owner of the deposit held the bank to its promise to provide standard money on demand. That promise was fulfilled when the bank converted your deposit into paper currency.

Notice that in the modern money system, **all paper currency and coins start as a bank deposit, and all bank deposits start their life as a loan or asset purchase. Once withdrawn from the bank, paper money functions outside the banking system, but it could not have come into existence without the banking system.**

Notice also that all changes in the money supply involve a bank transaction. The money supply requires commercial banks to create it.

This was not true under a gold standard. Gold was money long before banking was invented. Promises to pay gold, when issued by a bank, were also money. But gold did not depend on a bank for its creation.

By contrast, as we have seen, modern money, even its “standard” form (paper currency), cannot be created unless a bank first issues credit in the form of new money.

**This is why I think the best name for our money and banking system – a name invented by Richard Werner – is a system of “pure credit creation.” All money originates as an extension of credit based on the legal privilege granted to commercial banks.**

[questions on any of this?]

### HOW MONEY GOES OUT OF EXISTENCE

**Steps Four and Five.** Let’s now suppose your vacation is over, and you have gone back to work. You receive your quarterly \$ 3,000 bonus, allowing you to pay off your loan.

[SLIDE]

	Your Bank		+	All Other Banks		=	All Banks		Change in Money Supply (bank deposits + currency in circ)	
	Assets	Liabilities		Assets	Liabilities		Assets	Liabilities		
1 Your Bank lends you money	+2000 loan	+2000 deposit					+2000 loan	+2000 deposit	+2000	new deposit is new money
2 You purchase airline ticket	-1000 cash reserves	-1000 deposits		+1000 cash reserves	+1000 deposits				0	no change, money moved to other banks
3 You withdraw currency	-500 cash reserves	-500 deposits					-500 cash reserves	-500 bank deposits	+500 -500 0	currency in circulation bank deposits no net change
4 You deposit qtrly bonus	+3000 cash reserves	+3000 deposits		-3000 cash reserves	-3000 deposits				0	no change
5 You pay off loan	-2000 loan	-2000 deposits					-2000 cash reserves	-2000 deposits	-2000	deposit extinguished (money supply declines)
Total	+1500 cash reserves	+1500 deposits		-2000 cash reserves	-2000 deposits		-500 cash reserves	-500 deposits	0	no net change in MS Money left the banks but currency increased

First, in **Step Four**, you deposit your bonus check from your employer. The money comes from your employer’s account at some other bank. As described earlier, when you deposit your bonus check, both bank deposits and cash reserves move from All Other Banks (which includes your employer’s bank) to Your Bank. No new money is created, it just moves from bank to bank.

Next, in **Step Five**, you tell your bank to pay off your loan. The bank takes away \$2000 of your deposits and simultaneously discharges or nullifies your loan. The bank’s \$2000 loan asset and an equal amount of your deposit liabilities are both extinguished. Thus, the money supply of the economy has declined by \$2000.

The last line in the chart (“Total”) adds up all the accounting entries as a double check to show that after all these transactions, the money supply rose when you got your loan but then contracted when you paid it off. From beginning to end, from loan to payoff, the money supply did not permanently change in quantity, but it did change in quality: \$500 of standard money was added to currency in circulation while bank deposits were reduced by an equal amount.

After all these transactions were netted, the quantity of money (the money supply or money stock) did not change, it rose and then fell over time. The quantity of fiduciary media declined by a net \$500, but the quantity of standard money increased by an equal amount when you withdrew currency from the bank.

[slide-optional]

		MONEY			
<b>Banks' Cash Reserves</b>					
	on deposit at central bank				
	vault cash		Standard Money		
<b>Currency in circulation</b>					
					Broad Money (M2)
<b>Bank deposit liabilities</b>			Fiduciary Media		

The additional currency in circulation came out of bank reserves. Both are forms of standard money, but only currency in circulation counts in the money supply, or “broad money,” not the electronic reserves held at the central bank. So all netted out, the \$500 increase in currency in circulation was offset by a loss of \$500 in bank deposits. Overall, after all these transactions are done, the money supply is unchanged.

### TESTING YOUR UNDERSTANDING

Let’s review a few examples to test our understanding of money creation and destruction. In each situation, **let’s decide if money is created, extinguished, or merely transferred from one owner to another.**

**You pay for groceries using a paper check, a debit card, or a banking app like Venmo or Zelle.**

- ANS: No money is created; it is merely transferred from your bank account to the grocer’s bank account.

**You pay for groceries using a credit card.**

- ANS: Money is created because when you use a “credit” card, a bank is lending you money.

**You pay down the balance on a credit card by writing a check to the credit card company.**



- ANS: Money is extinguished by the loan amount you pay off.

**You finance a new car using the dealer's finance company.**

- ANS: Money is created if the loan came from a bank. Automobile finance companies are not themselves banks, but they usually have "lines of credit" with banks and perhaps with other non-bank lenders. The finance company draws on the line of credit to provide you with money. Suppose they draw money from a bank; that is creating money. So the finance company itself is typically re-lending you existing money – some borrowed from banks, some borrowed from non-banks.
- The finance company usually sells your loan to a third party, an "investment bank," and uses the proceeds to pay back the line of credit from its lenders. The loan is then "securitized" with other auto loans into an Asset Backed Security (ABS), a bond backed by a pool of auto loans. The ABS is purchased by various investors, including commercial banks, who create new money when they buy the ABS. Lesson: all existing money was originally created by an asset purchase (this includes loans) made by a commercial bank.

**You deposit paper cash into your checking account.**

- ANS: No new money is created. The cash is traded for a bank deposit. Currency in circulation declines, bank cash reserves go up (your cash becomes vault cash), and deposits go up.

**You pay off a credit card balance by sending paper cash to the credit card company.**

- ANS: Money is extinguished. Think of it in steps. First, the CC company deposits currency into the bank. Bank reserves go up, and deposits go up. Then, the CC company tells the bank to pay down the loan. Loans go down, and deposits go down. Bank assets have stayed the same, but reserves are up, and loans are down equally. Bank liabilities have stayed the same because the bank deposit created by the deposit of cash was quickly destroyed to pay off the loan. No change in bank deposits, but currency went down. Since currency is part of the money supply, the money supply has declined.

**You "take out a mortgage" (borrow money to buy a house)**

- ANS: money is created if it was borrowed from a commercial bank.

**You make a monthly mortgage payment.**

- ANS: Assuming the mortgage originated from a bank, money is destroyed. But the amount of money destroyed is less than the entire payment. Usually, you pay a mortgage servicing company that splits your payment into principal, interest, taxes, insurance, and a small service fee. Only the principal portion pays down the loan, which extinguishes money. All other portions of your payment are transfers of money from one bank account to another, which do not extinguish money.

**A company defaults on a loan (for example, it doesn't pay interest owed) but still has money on deposit in the bank.**

- ANS: the bank takes the deposit, pays off the loan, money is extinguished.

**A company defaults on a loan, but having no money, it declares bankruptcy. Assume the borrower no longer has any money in any bank, and the bank writes off the loan as worthless.**

- ANS: Unless the general depositors in the bank take the hit, the money supply will remain the same! The loss (write down) on the loan asset is taken against bank capital, not deposits (i.e., the money). All other deposit claims on the bank remain in place. This scenario happens often – a small percentage of bank loans are written off (valued at zero) every year. If there are too many worthless loans, enough to put the bank's existence at risk, there could be a bank run, which might expose the bank as unable to keep its promises to pay cash on demand. Cash reserves would be withdrawn first, and the remaining depositors would have a claim on less liquid and less valuable assets. In other words, a failed loan by itself is not a decrease in the money supply, but if it leads to a bank run, and all cash reserves and other assets are used up to meet withdrawals, there could be some depositors with claims greater than the value of the remaining assets. In that case, the money supply could shrink.
- I recall a situation during the European banking crisis in 2012, where a Cyprus bank with toxic loans conducted a so-called "bail-in." This consisted of giving the depositors, mostly Russian oligarchs, a 20% haircut on the value of their deposits to balance the remaining assets and liabilities. In that case, money was extinguished.

**A bank buys a bond from a private investor.**

- ANS: money is created as a deposit in the investor's bank account.

**The bond issuer (borrower) pays off the principal to the bank (bond owner) when the bond matures.**

- ANS: Money is extinguished. If the borrower has a deposit account with the bank, the deposit is reduced by the bond amount.
- If the borrower pays from an account at another bank, the borrower writes a check from its bank to the bank holding the bond. The bank owning the bond presents the bill to the bond issuer's bank, which sends cash reserves in payment. The bond is extinguished because it is paid off, replaced by cash reserves from the borrower's bank. The deposit of the bond issuer (money) is extinguished.

**The same bank sells a bond to a private investor:**

- ANS: Money is extinguished. If the investor has an account at the bank, the investor's deposits go down and the bank's assets go down when the bond ownership changes hands. If the investor has an account at another bank, the investor writes a check to the bank that owns the bond, which presents it to the bond buyer's bank, which sends cash reserves to the selling bank.

**You send money to the government (US Treasury or the IRS) to pay taxes or to buy a Treasury bond direct from the government.**

- ANS: Technically, according to the Federal Reserve, money is destroyed. Your check goes to the government, which presents the check to your bank for payment. **However, the government does not have accounts at commercial banks.** The government keeps its checking account at the Fed in what is called the Treasury General Account (TGA).
- You write a check to the government. The government presents your check to your bank. The bank deducts from your deposit account and sends cash reserves to the Treasury, which deposits those reserves with the Fed in their account at the Fed, the TGA. So, commercial bank deposits decline, and bank cash reserves decline. What was the bank's cash reserves became the Treasury's cash reserves.
- Monetary authorities do not consider the TGA as part of the money supply. However, as the Treasury spends the money (i.e., sends out a social security check or pays a contractor) the Treasury writes a check to the payee, who deposits it in his bank account. The bank presents the check to the central bank for payment, and the central bank pays the bank with cash reserves. Thus when the government pays out money, deposits increase, so the money supply increases.
- This is controversial accounting at best. I believe the TGA should count as part of the broad money supply. Just because it is money held by the Treasury shouldn't mean it is no longer money. The TGA is counted by some economists in what they call the Austrian Money Supply, or AMS.

**Bank A writes a check to a car dealer to purchase a company car.** [optional]

- ANS: Money is created. Bank A writes a check to the car dealer. Car dealer deposits a check in his account at Bank B. Bank B presents the check to Bank A for payment. Reserves shift from Bank A to Bank B. New money is created by the increase in the car dealers' bank account at Bank B. Bank A has swapped some of its cash reserves for a car. **Bank B has created new money by accepting Bank A's check - a promise to pay out standard money on demand.**

If you are having trouble following the details of the accounting, it might help to remember this:

- When a bank purchases an asset from a non-bank, it creates money to do so.
- When a bank sells an asset to a non-bank (which is the same as a loan being paid off, or a bond being paid off) it destroys money.

**3. HOW DO CENTRAL BANKS KNOW HOW MUCH CASH RESERVES TO CREATE?**

Now I want to come back to continue our discussion of cash reserves. These are the cash balances commercial banks hold as assets, and simultaneously, they are liabilities of the central bank listed as "reserves due to banks."

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HOW CENTRAL BANKS CREATE CASH RESERVES					
	Central Bank			Commercial Bank	
	<u>Assets</u>		<u>Liabilities</u>	<u>Assets</u>	<u>Liabilities</u>
Central Bank buys bond	+1000		+1000	-1000	
from bank, creates	(bond)		(reserves	(bond)	
cash reserves			due banks)	+1000	
				(cash reserves)	

In Lesson Two, we discussed how central banks create cash reserves: the central bank purchases a Treasury bond from the bank and pays for the bond by creating brand new made-up cash reserves. (It's another presto – poof ex nihilo moment. The central bank just creates standard money with a couple of mouse clicks.)

Recall that under a gold standard, the ultimate limit on the growth of cash reserves was the rate at which the supply of gold could increase, historically about 1-2%. However, creating cash reserves under a fiat reserve standard is entirely up to the central bank. So, how do they decide how fast or how much to grow cash reserves?

There is a school of thought that the level of cash reserves is a tool used by monetary authorities (normally central bank) to limit the quantity of money that the banks create, just as gold deposits were once a limiting factor on fiduciary media under a gold standard. Textbooks on money and banking are still teaching this.

**That seems like a plausible theory. By limiting the creation of fiat bank reserves, central banks could theoretically limit money creation in the same way a limited gold supply limits money creation under a gold standard.** If fiat bank reserves grew slowly, like the gold supply, by only two percent per year, the total bank money supply could grow no faster (on average, over the long run) than two percent per year.

But this is not what central banks have done in practice. As **a matter of historical fact, central banks have always created enough cash reserves to keep pace with the creation of bank deposits.** This fact stands in contrast to the standard version of the fractional reserve money-multiplier theory most of us were taught in college, and which is still being taught. This theory still teaches that central banks create bank cash reserves to limit the amount of money that can be created in the banks.

Under this theory, the central bank controls the amount of loans the bank can make by setting a minimum “reserve requirement ratio.” This is a ratio of cash reserves to loans, which limits loans. For example, if the reserve requirement ratio is 10%, the bank can lend only 10 times the

amount of its cash reserves. Then, if the central banks increase cash reserves by 2 percent per year, then the banking industry will also have to limit their lending growth to 2 percent per year.

But in fact, for decades, central banks have created reserves in response to commercial bank money creation growth to ensure **the banks always have enough reserves to back up whatever new money they have created**—a case of the tail wagging the dog.

Thus, under our fiat reserve system, as it operates in the real world, **the level of cash reserves is not a constraint on money creation** and never has been. The idea that cash reserves do constrain money creation is still held by many economists and still taught in schools, but it is incorrect.

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From the Bank of England:

“In reality, neither are reserves a binding constraint on lending, nor does the central bank fix the amount of available reserves. **As with the relationship between deposits and loans, the relationship between reserves and loans typically operates in the reverse way to that described in some economics textbooks.** Banks first decide how much to lend depending on the profitable lending opportunities available to them — which will, crucially, depend on the interest rate set by the Bank of England. It is these lending decisions that determine how many bank deposits are created by the banking system. **The amount of bank deposits in turn influences how much central bank money [i.e., cash reserves] banks want to hold in reserve** (to meet withdrawals by the public, make payments to other banks, or meet regulatory liquidity requirements), **which is then, in normal times, supplied on demand by the Bank of England** (Italics and bold added.)

*-Money Creation In The Modern Economy, Bank of England, Quarterly Bulletin, Q1 2014*

In other words, as banks grow their loan portfolios, they need to hold larger cash reserves. Without larger cash reserves, the banking industry would have to stop growing its loan portfolio. Central banks believe this growth should not be constrained, so they accommodate high loan growth by purchasing assets (bonds) from commercial banks, thus turning these assets into cash reserves. So, by its lending activity, the banking industry controls the level of reserves created by the central bank.

Here is how a former president of the Federal Reserve Bank of Cleveland acknowledged this reality:

The commercial banking system has ceased to be reserve-constrained, and this means that *monetary authority actions to change the size of the central bank balance sheet do not affect the nation's money supply.* (Italics original)

-*Cato Journal*, July 2016, page 368, "The New Monetary Framework," Jerry L. Jordan

So, central banks do not create reserves to constrain money creation. They create reserves to make life easier for their member banks. This encourages the expansion of fiduciary media. In my opinion, this is the cause of "creeping inflation," i.e., chronic, slow erosion of purchasing power that goes unnoticed by many people.

#### 4. HOW DO CENTRAL BANKS CAUSE COMMERCIAL BANKS TO CREATE MONEY? (The mechanics of quantitative easing)

The policy of creating sufficient reserves to encourage the growth of bank deposits got much more aggressive in 2009, in the aftermath of the Great Financial Crisis, when central banks, led by the example of the US Federal Reserve, found that the commercial banks were shrinking, not increasing, their loan books in response to widespread economic stress. Banks severely slowed their lending, and thus money was being extinguished faster than it was being created.

Central banks, therefore, adopted increasingly radical policies. With the money supply slowly shrinking, central banks were deathly afraid of a 1930s-style deflationary spiral. So, their traditional policy – creating enough reserves to keep up with market-driven credit creation in the banks – morphed into something called "quantitative easing," or QE.

The purpose of QE was to create money that the banks were refusing to create, in order to avoid a deflationary meltdown. QE doesn't encourage money creation. QE *requires* commercial banks to create money.

QE uses a standard central bank procedure called Open Market Operations on a massive scale to create new spendable bank deposits. Open Market refers to the fact that the Fed is purchasing assets from the investing public, i.e., from non-banks. OMO works like this, as described by the Fed:

[slide]

"When the Federal Reserve wants to increase bank reserves...it contacts dealers or financial institutions that are willing to sell their government securities. In exchange for the securities, the Federal Reserve credits the financial institution's commercial bank with additional bank reserves equal to the value of the securities. *The commercial bank, in turn, credits the institution's account. The net result is that the Federal Reserve has more government securities, the commercial bank has larger reserves, and the dealer has larger deposits with the commercial bank. **Both bank reserves and the money stock have increased.***" [italics added]

- Scott Hein, Federal Reserve Bank of St. Louis, March 1981

In accounting terms, an open market purchase looks like this:

<b>Central Bank Purchases Asset From Non-Bank Investor</b>			
Federal Reserve		Commercial Bank	
Assets	Liabilities	Assets	Liabilities
+100 Treasury	+100 Reserves to Bank	+100 Reserves	+100 Deposits
Individual Investor			
Assets	Liabilities		
+100 Deposits	-100 Treasuries		

As the passage above confirms, **the result is that both bank reserves and money supply have increased.** The individual (non-bank) investor gets new deposit money in exchange for his Treasury bond. The commercial bank gets new reserves and incurs a new deposit liability to the investor. The central bank receives a new asset in the Treasury bond and a new liability in the cash reserves owed to the commercial bank.

From our previous work, we can generalize the following:

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**The commercial bank can always create new money by purchasing a bond from a non-bank investor.**

**The central bank can always increase a bank's cash reserves by purchasing a bond from that commercial bank.**

**When the central bank combines these two operations into a three-party transaction, new bank deposits (money), new cash reserves, and new Fed liabilities are created simultaneously.**

For many years, the Fed used this transaction, on a modest scale, to tweak the money supply up or down a bit, nudge short-term interest rates up or down a little, or gradually increase the cash reserve level for a growing banking industry. This is open market operations, the Fed's primary traditional policy tool.

But after the Great Financial Crisis of 2009, the Fed implemented this transaction on a massive scale.

In Lesson Five, we will examine the effects of this massive money-creation exercise in detail. For now, it is essential to understand the mechanics.

### Erroneous Beliefs about QE

A common but erroneous belief among pundits who write about QE, including some of my free-market friends) is that when the Fed buys a bond from a non-bank investor, only bank reserves are increased, and the money supply does not increase. Here's an example of this thinking:

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## Why Quantitative Easing Isn't Printing Money

Marshall Gittler, Head of Global FX Strategy | IronFX  
Published 3:31 AM ET Thu, 23 May 2013 | Updated 6:37 PM ET Thu, 23 May 2013



<https://www.cnbc.com/id/100760150>

The theme of this article is that quantitative easing creates only new bank reserves but does not create new money that can be spent in the economy (bank deposits). The author incorrectly describes "QE" as the Fed only buying bonds from banks – which would *not* result in new bank deposits if the Fed did that.

The author is apparently unaware that under QE, *the Fed buys bonds from private investors* using the banks as an intermediary, as I described above, creating new money for that investor's use. He is apparently ignorant that this is how open market operations have always worked at central banks, and QE was just a massive expansion of this policy tool.

These beliefs persist because some financial writers focus only on the interaction between the central bank and the commercial bank, omitting the key role of the individual investor who sells the bond to the Fed. This kind of misinformation perpetuates wrong-headed ideas about money creation.

A follow-on, compounding error lies in thinking that the way QE was supposed to increase the money supply was to first flood the banks with reserves. The banks, flush with reserves, would start lending these excess reserves to create new loans. I have heard this story from numerous free-market economists, some even recognized as experts. But this story is based on the erroneous belief that banks lend out their reserves. They do not. They create new money to lend. Unless they are deficient in reserves in the first place, excess reserves do not encourage banks to lend more, any more than reserves are normally a constraint on lending.

Many professionals have widely misunderstood QE for many years and still do.



Here is a more recent explanation from the Bank of England:

[slide]

“[Quantitative Easing] is intended to *boost the amount of money in the economy* directly by purchasing assets, mainly from non-bank financial companies.

*QE initially increases the amount of bank deposits those companies hold (in place of the assets they sell).* Those companies will then wish to rebalance their portfolios of assets by buying higher-yielding assets, raising the price of those assets, and stimulating spending in the economy.

As a by-product of QE, new central bank reserves are created. But these are not an important part of the transmission mechanism. This article explains how, just as in normal times, these reserves cannot be multiplied into more loans and deposits and how these reserves do not represent ‘free money’ for banks.”

- Bank of England, Quarterly Bulletin, 2014 Q1

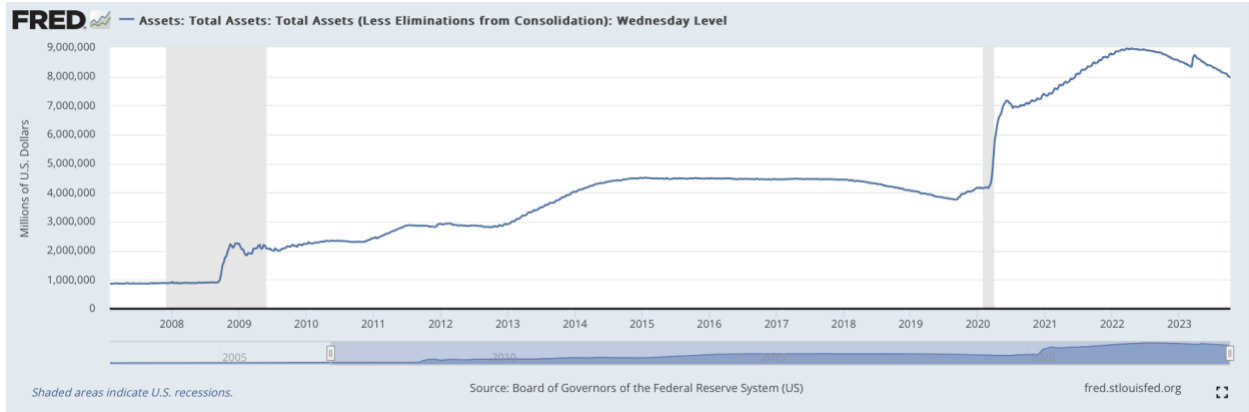
And now, from an eminent monetary scholar who knows what he is talking about:

[Russell Napier, *Solid Ground*, 4 Sep 2023]: “The whole point of QE, at least initially in 2009, was to make sure that the contraction in bank credit that was destroying money was offset by a central bank creating money. *The Fed created money by buying assets from financial institutions, primarily Treasury securities,* and with little delay those financial institutions used their growing liquid funds to buy assets. The downward spiral in asset prices was prevented, and, with a lag, bank credit stabilized and slowly began to grow again as the US private sector began to increase their borrowing.”]

The clear objective of QE was and is to increase the money supply. The increase in cash reserves is incidental and not important in providing monetary stimulus to the economy because bank reserves cannot be spent in the economy. In QE, it’s the creation of money (bank deposits) that counts the most, not cash reserves.

When the Fed buys bonds from a non-bank, the money supply increases (bank deposits rise). When it sells bonds does the money supply decrease? If it sells to a non-bank, yes. Remember, send money to the government, the money supply goes down. When Fed sells bond to individual, the individual trades a bank deposit for bond. Fed presents check (for standard money) to bank. Bank pays Fed with standard money (cash reserves). Individual trades deposit for bond. Deposit is retired, money is destroyed. Cash reserves are retired, Fed reserved due bank are retired, Fed’s bond transferred to individual.

[slide]



Just how much money did the Fed create using QE? You can measure it by looking at how much the Fed increased its assets during the QE era of 2009 to 2022, net of over \$7 Trillion, which is about one-third of the total broad money supply of \$21 Trillion. Every asset purchase increased the money supply as described above. This means that over the last 13 years, one third of the money supply (\$7 Trillion out of \$21 Trillion) was created by decisions made by the Fed, not by the commercial banks.

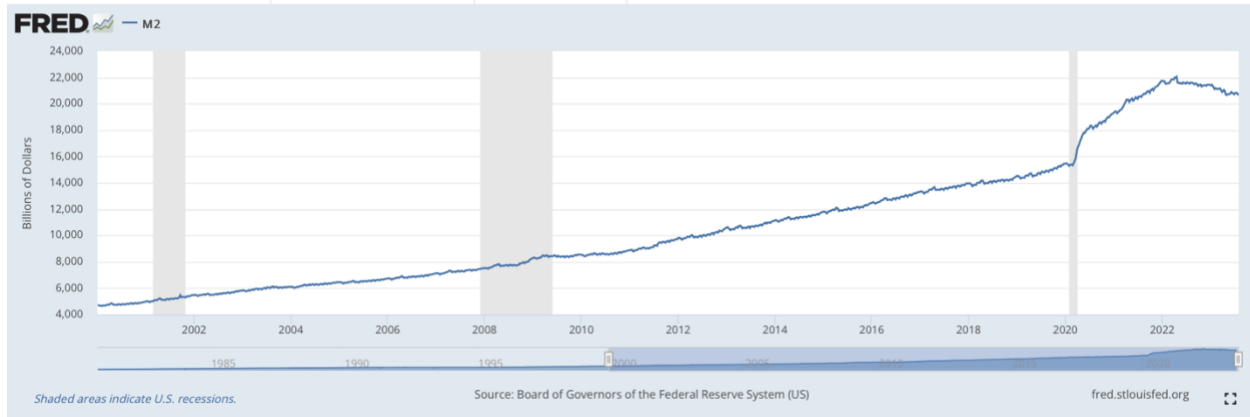
[optional] When the Fed owns a T-bond and the bond matures, ie Tsy pays off the bond? No change in money supply unless you include the TGA in the money supply. The Treasury pays down reserves from the TGA, and the Bond retires (disappears). Fed asset (bond) and liability (reserves due to Treasury) both go down. Treasury asset (cash reserves) and liability (the Treasury bond) both go down. No change in money supply unless you consider the TGA to be money, which I do.

### INTRODUCING M2 AS A MEASURE OF “BROAD MONEY”

I brought up the broad money supply, so we need to introduce the common measure of it that is the Fed uses to measure so-called “broad money,” or M2. M2 is designed to measure everything we use as money.

**Virtually everything we call money is either bank deposits or currency in circulation. I’ll explain in a moment what I mean by “virtually everything.”**

[slide of M2]



“M2” is a label with a long history in monetary statistics. There used to be many more “Ms” in the financial lexicon: M0, M1, M2, M3, etc., but most of these Ms have fallen out of use because central banks decided they had little analytical value, and I agree. For our purposes, M2 is our preferred measure of the “broad money” supply - that is the money available for use by the public in everyday economic transactions, including all consumer purchases, business expenditures, investment outlays, and so on.

Here is a graph of the **total M2** in the 21<sup>st</sup> Century. It peaked at just under 22 trillion in July 2022 and currently (September 2023) is at just under \$21 trillion. The biggest component of M2 (by far) is bank deposits, currently at about \$17.3 Trillion. The next largest component is “currency in circulation,” which is just the paper money we carry around or hide under our mattresses. This component stands today at about \$2.3 trillion.

Finally, there is another component the Fed includes in M2 called “**retail money market funds**,” or “money funds,” currently at about \$1.6 Trillion. Money market funds are mutual funds that invest in very short-term bonds. “Retail” money funds are those held by individuals as opposed to “wholesale” money funds held by businesses and institutions. Because these funds invest in very short-term securities, their price does not change much when interest rates change, which makes the entire fund stable in price. This stability allows the fund to price its shares at \$1.00 per share despite interest rate changes. To the investor, they function almost like an interest-bearing bank deposit but without FDIC insurance. However, since the great financial crisis of 2008-9, money market funds have primarily invested in government-backed securities, so most of them are considered virtually risk-free and they are a very popular way to stockpile money or near-money.

Including money market funds in the broad money supply is problematic, conceptually. I’ll take a few minutes to explain why, hoping not to lose you in the weeds.

When you use your bank deposit to buy into a money market fund, the first thing that happens is that your deposit transfers from your bank account to the fund’s bank account. No money is created or destroyed there because you have just transferred your bank deposit to the fund’s bank. But as soon as the fund invests the money, things get interesting. If the fund buys a

Treasury bill from an investor, no new money is created – the fund gets the T-bill and the seller gets the fund's money. By including money funds in the money supply, the Fed is counting both the bank deposit and the new money market fund investment as "broad money." There is definitely some double-counting there.

However, if the fund buys a T-bill directly from the Treasury, then that money leaves the banking system (it's no longer a bank deposit) and goes into the Treasury's account at the Fed (the TGA) which the Fed does not count as part of M2. (As I mentioned earlier, I think the TGA should be considered part of the money supply because the Treasury is constantly spending, and when they spend from the TGA, the money goes right back into a bank deposit.) So, money that goes into the TGA, whether it comes from a money market fund or any other source, tax payments, should be considered part of the money supply, in my opinion.

Assets in a money fund, like T-bills, cannot be spent. You can't spend a T-bill to buy a car. You have to sell it and then use the money you receive to buy the car. This exchange of a T-bill for money can normally be made very easily, but money first has to come from another bank account to your bank account. So, counting investments in Treasury securities both as investments and as money seems like double counting to me.

There is another new category of money market investments that I believe should be counted in the money supply. This is a special program offered by the Fed that came into use over the last three years. It is called the Reverse Repurchase Agreement program, or RRP. The Fed uses this program to help it control short-term interest rates.

Under this program, if you are an approved large institution, you can lend the Fed money overnight, currently at a rate of 5.25%. So, for example, Blackrock, Vanguard, and about 20 other big firms can bundle their customers' money into a money market fund and lend this money overnight to the Fed. They can have the money back anytime they want – the Fed simply returns the loan in the form of a deposit at the lender's bank. This means the money can be in a bank account (money) one day, loaned to the Fed and out of a bank account the next (not money), and back in a bank account the next day.

Now I think this money loaned overnight to the Fed should be counted as part of the money supply because there is very little difference to the depositor as far as access to spending money is concerned. It is like having a bank account that pays higher interest than your bank. If you have a bank account, you have the bank's promise to pay out standard money on demand. If you have loaned money to the Fed under the RRP, you have the Fed's promise to pay out standard money on demand the next day. This to me is a difference without any real distinction.

		As of September, 2023	
		(\$ Billions - approximate)	
		Broad Money Supply (M2)	Brown's Broad Money Supply
	Bank Deposits	17,345	17,345
	Currency in circulation	2,328	2,328
	Retail Money Market Funds	1,591	0
	Treasury General Account	0	679
	Reverse Repo Program	0	1,265
	<b>Total</b>	<b>21,264</b>	<b>21,617</b>

So, if you asked me how to count the money supply, I would include bank deposits and currency in circulation, like the Fed does, but I would exclude money market funds. However, I would also include the Treasury General Account, and I would include the Fed's Reverse Repo Facility. That would give you a total that looks like this, as opposed to the Fed's method of counting. Not that much difference at the end of the day, but the TGA and the RRP can fluctuate quite a lot depending on the interest rate the Treasury and the Fed are paying.

That is all I want to say right now about how to count the money supply unless you have questions about it, which I'd be glad to discuss.

One concluding point. This ambiguity of what counts as money does not change the fact that all money – even if held in the TGA or held directly at the Fed – all of it got its start, i.e., was created, as a bank deposit in a commercial bank resulting from a loan or other asset purchase.

We truly live in an era where all money emerges from pure credit creation.

Next time, we are going to look at the very positive side of money creation, how it can be a positive force for economic progress, even under our fiat reserve system.

**END OF MANUSCRIPT**