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**Money Creation**

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## **Abstract**

Banks create money. This fact is now well accepted after the Bank of England published an article describing how banks created money. This paper demonstrates how shadow banking also creates money. However, not all shadow banking money is newly created; some are cannibalised from traditional banking. This paper also shows that the stock of shadow banking money is growing faster than the stock of traditional banking money. These facts, that shadow banking creates money and that it is growing faster than traditional banking money, have implications regarding differences in access to finance among households, SMEs, and large corporations.

# Money Creation

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## What Is Money?

I suppose today the debate is settled. After all, the acknowledged authority on money has spoken. The Bank of England has stated, in its 2014 Quarterly Bulletin, that the money that you and I use, or at least the majority of the money that we use, is created by commercial banks [1].

This was how the Bank of England put it:

In the modern economy, most money takes the form of bank deposits. But how these bank deposits are created is often misunderstood: the principal way is through commercial banks making loans. Whenever a bank makes a loan, it simultaneously creates a matching deposit in the borrower's bank account, thereby creating new money.

Yet, old habits of thought are hard to shake off. We cling to the idea that banks use our deposits to make loans. Even banks themselves seem to say so. Here, for example, is how one of the major banks described its prudent lending process in its 2020 annual report [2].

...retail and corporate loans and advances are largely funded by deposits...

That, as you would have noticed, is quite different from what the Bank of England said, that deposits are created when commercial banks make retail or corporate loans.

The idea that somehow a for-profit commercial enterprise, albeit a trusted bank, could freely print money to further its private commercial interests is, well, unsettling. Isn't that like giving the bank a carte blanche? Is it even legal? Surely the only legitimate authority to print money should be the government, or the central bank, shouldn't it? I mean, the reason that a £5 note is widely accepted as money is because it is issued by the Bank of England.

In fact, Bank of England is boldly printed across the legitimate £5 note, with the declaration that says, *I promise to pay the bearer on demand the sum of five pounds*. By the way, I find that declaration rather amusing, though. What happens if you were to take your £5 note to the Bank of England and demand that sum of five pounds? You would get another £5 note in exchange, still bearing that declaration, of course!

Well, you could ask to be given five pieces of £1 coins instead. But why would you think that five of these £1 coins are worth £5? A £1 coin is made up of mostly copper with some zinc and some nickel. There is no gold in it; zilch. The market value of the metals in each coin wouldn't amount to more than a couple of pennies.

Looked at it that way, the value of the money in your wallet is not much more than an illusion!

But I digressed. Anyway, to get back to the point that the legitimate authority to print money should be the Bank of England, you might say: But wait! There is an exception, isn't there?

Before this pandemic, when travelling was easy, you landed for the first time at the Hong Kong International Airport. It was surely one of the most beautiful airport you've even been in. You got to the money changer and asked to buy a thousand Hong Kong dollars, all to be in HK\$100 denomination. When you opened the envelope, you found that you had been given HSBC banknotes. So, you turned back and said you wanted Hong Kong dollars. The lady behind the counter smiled knowingly. She said, with some emphasis, this **is** Hong Kong dollar. It is issued by HSBC.

So does HSBC, a for-profit commercial bank, print its own money in Hong Kong? The answer is, yes, and no. Those HSBC HK\$100 notes you were given were indeed legal tender in Hong Kong. But how does a commercial bank get to issue its own legal tender money? Well, it's because the Hong Kong Monetary Authority (HKMA) has authorised HSBC, and two other commercial banks, to issue money on its behalf [3]. It's a throwback to Hong Kong's colonial past. Hong Kong, like other British colonies, was governed principally to further British mercantile interests. So, British corporations, such as the British East India Company and the Hong Kong And Shanghai Banking Corporation, held sway over how the colonies were run.

But the three money-issuing banks cannot freely print Hong Kong dollars. For every HK\$780 that the three authorised banks issue, the banks have to pay the HKMA US\$100.

The actual printing of the HK dollar notes these days are undertaken by a Hong Kong company, partly owned by the three money-issuing banks, but with majority shares held by the HKMA.

So, no, HSBC does not have *carte blanche* to print paper money. The bank has to pay for every HK dollar that it issues. The Hong Kong government, through the HKMA, is the ultimate authority to print (or mint) Hong Kong currencies.

But currency (in the interest of brevity, we shall simply label notes and coins as currency) is not the only form of money. If you examine the balance sheet of any business, you see an asset line item that says, *cash-in-hand*, or in some balance sheets it says, *cash and cash equivalents*. You know that the amount of *cash-in-hand* reported in the balance sheet is more than what you find in the company's petty cash box.

So what else counts as *cash-in-hand*? Businesses count their deposits with banks as *cash-in-hand*, as you and I would too. So for all intent and purposes, our bank deposits are money. However, we would not count furniture, or a car, as money. So cash and deposits are money, but furnitures and cars are not. Similarly, bonds are not money. And neither are trade receivables, at least not until money has been received. *Cash-in-hand*, furnitures, cars, bonds, and trade receivables are all assets, but furnitures, cars, bonds, and trade receivables are not money.

Why so? Well, one of the distinguishing features of money is that we can use it to make payments. Equally important, we can use money at par. That is, if the monetary asset says it is worth £5, then we could exchange it for £5. And tomorrow the monetary asset will still be worth £5. Unlike non-monetary financial securities, such as company shares, or bonds, the values of which fluctuate from day to day, money has a defined par value. Another distinguishing feature of money is that it is ready to be used. So, with cash, we simply hand over the money as payment. With deposits, we write and hand over a cheque, or we instruct the bank to transfer a sum of money from our deposit account as payment.

This is how the Bank of England describes what money is [4].

The vast majority of all money in the UK is held electronically as deposits, with just a small portion held in physical form as cash (banknote and coins).

And this is how an article by the US Treasury Department describes what money is [5]:

Money is usually defined from a functional perspective as a "unit of account, store of value and medium of exchange." However, this definition does not take into account the quintessential attribute of money — that money always trades **at par on demand** — and the institutional arrangements that underpin this attribute.

So, bank deposits are *money-on-demand*, available on demand. Deposits are valued at par. Bonds and shares are assets, but they are not money because their value tomorrow cannot be known today and the ability to convert them to cash depends on whether or not there are buyers who would pay par.

If you examine Fig 1 you would notice that, other than currency and deposits, there are two other forms of *money-on-demand*.

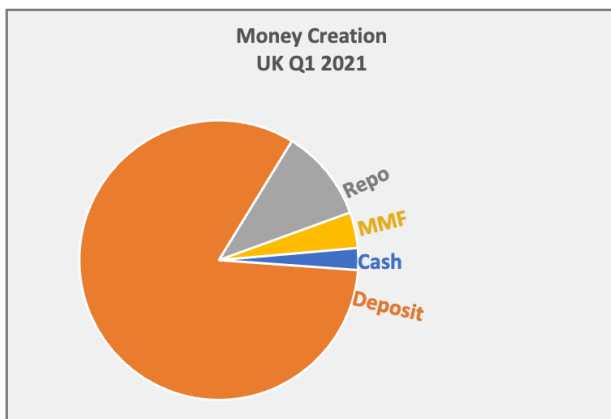


Fig 1

The rest of the paper is devoted to exploring how these different forms of money come into existence and who create them.

It should be noted that this paper is not an exposition of the financial system. Nor is this a paper about banking, or central banking, or shadow banking. It does not even cover adequately many aspects of money. This paper is an analysis of how money is created, and even that not in great detail.

### **Does Quantitative Easing Create Money Out Of Thin Air?**

Logically, quantitative easing (QE) should be discussed at the end of the paper. However there are certain features of money that first have to be understood before we can explore the question of money creation. And it just so happens that en route to answering the question about QE, we would be visiting the role that *bank-reserves* play in banking transactions. And we have to understand banking transactions in order to determine whether a particular transaction is creating new money or not. That's why it makes sense to start by asking if QE really can bring new money into existence.

But, if *bank-reserve* are so important in the scheme of things, why are *bank-reserves* not represented as a form of money in Fig 1? To understand why, we must first understand the relationship between commercial banks and the central bank.

This section introduces the relationship between central bank and commercial banks and how *bank-reserves* provide the essential channel through which money flows between commercial banks, through the central bank. An example from quantitative easing pulls all these different strands together.

What is the relationship between the central bank and commercial banks? A country's central bank acts as the banker for commercial banks. Just as you and I hold deposit accounts with commercial banks, these commercial banks (actually, not all commercial banks, but the major ones) hold deposit accounts with the central bank. This type of deposits has a special label. They are called *bank-reserves*.

Recall that we treat deposits as money.

There is an important difference in the quality of the money held as deposits with the central bank and the money held as deposits with a commercial bank. The type of deposits that commercial banks hold with the central bank is backed by the full authority of the state. The type of deposits that you and I hold with a commercial bank is as good as the ability of the bank to pay when we want our money back. I'm oversimplifying matters here. While the statement is not wrong, it fails to give the whole truth.

A bank deposit is a bank's promise to pay at par on demand. But why do I trust a bank's promise more than, say, I trust an acquaintance's promise to pay? There are two good reasons. First, the bank's promise is backstopped by the country's central bank. That is, in the unlikely event that the bank lacks the fund to pay, the central bank stands ready to supply the necessary fund. Second, the deposit is insured by a government agency.

We can imagine that the two distinct types of deposits reside in two distinct sectors of the financial world. The European Central Bank (ECB) calls these two sectors the *Money-Issuing Sector* and the *Money-Holding Sector* [6]. For now, interpret *MFIs* to mean commercial banks and the central bank. We will expand its meaning later.

The MFI sector comprises those institutions whose liabilities may be of a monetary nature... The MFIs ... are collectively defined as the “money-issuing” sector...  
...(T)he “money-holding” sector comprises ... principally households, non-financial corporations, insurance corporations and pension funds, and other non-MFIs...

When we talk about the money in circulation in the economy, we are talking about money that exists in the *Money-Holding Sector*. This kind of money comprises currency and bank deposits. It is different from the reserves that commercial banks hold within the commercial banks’ vaults or in reserves accounts with the central bank. An example of currency and bank deposits on the one hand and *bank-reserves* on the other hand would make this point clear.

Currency and bank deposits, and *bank-reserves* are money. But currency and deposit are a different kinds of money from *bank-reserves*. You and I use currencies and commercial bank deposits as money. But you and I have no access to, and do not use, *bank-reserves* as money. Only banks use *bank-reserves* as money.

Another way to think about this distinction between currency and deposits on the one hand, and *bank-reserves* on the other hand, is to say that both currency and bank deposits reside in the *Money-Holding Sector* whereas *bank-reserves* reside in the *Money-Issuing Sector*.

When people talk about the money supply, i.e., the stock of money circulating in the economy, they are talking about the money in the *Money-Holding Sector*. That’s the kind of money that you and I use to make payments.

It is important to understand the role of *bank-reserves* if we are to understand how quantitative easing creates money.

When a central bank purchases financial assets in the market, money supply expands. When a central bank sells its holding of financial assets, money supply contracts. The types of financial assets that the central bank buys depends on circumstances. During normal times, the purchases would be high quality assets, such as bonds that have been issued by the government. However, when the financial industry, or the economy, is in trouble, and the central bank has to shore up the financial system, that is, when quantitative easing is called for, the central bank would resort to purchasing less safe assets, such as corporate bonds.

Take the case of the UK. The Bank of England has engaged in quantitative easing since 2009. The Bank’s asset-purchasing appetite has been voracious. In 2009, the Bank gobbled up £200 billion of gilts. But its appetite for assets has not eased up since. By 2021, the Bank has purchased a cool £895 billion of assets from the financial market, of which, £19.7 billion were corporate bonds [7].

Now, we walk through a simplified scenario of how quantitative easing creates money.

Let’s say that an insurance company holds a deposit account with HSBC. The Bank of England has just bought some bonds from the insurance company. How does the Bank of England pay for its purchase?

First we look at what happens in the *Money-Issuing Sector*. The Bank of England credits HSBC’s reserves account. HSBC in turn credits the insurance company’s deposit account. The increase in HSBC’s reserves account at the central bank balances exactly the increase in the insurance company’s bank deposit account.

Next we look at what happens to the balance sheet of the insurance company. The insurance company is in the *Money-Holding Sector*. Money as we understand it resides in this sector. When the insurance company sells bonds, its deposit account at HSBC grows. That is, the insurance company receives money for the sale. At the same time, its stock of bonds is reduced. Recall that bonds are assets, but they are not money. That is, bonds can be sold for money, but that sale is contingent on the availability of ready buyers. In other words, bonds are not *money-on-demand*. And, there is no guarantee that they would trade at par.

The overall result is that the *Money-Holding Sector* now has a deposit that did not exist before. In other words, money has been created in the *Money-Holding Sector*.

### The T-accounts Of Quantitative Easing

Fig 2 retells the quantitative easing example, but in greater detail, through T-accounts.

You will find that in this paper each example is retold using T-accounts. However, if you find that these T-accounts interrupt the flow of the narratives, it is OK to skip them altogether. The main text can stand as is, without the T-accounts. The T-accounts are included to meet the expectations of people who like their t-s crossed and i's dotted. For them, all credits must be counterbalanced by debits. And that expectation is best satisfied using T-accounts.

The T-accounts are colour coded. Any reference relating to assets and liabilities in the *Money-Issuing Sector* is in red. Any reference relating to the *Money-Holding Sector* is either in green, or in blue. Green denotes money. Blue denotes assets, such as bonds, furnitures, or cars, that are not money.

In the *Money-Issuing Sector* the Bank of England's balance sheet is increased by the newly purchased bonds. For this purchase, the Bank of England credits HSBC's reserves account.

HSBC's balance sheet now has an increased central bank reserves. HSBC in turn credits the insurance company's deposit account.

The sold bonds are deducted from the insurance company's balance sheet. But now the insurance company has deposit that did not exist before. So in the *Money-Holding Sector*, new money (in the form of deposit) has been created.

HSBC <i>Money-Issuing Sector</i>		Bank of England <i>Money-Issuing Sector</i>		Insurance Company <i>Money-Holding Sector</i>	
Dr	Cr	Dr	Cr	Dr	Cr
Central Bank a/c (i.e. an asset)	Insurance Co's deposit a/c (i.e. a liability)	Bonds (newly acquired)	HSBC's reserves a/c	Deposit at HSBC (money)	Bonds sold (asset)

Fig 2

Note however that no new money is created if the central bank had bought the bonds directly from a commercial bank. An easy way to understand why this is the case is to think in terms of *Money-Issuing Sector* and *Money-Holding Sector*. When the central bank purchases bonds directly from a commercial bank, the transaction stays entirely inside the *Money-Issuing Sector*. No new deposit (i.e., money) is created in the *Money-Holding Sector*. That is just another way of saying that no new money has been added to the money supply.

## Do Banks Really Create Money Or Do Banks Merely Intermedate?

We used to think of banks as intermediaries. They move money from savers to borrowers. But in reality banks create money. But how can we demonstrate that indeed banks don't just intermedate, that they create money?

We begin with two very commonplace scenarios in banking transactions.

In the first scenario we imagine that you run a small eatery. At the end of each business day, you deposit your day's cash-takings with the bank. The bank credits your deposit account.

But banks don't like to have cash sitting idly in the vault. Yes, banks do hold a small amount of cash in their vault. That small amount is to meet the occasional cash withdrawals by walk-in depositors. But banks would rather deposit any excess cash with the central bank.

That last sentence is not totally correct. While the central bank is the issuer of currency, the actual distribution of the currency is undertaken by agents appointed by the central bank. So, in reality, the bank would deposit the excess cash with the central bank, but through one of these agents.

The bank's deposits with the central bank has a special name. It's called *bank-reserves*. There is a lot of misunderstanding regarding the nature of *bank-reserves*. But we leave that issue aside for now, except to note that any cash sitting idly in the bank's vault is sitting in the *Money-Issuing Sector*. That is, cash in the bank vault is not that different from the bank's reserves sitting in the central bank (except that the bank might earn a small interest if the money were parked with the central bank). So cash sitting in the bank vault also counts as *bank-reserves*.

Since you now hold an additional deposit that didn't exist before, it would appear that new money has been created in the *Money-Holding Sector*. But you have just handed an exactly equal amount of cash to the bank. That is to say, you have removed cash (i.e., money) from the *Money-Holding Sector*, and that cash now resides in the *Money-Issuing Sector*. Basically, you have exchanged money in the form of cash for money in the form of a bank deposit. No new money has been created.

### T-accounts of a bank deposit

Fig 3 shows the T-accounts between the eatery and the bank. Notice that the eatery now has a deposit that it didn't exist before. At the same time, an equal value of cash has been reduced. No new money is created in the *Money-Holding Sector*.

Bank (Money-Issuing Sector)		Eatery (Money-Holding Sector)	
Dr	Cr	Dr	Cr
Cash in vault	Eatery's deposit a/c	Bank deposit	Cash

Fig 3

Assets, liabilities relating to the *Money-Issuing Sector* are shown in red.

Assets, liabilities that are *money-on-demand*, relating to the *Money-Holding Sector*, are shown in green.

Assets, liabilities that are non-monetary, relating to the *Money-Holding Sector*, are show in blue.

In the second scenario you are a wage earner. To pay you, your employer withdraws cash from his bank deposit account. Let's label the employer's bank as the *Sending Bank*. So the *Sending Bank* debits the employer's deposit account. You receive your wage and deposit the money in your



bank account. Let's call your bank the *Receiving Bank*. So, the *Receiving Bank* credits your deposit account. Overall, no extra deposit has been created.

But in reality, your employer would not have withdrawn cash to pay your wages. He would have made a fund transfer.

What exactly happens in a fund transfer?

A fund transfer between two commercial banks involves three parties, the *Sending Bank*, the central bank, and the *Receiving Bank*. The accounts between the *Sending Bank* and the *Receiving Bank* is settled, i.e., the transfer is effected, when the central bank debits the *Sending Bank's* reserves account and credits the *Receiving Bank's* reserves account.

At the same time, the *Sending Bank* debits the employer's deposit account, and the *Receiving Bank* credits the wage earner's deposit account.

In the *Money-Holding Sector*, one deposit asset is increased, and another deposit asset is decreased by the same amount. No new money has been created.

### T-accounts Of A Payroll Fund Transfer

Fig 4 shows the fund transfer from the *Sending Bank* to the *Receiving Bank*, across their reserves accounts at the Bank of England.

Fig 5 shows the T-accounts of the balance sheets of the employer and the wage earner, both entities in the *Money-Holding Sector*. No new money is created when the transaction is between entities of the same *Money-Holding Sector*.

Sending Bank (Money-Issuing Sector)		Central Bank (Money-Issuing Sector)		Receiving Bank (Money-Issuing Sector)	
Dr	Cr	Dr	Cr	Dr	Cr
Employer's deposit a/c	Reserves at Central Bank	Sending Bank's reserves	Receiving Bank's reserves	Reserves at Central Bank	Wage earner's deposit a/c

Fig 4

Employer (Money-Holding Sector)		Wage Earner (Money-Holding Sector)	
Dr	Cr	Dr	Cr
Wage expense	Deposit a/c	Deposit a/c	Wage income

Fig 5

Assets, liabilities relating to the *Money-Issuing Sector* are shown in red.

Assets, liabilities that are *money-on-demand*, relating to the *Money-Holding Sector* are shown in green.

Assets, liabilities that are non-monetary, relating to the *Money-Holding Sector*, are show in blue.

### Do Banks Really Create Money? Part II

The conventional narrative about banking goes like this. You deposit money with the bank. The bank lends most of that money to someone else. But the bank retains enough of the money in case later you wish to withdraw some money. Now, if thousands, or perhaps hundreds of

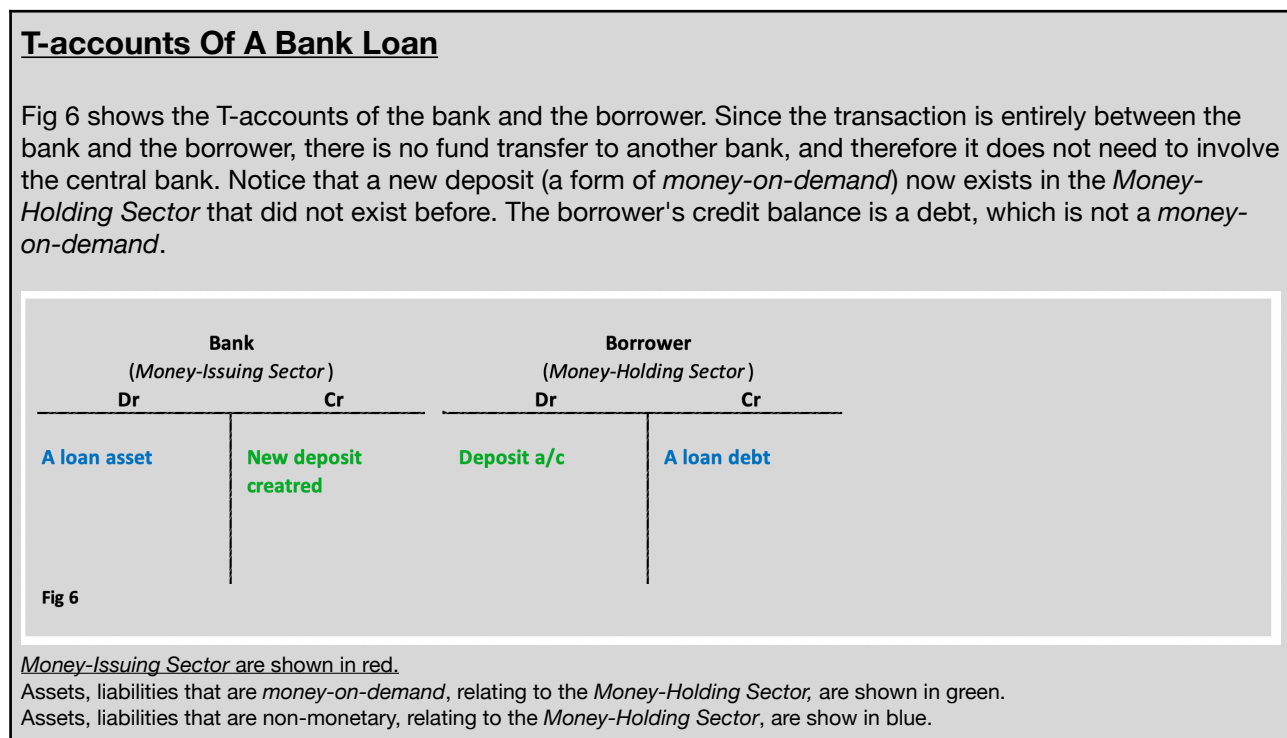
thousands, of people deposit money with the bank, the bank reckons that it would be unlikely that all these people would queue to withdraw all their money at the same time. So, in principle the bank needs to hold only a fraction of the deposits to meet depositors' withdrawal demand.

The long and short of it all, according to this old narrative, was that deposits begot loans.

But in 2014 the Bank of England offered another version of this narrative [1]. According to the Bank of England, the story of banking should be retold as follows. You wish to borrow from the bank. Assuming that the bank approves your loan request, the bank credits your deposit account with the approved loan.

Notice what has just happened? The bank has created a deposit that didn't exist before. That is, the borrower now has a deposit asset that didn't exist before. Money has been created, and money supply has increased, in the *Money-Holding Sector*.

New money has been created. But it's a moot point whether the bank has *pushed out* a new loan asset (which is its deposit liability) or the borrower has *pulled in* a new deposit asset (which is her new loan debt). Most banking literature would say that the bank has created new money. But I prefer to think in terms of the *banking process* having created new money. The *banking process*, which is an interaction between a borrower and a bank, brings about the new loan, balanced by a new deposit.



Next, we imagine that you use the loan money to buy a car. So, you draw a cheque on the bank, payable to the car seller. The seller promptly deposits the cheque with his bank. Your bank debits your deposit account. Has the new money been extinguished? No, it hasn't. The reason is obvious, but at the risk of belabouring the obvious, we walk through what happens to the money.

Let's call the buyer's bank the *Sending Bank*, and the seller's bank the *Receiving Bank*. The *Sending Bank* transfers the money that's in your deposit account to the *Receiving Bank*, which then credits that sum into the deposit account of the seller. As we have seen in the payroll example, the transfer is settled across their reserves accounts at the central bank. It was merely moving the reserves from one bank to another. And no new money has been created in the *Money-Holding Sector*. What's lost in the buyer's account is gained in the seller's account.

## T-accounts Of A Car Purchase

Fig 7 shows the T-accounts of both the buyer and the seller. Both are in the *Money-Holding Sector*. Notice that the deposit account of the buyer sets off the deposit account of the seller. No new money is created. Cars are not money.

Buyer (Money-Holding Sector)		Seller (Money-Holding Sector)	
Dr	Cr	Dr	Cr
Car (acquired)	Deposit a/c	Deposit a/c	Car (disposed)

Fig 7

Assets, liabilities relating to the *Money-Issuing Sector* are shown in red.

Assets, liabilities that are *money-on-demand*, relating to the *Money-Holding Sector*, are shown in green.

Assets, liabilities that are non-monetary, relating to the *Money-Holding Sector*, are shown in blue.

## How Much Money Have Banks Created?

So, how much money have banks created? Before we can give an answer to that question, we have to agree upon what we mean by money and what we mean by banks.

We have said that deposits, like banknotes and coins, are money. But there are deposits and there are deposits. Overnight deposits clearly are as good as money because such deposits have a maturity of only one day, even if they are continually renewed each day. The common chequing account is also money because we can withdraw money on demand or draw a cheque on our account and know that it would be honoured.

But what about time deposits? Are time deposits also money? Yes, they are. Time deposits pay at par on demand, although the interests earned on the deposit may be lower if money is withdrawn before the maturity date. Deposits that pay at par and can be withdrawn on demand is as good as sight deposit.

What do we understand to be banks? Well, earlier we said that MFIs meant commercial banks and the central bank. But when we say that bank deposits are as good as money, we mean money that is used for payment in the *Money-Holding Sector*. That excludes *bank-reserves* at the central bank. So, in the context of the question regarding whether banks create money, we understand banks to mean financial institutions that holds deposits from the *Money-Holding Sector*. So, for example, in the UK that would include both commercial banks and building societies.

There is one more factor to take into consideration. Earlier, we established that quantitative easing created bank deposits and that meant that quantitative easing created money. Was that money created by the central bank or was the money created by commercial banks?

Actually, we have addressed a similar question earlier. When a bank makes a loan, money in the form of a deposit is created. The question was, did the bank *push out* a loan or did the borrower *pull in* the loan? Who created the new money, the bank or the borrower? We concluded that it was not who but what. It was the *process of banking* that created the money. So, by the same token, we now conclude that it is the *process of banking* during quantitative easing that creates the money. The question of whether it is the central bank, or the commercial bank, or the borrower, is a red herring. It is none of those. It is the *process of banking*.

After taking these refinements into consideration, how much money has the *process of banking* created?

We consider two cases — the Eurozone, and the UK. And we use a broad definition of what money is. This broad definition of money will be elaborated upon later, after we have considered other processes that also create money.

The total money supply in the Eurozone in 2021 was €15.5 trillion, of which banking created €13.2 trillion [10]. That is, the *banking process* created about €38,600 per person in the Eurozone. Another way that I like to look at this is to say that banking created €1.18 of money to fund each €1.00 of economic output, measured as gross domestic product, GDP.

The total money supply in the UK in 2021 was £3.5 trillion, of which banking created £2.9 trillion [11]. That is, the *banking process* created £43,000 per person in the UK. Another way to look at this is to say that banking created £1.32 of money to fund each £1.00 of economic output.

### **What Is Shadow Banking?**

The fact that banks can and do “print” money is now widely acknowledged. Commercial banks create most of the money that you and I use. People in the financial industry have hinted at this for years. The Bank of England’s acknowledgment that indeed this was the case was a long time in coming.

But does shadow banking also create money?

The label shadow banking came into popular use in the aftermath of the 2008 great financial crisis. People woke up to find that the run on shadow banks brought the entire financial sector to its knees.

But I don’t like that label. Shadow banking has such a bad connotation, as if there were something shady, something nefarious, about this form of banking.

So, what is shadow banking? Is it even banking at all? This paper is not the place to delve into the intricacies of shadow banking. There have been excellent papers written about shadow banking [8]. Our focus here is limited to determining whether or not shadow banking creates money.

One thing to bear in mind when discussing shadow banking is that most large commercial banks engage in shadow banking. In other words, often traditional banking and shadow banking operate side by side within the same financial institution.

Most people associate shadow banking with a whole alphabet soup of strange financial instruments. Here we briefly consider a few.

Here is one example. ABCPs refer to asset backed commercial papers. A financial institution (this can be a bank but it can also be a non-bank financial institution) may have a bunch of accounts receivables. These may be trade receivables, or credit card receivables. So long as these sit in the balance sheet, they tie up capital. Now, if the financial institution could palm these off to a buyer, that would free up capital for the financial institution to create more accounts receivables. But to whom could the financial institution sell these receivables? Well, the financial institution simply sponsors the formation of a special purpose vehicle, i.e., a SPV. The SPV is formed as a separate entity, legally distinct from the financial institution. The SPV buys these accounts receivables from the financial institution. At the same time the SPV issues debt instruments. These debt instruments are backed by (i.e., secured against) the accounts receivables. These debt instruments are the ABCPs. The SPV uses the proceeds from the sale of these ABCPs to pay the financial institution. The market laps up the ABCPs. So, now the financial institution has rid itself of the accounts receivables. With fresh funds it would generate more accounts receivables. And then it would sponsor another SPV to issue more ABCPs.

ABCPs must not be confused with commercial papers, CPs. Commercial papers are issued by, and therefore are the liabilities of, banks (and other highly credit-worthy corporations) whereas ABCPs are the liabilities of thinly capitalised SPVs.

Here is another example of shadow banking. Money market funds, MMFs, are open ended funds. That is, MMFs issue as many shares as investors would buy them. And MMFs would buy back as many shares as investors would redeem them. That means, the number of issued shares varies from day to day. MMFs use the proceeds from these shares to invest in safe financial products with short maturities, such as commercial papers (i.e., CPs), certificates of deposits (i.e., CDs) and repurchase agreements (i.e., repos).

ABCPs, SPVs, CPs, CDs, MMFs, mortgage backed securities (MBSs), collateralised debt obligations (CDOs), credit default swaps (CDSs), overnight indexed swaps (OISs), repurchase agreements (repos), these are some of the thingamajigs that inhabit the world of shadow banking. But these are not some parasitic appendages of the financial system, as some writers make them out to be. These shadow banking financial products form part of a robust lattice that holds up today's financial infrastructure.

### **Does Shadow Banking Create Money?**

We've seen how commercial banking in the Eurozone created €13.2 trillion, *out of thin air*, so to speak. But does shadow banking also create money?

Take the case of money market funds. Money market funds are like deposit-taking banks. Corporations with excess cash park their money with them. Corporations that need money for just a few days borrow from them. Except that money market funds are not really banks. And the money that corporations park with them are not really bank deposits.

Corporations that park their money with money market funds are, technically, investors. They hold shares of, not deposits with, the money market funds. And as shareholders they earn a return, which varies according to the performance of the funds. This contrasts with depositors, who might or might not earn a pre-defined interest on their deposits.

Nonetheless, corporations that park their working capital with money market funds don't see that as that different from a bank deposit. After all, they can withdraw cash on demand. They can even draw cheques on their money market funds. And the value of their shares is kept at par.

From the point of view of the treasury department of corporations, if MMF shares can be withdrawn on demand, and at par, they are as good as bank deposits.

Following the market-wide run on money market funds after the collapse of Lehman Brothers, the EU introduced new regulations to govern how these funds were managed [9]. The regulations define three types of money market funds. Of these, constant net asset value money market funds (CNAV funds) are most like banks because the regulations are designed to keep the value of their shares at par. In other words, if an investor invests €1.00 million in a CNAV fund the investor is assured that he could withdraw at par €1.00 million tomorrow. Of course, like banks, money market funds are not absolutely immune to sudden large withdrawals by panicking investors. But there are provisions in the regulations to keep money market funds afloat in the event of a run.

So, now we expand the definition of *monetary financial institutions*, MFIs, to include not only the central bank and commercial banks, but also money market funds. The distinguishing characteristic of these types of financial institutions is that their promise to trade at par on demand is buttressed by special regulatory provisions.

This is how the US Treasury Department noted about this distinguishing attribute of MFIs [5].

...the quintessential attribute of money (is) that money always trades **at par on demand** — and the **institutional arrangements that underpin this attribute**.

(Since the name, money market funds, is quite a mouthful, we shall simply call them MMFs.)

So, shares of MMFs, like bank deposits, can be withdrawn on demand. And they trade at par. That means, shares of MMFs, like bank deposits, are *money-on-demand*. And indeed, the European Central Bank counts MMF shares as money.

Does this mean that MMFs, also create money, similar to how banks create money? Or does MMF shadow banking merely convert bank deposits into MMF shares?

When a corporation purchases MMFs shares, the corporation must transfer money from its bank account to the MMF. Doesn't this mean that for every €1.00 of new MMF shares created, a corresponding €1.00 of deposit is extinguished? And doesn't this mean that, on the whole, no new money is really created?

Recall how commercial banks create money. When a bank makes a loan, it also credits the borrower's account with the sum of money. It turns out that that is also how MMFs create money. But MMFs do it a little differently, in two stages. Here is an example of how a MMF might go about creating new money.

MMF's money-creation process begins with the MMF creating new shares to meet an investor's desire to purchase its shares. We've seen earlier that MMF shares, like bank deposits, are *money-on-demand*.

Next, the MMF invests the proceeds from its newly issued shares in another corporation. For example, the MMF purchases 30-day commercial papers (i.e., CPs) issued by a non-financial corporation. Although the commercial papers are highly rated debts, and they are generally very safe assets, they are nevertheless not *money-on-demand*.

If we view the two stages together, in the *Money-Issuing Sector* we see that the MMF, which is a monetary financial institution (i.e., a MFI), has incurred new liabilities in the form of MMF shares. At the same time, in stage two, the MMF has acquired a new loan asset in the form of 30-day CPs. This is not that different from a bank incurring a new liability in the form of a deposit and at the same time, acquiring a new asset in the form of a loan.

If we view the two stages in the *Money-Holding Sector*, the investor parted with its bank deposits, and the CP issuer acquired new bank deposits. So, there is no net gain or loss of bank deposits in the *Money-Holding Sector*. However, the investor now holds new MMF shares, which the investor did not have before. So, now there is new money, in the form of MMF shares that did not exist before, in the *Money-Holding Sector*.

So, we see that, whereas in the banking process the borrower and the depositor are the same entity, in the MMF shadow banking process, the borrower and the "depositor" are different entities. Nonetheless, the effects are the same. In both cases, in the *Money-Holding Sector*, a non-monetary debt is created while at the same time a *money-on-demand*, in the form of MMF shares, is created.

## T-accounts of the two-stage MMF money-creation process

Fig 8 shows the first stage of the money creation. A non-MFI corporation invests its spare cash in MMF shares. The corporation has a deposit account with the *Sending Bank*. The MMF has a deposit account with the *Receiving Bank*. The two banks settle the transfer of payment from the investing corporation to the MMF through their respective reserves account with the central bank.

Fig 9 shows the full process, which, unlike the banking process, involves two parties in the *Money-Holding Sector*. The investor in MMF shares acquires new MMF shares, which are *money-on-demand*, like a bank deposit. The issuer of the commercial papers incurs new debts, equivalent to a bank loan. Meanwhile, overall, there is no increase or decrease in bank deposits in the *Money-Holding Sector*.

Sending Bank (Money-Issuing Sector)		MMF Investor (Money-Holding Sector)		Receiving Bank (Money-Issuing Sector)	
Dr	Cr	Dr	Cr	Dr	Cr
MMF investor's deposit a/c	Reserves a/c at central bank	New MMF shares	Deposit a/c	Reserves a/c at central bank	MMF's deposit a/c

Fig 8

MMF Investor (Money-Holding Sector)		Money Market Fund (Money-Issuing Sector)		Non-MFI CP Issuer (Money-Holding Sector)	
Dr	Cr	Dr	Cr	Dr	Cr
New MMF shares	MMF's deposit a/c	New CPs issued by CP issuer	New shares issued to investor	MMF's deposit a/c	New CPs issued to MMF

Fig 9

Assets, liabilities relating to the *Money-Issuing Sector* are shown in red.

Assets, liabilities that are *money-on-demand*, relating to the *Money-Holding Sector*, are shown in green.

Assets, liabilities that are non-monetary, relating to the *Money-Holding Sector*, are shown in blue.

Earlier we defined MFIs to mean only the central bank and commercial banks. MFIs are monetary financial institutions. In other words, they are money issuing financial institutions. They are entities in the *Money-Issuing Sector*. Now that we've established that MMF shadow banking also creates new money, we expand the meaning of MFIs to include money market funds.

Are MMF shares always new money? Not necessarily; it depends on where the MMF invests the proceeds from its issue of new MMF shares.

Let's say that the MMF invests the proceeds in CPs, but these CPs are issued by another bank. Now if we view the two stages, we find that now there is only one entity, the investor, that belongs to the *Money-Holding Sector*. And if we examine the balance sheet of the investor, we find that it has acquired new MMF shares, which are *money-on-demand*, but it has also given up bank deposits, which are also *money-on-demand*, to pay for the shares. There is no net increase in money supply, merely a conversion of bank deposits to MMF shares.

How much money do money market funds create?

In 2021 MMFs created £145 billion of new money in the UK, whereas MMFs created €675 billion of new money in the Eurozone.

On the face of it, it would appear that shadow banking in the form of MMFs is more active in the Eurozone. And indeed, it is. But the reality is quite different when one takes into account the context. Most CNAV MMFs are domiciled in Ireland rather than in London. So, that explains why MMFs have such a great effect in the Eurozone. However, the investors of these MMFs are mostly domiciled in London. Furthermore, the counter-parties to MMFs' investments are also mostly domiciled in London. So, it is arguable whether shadow banking in the form of MMFs is more active in the Eurozone or in the UK.

### **Does Shadow Banking Create Money? Part II**

MMF shares are not the only form of shadow banking money. Repos are another form of shadow banking money.

Repos, i.e., repurchase agreements, might appear to an uninitiated observer to be a sale and purchase transaction. But it has the effects of a loan. And officially it is recognised as such.

In a repo, the borrower sells some financial assets and receives a sum of money. The sale is made with the promise to repurchase the assets from the lender at an agreed later date. The assets are sold at a discount and repurchased at their full value.

Repo maturities can be as far in the future as one year, but most are overnight repos. And they tend to be overnight open repos. As the name implies, overnight open repos do not have fixed maturity. Instead, the repos are rolled over each day. So, in effect an overnight open repo is an uninterrupted series of overnight repos until the agreement is terminated. Either party may terminate the repo.

So, it is clear from the foregoing that overnight open repos trade at par and are convertible to deposits, or cash, on demand. Assuming that an overnight open repo liability is issued by a bank, its promise to repurchase is as good as the credit-worthiness of the bank, which, as a MFI, is backstopped by the country's central bank. Therefore it is not surprising that financial markets deem overnight open repos issued by banks as *money-on-demand*, like bank deposits.

Although repos are characterised as loan agreements, and accounted for accordingly, the titles to the assets actually change hands. In other words the lender takes legal title to the entire set of repo assets. This is a useful feature. The lender can sell the assets, or use the assets as collateral to borrow from another party.

It is important to note that the assets to be returned at maturity do not have to be the identical assets originally received. The contracting parties agree on a list of assets, updated daily, that are acceptable for repurchase. On the repurchase day the lender may deliver to the borrower any assets in the agreed list so long as they add up to the value of the repo agreement.

The assets in the list are marked to market daily. On any particular day, the borrower delivers more assets or replaces some assets so that the value of the assets as collateral in the hands of the lender will be exactly the same value as the repurchase agreement.

As we shall see in the following example, the fungible feature, marking to market, plus the fact that the lender takes title to the repo assets, make repurchase agreements with maturity that are longer than overnight still an excellent form of *money-on-demand*.

In the following example, an insurance company (a *Money-Holding Sector* entity) extended a 90-day repo loan to a bank (a *Money-Issuing Sector* entity), taking as collateral some repo assets. Twenty days remain to the repurchase agreement. That is, in 20 days' time the insurance



company would receive repayment of the loan plus interest. But the insurance company wants to convert the repo assets to cash now. What could the insurance company do?

The insurance company could take a 20-day loan, pledging the repo assets as collateral. Alternatively, the insurance company could sell the repo assets outright. In either way, the insurance company converts the repo assets to cash. So, the repurchase agreement in fact is *money-on-demand*.

In twenty days' time, the bank repays the repo loan plus interest. The insurance company returns equivalent assets to the bank.

Note that these transactions are possible only because the insurance company can pledge, or sell, the repo assets and also because the assets returned to the bank need not be the same assets as the ones the insurance company originally received from the bank.

The example demonstrates that a bank repurchase agreement is *money-on-demand*. And indeed the European Central Bank counts bank repurchase agreements are *money-on-demand*.

But do repurchase agreements, i.e., repos, create new money? Or do they merely switch money in the form of deposits into money in the form of repos?

What happens to the insurance company's balance sheet when it buys a repurchase agreement? On the asset side of the balance sheet is the repurchase agreement. We've seen that the repurchase agreement is *money-on-demand*. At the same time, on the liability side of the balance sheet, the insurance company's bank deposit decreases by the same amount.

To see how a repurchase agreement creates new money, next we follow what happens after the bank has sold a repurchase agreement. The bank underwrites a bond issue. The bonds are issued by a non-financial corporation. That is, the bank purchases the non-financial corporation's bonds, with the intention to resell the bonds in the market for profit.

Notice that the bank has taken a two stage approach, as did the MMF in the earlier example.

The bonds are the debt of the corporation. So, what happens to the corporation's balance sheet? On the asset side, the corporation gains fresh deposits from the proceeds of its bond issue. On the liability side, the corporation now has incurred new debts in the form of bonds, which are not *money-on-demand*.

Assuming that the value of the repurchase agreement matches the value of the bond issue, the deposits gained by the corporation matches the deposits given up by the insurance company. In other words, in the *Money-Holding Sector*, money in the form of bank deposit is neither created nor extinguished. But notice that the insurance company now holds a repurchase agreement, which is a form of *money-on-demand*. So, the net result is that new money, in the form of a repurchase agreement, has been created.

## T-accounts of a Repurchase Agreement

Fig 10 shows the shadow banking process of how a repo agreement creates new money.

The bank sells a repurchase agreement, i.e., a repo, to the insurance company. The insurance company's bank (not shown) credits the repo bank's central bank reserves account.

Next, the bank underwrites a bond issue and transfers funds to the bond issuer's bank (not shown), across the reserves accounts at the central bank. The bond issuer's bank credits the bond issuer.

Notice that in the *Money-Holding Sector*, the bank deposits acquired by the bond issuer balances off the deposits lost by the insurance company. But the sector has now acquired a repo, which is a form of *money-on-demand*, that did not exist before.

Therefore shadow banking, in the form of a repurchase agreement, creates new money.

Bond Issuer (Non-Fin) (Money-Holding Sector)		Bank (Money-Issuing Sector)		Insurance Company (Money-Holding Sector)	
Dr	Cr	Dr	Cr	Dr	Cr
		Central bank reserves a/c	Repo (sold)	Repo (purchased)	Bank a/c deposit
Bank a/c deposit	Bonds issued	Bonds (underwritten)	Central bank reserve a/c		

Fig 11

Assets, liabilities relating to the *Money-Issuing Sector* are shown in red.

Assets, liabilities that are *money-on-demand*, relating to the *Money-Holding Sector* are shown in green.

Assets, liabilities that are non-monetary, relating to the *Money-Holding Sector*, are shown in blue.

Do repurchase agreements always create new money? Not necessarily; it depends on where the bank invests the proceeds from its repo sale.

If the proceeds from the bank's repo sale are invested in another MFI, no new money is created.

So, how much money do repurchase agreements create?

In 2021 repurchase agreements created £374 billion of new money in the UK, whereas repurchase agreements created €118 billion of new money in the Eurozone.

Taking together both the money creation by MMF shares and by repurchase agreements, the money created by shadow banking in the UK in 2021 was £519 billion. The money created by shadow banking in the Eurozone was €793 billion.

## Conclusion

Broadly speaking, there are three ways in which money is created. Central banking creates currency. Traditional banking creates bank deposits. And shadow banking creates MMF shares and repurchase agreements.

The UK has £3.5 trillion of money in the economy in 2021. Fig 12 shows the composition of UK's money stock. Currency made up 2.5% of the money stock. Bank deposits made up 82.6%. And MMF shares and repurchase agreements made up 14.8%.

The Eurozone, with nineteen member states, has €15.5 trillion of money in the economy in 2021. Fig 13 shows the composition of the money stock of the Eurozone. Currency made up 9.5% of

the money stock. Bank deposits made up 85.4%. And MMF shares and repurchase agreements made up 5.1%.

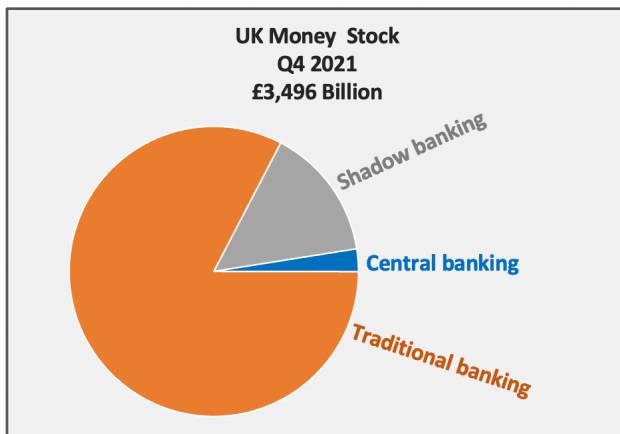


Fig 12

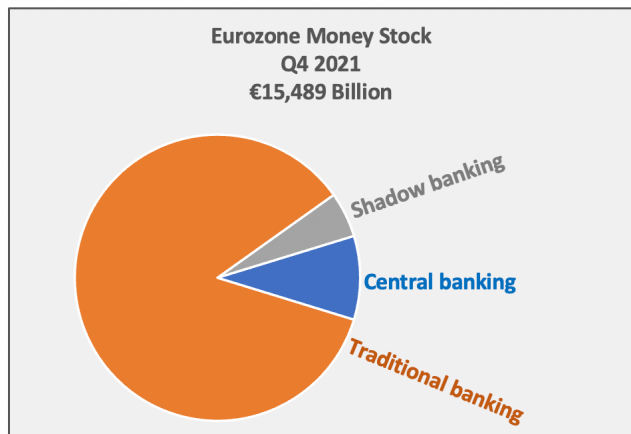


Fig 13

Most people associate money with currency and bank deposit. In fact, that is also how most textbooks describe what money is. However, that is an incomplete view of money. And taking an incomplete view about money can lead us to misread the trend in money supply. The following example demonstrates how that might happen.

We have seen how the funding actions of corporations can convert one form of money into another. For example, when a bank ‘sells’ a repurchase agreement and invests the proceeds in

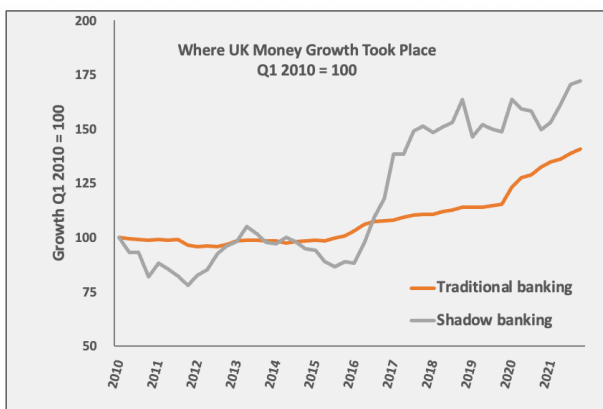


Fig 14

bonds issued by another bank, money in the form of bank deposits is extinguished while money in the form of MMF shares is created. So, if we count only currency and bank deposit as money, then it would appear as if money supply has shrunk, when in fact, it has not. Money in one form that is counted has been converted into money in another form that is not counted.

The fact is, corporations are increasingly turning to shadow banking for answers to their cash management. This is especially true for economies with well developed securities markets. Fig 14 shows the manner in which UK’s money supply has grown. Notice how money in the form of bank deposits and money

in the form of shadow banking money grew at different rates. Over the past ten years, shadow banking money grew 72% whereas traditional banking money grew 41%.

The divergent trends of shadow banking money and traditional banking money have implications for the conduct of economic policy. There are two possible reasons why the two types of money grew at different rates. An obvious reason is that shadow banking is creating new money at a faster rate than traditional banking. But a second reason might be that shadow banking money is cannibalising traditional banking money. Knowing the reasons why the two trends diverge inform policy makers whether households and small businesses are adequately serviced by the financial sector.

Households and small and medium sized businesses rely mostly on traditional banking for their financial needs. They obtain fundings through bank loans and they store their excess cash as bank deposits. Households and small businesses do not have access to, nor do they have the knowhow to participate in, shadow banking. Shadow banking as a means of cash management and shadow banking as a source funding are the preserve of large corporations.

Therefore understanding the reasons underlying the diverging growths of traditional banking money and shadow banking money is of great import. It is a worthy subject for further study. Such a study has to begin with considerations of how money is created, by whom, and for whom. So, this paper should be viewed as an initial step towards a better understanding of whether or not households, small businesses, and large corporations have adequate access to finance.

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