

Money Creation in the Debt Economy

By Dix Sandbeck. Attac Ontario, Dec 2016.

Web: attac-ontario.org

Contact: dix@attac-ontario.org

Trust and Taxing Power

The question about how money is created has been a critical question ever since the creation of money slipped out of the hands of kings and emperors, who once controlled all minting of coins from precious metal. At first, the size of the coinage were dependent upon the availability of the precious metals used, which were fixed in the short term, but the rulers quickly discovered that they could expand the money supply by debasing the coinage, i.e. mixing the gold or silver with baser metals, but keeping the face value by fiat (royal decree). This method of creating money, which gave the rulers extra spending powers, was called 'seigniorage', since it was the prerogative of the 'seigniors', or the rulers. The term, seigniorage, is still used for the creation of central bank money that pay for government expenditures in excess of receipts.

When proto-banks (goldsmiths, money-changers, etc.) started to expand the money supply by issuing promissory gold certificates in excess of the gold in their vaults, most notably the goldsmiths in the 17th century Britain, money creation was partially wrestled away from the feudal rulers and into private hands. Obviously, the excess promissory notes could only be issued as loans, which thus became the earliest example of proto-bank money creation.

Later on, the early banks that emerged from the goldsmiths' activities began to allow their customers to write their own promissory notes against deposits in the banks, a practice which was the origin of the cheque. When overdrafts from chequing accounts were allowed, these developments laid down the contours of the modern banking system and its method of money creation as debt.

The money question grew in complexity when the rulers learnt from the goldsmiths and began to issue convertible paper money on a fractional basis. Thus, state currency based on fractionally held gold reserves together with private bank cheques became the main circulating money forms until the 1930s, when essentially all economically developed states abandoned holding gold reserves for the currency they issued. Hence all state money has been fiat money, i.e. currency only backed by trust in the issuing state and its taxing powers.

Components of the Quantity of Money

Modern economies have three interrelated forms of money. Currency (banknotes and

coins), central bank (CB) reserves, and commercial bank deposits.

Currency is issued by central banks, albeit this form of money plays a falling role in the economy. The main avenue through which currency enters the economy is through commercial banks, which when needed will exchange some of the electronic reserves held at their CB reserve accounts into physical vault cash and then dispense it to their customers when these demand withdrawals as currency (for instance, from ABMs¹). Conversely, if a commercial bank holds too much currency (vault cash) they can return it to the CB, which then credits the given bank's reserve account with the money. This means that currency and CB reserves are fungible; it doesn't matter in which form a bank holds its reserves.

Modern money circulation is mainly a function of the system of accounts held by the commercial banking sector. Most incomes occurs as electronic transfers to bank accounts, and the currency used for the fraction of retail payments that still occurs as currency transactions are acquired by withdrawing it from the bank accounts.

Aggregate money quantity and its expansion are often interpreted as being closely dependent upon the credit function of banks. Be as it may, all economies also contain substantial amounts of money that are inserted into the economy through non-credit channels, e.g. seigniorage that accumulates over time, central banks financial net asset purchases, and the conversions of earlier periods commodity monies into transactional bank account monies. While the latter today is a static pool (commodity money no longer being issued), seigniorage and asset purchases are in varying degrees active forms of money creation in most countries.

The conversion of earlier periods monies is a function of the fact that money is never destroyed by use, but only by accidents,² which are very peripheral phenomena with little influence on the aggregate quantity of money. Thus, a period's money supply continues to form the base of the money supply in the next historical period, albeit sometimes in a changed denominative system. This is particularly true in a commodity money system, but also in fiat money systems as long as the political economy continues in an evolutionary process from period to period.

Sources of Money Creation

With respect to the fundamental question of money creation, there are in modern economies several main sources for creating the money needed to sustain the economy and its growth (as measured by nominal GDP):

A. State seigniorage, which is a state issuing more base money (generally through its central bank) to pay for expenditures in excess of what it receives in taxes and other forms of government incomes. However, there has been a strong tendency to finance deficits by selling debt claims (government bonds which has an interest cost). The purpose of financing government deficits by selling debt instead of issuing seigniorage is to absorb

¹ UK and US English = ATM (Automated Teller Machine).

² or in earlier cultures sometimes by sacrifices.

the extra, presumably inflationary, liquidity that traditional monetary theories believe expansionary government expenditures will incur. This view is founded on the monetarist belief that all inflation is monetary; a view, which however ignores the cost-push element of prices, linked to scarcity/excess balances of inputs and outputs. For instance, if there are unused inputs, in particular labour inputs (unemployment), targeted seigniorage-financed spending by a government can activate such resources without having any serious influence on price levels. It should be emphasized that seigniorage influence and expand the economy through real sector channels.

B. Banks can expand the volume of transactional money when they create new credit in a way that expands their balance sheets.

C. Central banks buy financial assets with newly created CB reserves, for instance through open market operations, which involve both buying and selling government debt in attempts to adjust the level of liquidity, both up and down. In general they are therefore seen as being rather neutral with regards to their overall impact on monetary aggregates.

In case of more dedicated expansionary programs for expanding the money supply by CB purchases of assets, for instance quantitative easing (QE), these programs, in contrast to seigniorage, impact the real economy indirectly through the economy's financial channels. In general, they have shown to have subdued effects on real variables and might in fact have had their main effects in driving asset inflation.

Different Views on Money Creation

As we saw, modern governments are generally unwilling to finance expansion directly via the seigniorage channel. If we for the moment ignore the experimental QE programs, the bulk of modern money is thus created by commercial banks. Therefore, understanding the processes through which this kind of money creation materializes is of the utmost importance for a general understanding of how modern economies function.

But views on these matters are not uniform and have undergone substantial changes in step with the rise and fall of different economic and monetary theories, a matter which has led to considerable confusion in debates and analyses of the current political economy.

In the traditional view, banks were seen as intermediaries between household savers with extra cash on their hands and firms in need in of money to facilitate investments in a growing output. Under the assumption that deposits of savings create loanable reserves, a banks ability to make loans was seen as directly linked to its portfolio of deposits on a one-on-one basis. Essentially, it was a view born in a period when money was still mainly envisaged as physical cash, and the implication of money also existing as postings in banks ledgers was not fully digested.

Later on, standard economics began to realize the implication of the existence of 'account money', which opened up for banks' ability to create money as credit and quashed the assumption of a direct link between savings deposits and loans. Instead the view emerged that central banks could control commercial banks' ability to create debt money via the so-called money multiplier. This was understood to work as a function of the requirements for banks to hold 'required reserves', which was a certain percentage

(typically around 10%) of their assets that had to be held as vault currency or CB reserves. However, today many central banks have abandoned reserve requirements, in the process removing the idea of the money multiplier from its former governing place, although this explanation of money creation is still common in textbooks.

The Double Entry Balance Sheet

The logic of banks holding reserves points to the fact that many money and banking phenomena can best be understood if analyzed within a balance sheet accounting framework. Balance sheet accounting stems from the invention of double entry bookkeeping, which appeared in North Italy in the 15th century. The main principle is that if there is a change on one side of the balance sheet, there must be a balancing change on the other side. To fully appreciate the system, one must be able to see that all monetary changes have physical components, even if it might only be electronic redistribution over the Internet of magnetized computer memory bits. Therefore, the fungibility between physical currency and electronic account cash similarly rules in the transactions occurring between banks and their customers.

Let's have a look at an example of a simple bank's balance sheet:

Simple Bank's Balance Sheet

Assets		Liabilities	
CB reserves	60	Deposits	700
Vault cash	60	Loans from money markets	300
Government bonds	180	Equity	100
Loans to customers	900	Retained earnings	100
Sum	1200	Sum	1200

In the above example—with balance item weights arbitrary and not attempting to resemble real conditions—the total reserves that Simple Bank has are 120 units or 10% of assets. On the liabilities side the risk is that a large number of depositors withdraw their money more or less at the same time (a bank run). If they all want cash and Simple Bank only have 60 units it might run out of cash when complying with the withdrawal request. Of course, it can, as just mentioned, with immediate effect exchange its CB reserves for currency but if deposit withdrawals continue a bank might not be able to raise enough cash to cover its commitments on the liability side, which is to let deposit customers at will withdraw the money sitting in their transaction accounts. Consequently, it would become insolvent.

The other general risk that a bank faces is that loan customers' default on their loans. When that happens, the bank has to, first, write the loan down from the asset side of the balance sheet, and second (due to the principles of double entry bookkeeping), write a corresponding amount down on the liability side, which has to come from the capital portion. If default write-downs continue beyond the capital (equity) portion, and assets thereby become less than liabilities, a bank is technically bankrupt.

Reserves and Deposits

Traditionally, a problem for banks was that currency and CB reserves didn't earn incomes. Therefore they wanted to keep them at a minimum. Currency of course still don't earn interests, but its role in the economy, including in bank operations, has diminished, mainly being used to feed ABMs and supply change to retail stores. However, a recent innovation in monetary policies has been that many CBs have started to pay interest on CB reserves, which also is an electronic money form in modern systems. Ostensibly, this new development is implemented in order to enhance CBs ability to better control short-term interest rates.

If we return to the commercial banks' abilities to create credit money, a point of contention has been to what extent they are constrained in that endeavour by deposits and reserve positions.

Newer economic theories realized that when banks create loans, the process in fact materializes through crediting the loan receiver's bank account with the amount, or said differently, by *depositing* the amount of the loan into his or hers account (in some cases by first opening a new account). This led to the view that "loans create deposits", and the amount of pre-credit deposits was therefore in this story of money creation not seen as important, a view that still dominates much of the modern discussions.

After deposits had been dismissed as important for banks' ability to create loans, the turn came to reserves. The story became that banks when they extend loans don't need to worry about reserves, because the central bank will always extend extra reserves to them in a pinch. Bank first makes loans and then looks for reserves, being assured that if they don't already have enough reserves and neither can find them in the interbank market, then the central bank surely will step in and extend it to them. This assumed willingness to always accommodate banks' needs for reserves was seen as caused by a key concern of central banks, which is to protect the soundness of the interbank clearing system at all times and, in turn, the economy's uninterrupted payment circulation.

Since neither having pre-credit deposits or reserves was seen as a hindrance for the process of creating money through the credit channel, it has led to the widespread assumption that banks can "create money out of thin air" whenever they find profitable loan opportunities.

In consequence of the above, a common modern view has become that well-run banks seldom have problems with accessing extra reserves. Either they can access them in the short-term interbank market for reserves (those banks holding excess reserves lending them short-term to those in deficit). Or they can sell government bonds to the central bank, and in exchange the CB inserts new reserves on the given bank's reserve account at the CB, the account from which interbank settlements are drawn. Accessing extra reserves from the CB often occurs as repos (repurchase agreements) that are short-term transactions where the CB after the prescribed period sells the bonds back to the bank, with the repo rate added as the cost of the credit transaction for the bank.³

³ The bank rates that CBs publish are the interest rates that—somewhat dependent upon the specific national institutions—govern interbank market transactions.

Reserves Still Matter

Banking systems of modern developed economies are systems that generally obey the probability laws of large numbers in nice Gaussian curves. Black swans fly this world by and most of the time experienced bankers have a good feel for how these probabilities presently are aligned and how they will align in the near future with regard to their banks' operations.

In a well-functioning banking system, the notion that reserves don't matter, might therefore be true in practical terms, but it is not true in a stringent theoretical sense and it's particularly not true when the general economic system finds itself in a crisis and the interbank channels are under stress. Nor is it true when an individual bank experience large loan losses or suddenly large deposit withdrawals.

During crises or if for instance large-scale fraudulent activities are inserted into the parts of the financial system, informed expectations to the soundness of counterparties become difficult to gauge. Under such crises situations, a bank's reserves can quickly disappear and access to new reserves through markets freeze up. This was one of the things that happened in the wake of Lehman Brothers collapse in September 2008 when interbank channels froze up for a short time, threatening a total monetary collapse.

Furthermore, the view considering deposits and reserves unimportant for the creation of credit money also overlooks that deposits created by loans are different from deposit originating from, say, customers' earnings. The fact is that deposits created by a bank's own credit operations are endogenous deposits and create no new reserves, while deposits originating from customers earnings are exogenous deposits and therefore create new reserves for the bank.

This goes to another essential aspect of balance sheet understanding. A key condition influencing the abilities of modern banking systems to expand aggregate money quantities is the processes that net out interbank claims among the banks.

With regards to the loans made to customers, when they spend them by issuing cheques (or other payment forms) it requires reserves from other sources to be available for the loan-issuing bank when the payments are being deposited in other banks and returned as interbank claims. But when one bank have to transfer reserves to other banks on behalf of customers' spending of credit money, customer of other banks will also obtain loans and issue business and consumption payments debited to postings of their newly acquired credit money. Some of this spending will end up deposited in the first bank and thereby replenish its reserves.

In this way, reserves also work on a fractional basis and small holdings of reserves can underpin large flows of transactions due to constant netting-out. During normal times daily discrepancies in mutual claims during the netting-out processes (clearing) will not be big. Consequently, they will be manageable along the avenues for accessing extra reserves outlined above. Only when the payment flows deviate from their normal patterns and

substantial imbalances occur will reserve positions return to focus.

Are Money Really Destroyed Again?

After verifying that deposits and reserves cannot be ignored when explaining the money creating process of commercial banks, we come to a related view, which is that when loans are repaid the money is destroyed again. In other words, the money that was created from thin air reverts to thin air again. This is of course a metaphysical view that only can create confusion.

When contemplating loan processes, things can appear muddy if one thinks in the terms of elusive electronic money. But since physical cash and electronic current account money⁴ are fungible, one can instead conceptualize the loan process by thinking of it in terms of currency, i.e. transacted by notes and coins.

If money is withdrawn as currency (physical cash) from a transaction account into which a loan has been credited, and later repaid with interest, again by notes and coins, the bank issuing the loan must first of all be ready to pay it out as currency, i.e. have the currency ready as reserves in its vault or be assured of immediate access to extra currency.

When later the bank receives the repayment of loans in, say, paper banknotes, it doesn't indulge the bank manager to order these notes burnt in an oil drum in the alley behind the bank. What really happens is that the money is not destroyed, but put into the vault where they change status from M1 money to M0 money⁵. In other words, on the bank's balance sheet a loan asset converts to a vault cash asset. The interest part, the profit from issuing the loan that is added to the repayment, becomes earnings on the liability side, where it becomes an added liability to the owners. Insofar the interest part, being currency, is retained and not paid out as dividends, it will further add to cash reserves on the asset side in accordance with double entry balance sheet principles. It should be noted that the interest part is gross earnings and before it is added to the bank's balance sheet costs of the relevant banking operations will be netted out.

If we now instead conceive the whole transaction conducted as electronic money, exactly the same mechanisms take place, except for that the returning money now is not physical vault cash, but electronic 'vault' cash, which in reality will appear as an entry to the bank's reserve account held with the central bank.

Balance Sheet Money Creation

Thus, in isolation the single bank cannot create new money above its direct access to reserves, but only transform whatever idle hoards it holds (CB reserves, vault cash) into

⁴ Before computer accounting, this kind of money might be called 'ledger account money'.

⁵ According to this interpretation, currency when it circulates outside of banks are M1 and only M0, or base money, when it sits as vault cash in banks or in CB reserve accounts.

transactional money (MI)⁶. Although it is indeed a fact that central banks in order to preserve the confidence in the payment systems will stretch itself to considerable length in order to accommodate banks' needs for extra reserves, this willingness is not unconditional and will normally require collateral and an interest charge in exchange for extended extra reserves.

To recapitulate, seen in isolation when a bank issues loans fully backed by the reserves it directly holds, it only exchange items on the balance sheet, it doesn't expand it. This in itself also can have expansionary effects on the economy, but we must keep in mind that money is only created when balance sheets in the aggregate expand, and likewise only is destroyed when balance sheets contract, such as in the case of creditor defaults.

Banks can therefore only create money in the aggregate by the 'netting out' process that swaps interbank liabilities, arisen from the spending of credit money inserted into other banks' transaction accounts. In that case a bank expands its balance sheet: the loan expand the assets side and the returning deposit from another bank's customer loan creates a matching liability.

The above also underscores the problem with the adage that loans create deposits: while it theoretically is so, the view overlooks the mentioned crucial aspect of deposits: deposits that originate from a bank's own lending require fractional reserves, while other deposits add reserves.

It must therefore be concluded that banks' abilities to create money in the form of new credit added to transaction accounts cannot be separated from their access to reserves. The fact is that understanding the interplay between reserves and balance sheet expansions is central to understanding modern money.

We also can see that although a single bank on its own is limited in its ability to create money as credit, the banking system as a whole is not. But there is a contingent requirement: that balance sheets are expanded in some measure of symmetry. If not, crashes and deleverage, with contraction of money ripping through the whole system, is a risk when some overextended position topples.

By that token, if we abstract from the possibility of seigniorage and velocity changes, it also becomes clear that the aggregate quantity of money is not expanded by spending of that fraction of bank account money that originate in deposits from non-credit channels. Only the mutually netted out part of new credit money has the capacity to expand balance sheets beyond already existing reserves and thus the aggregate quantity of money.

Finally, the deleveraging that occurs during crises involves two processes: First, a rise in defaults that directly destroy reserves. Secondly, the slow down of new credit, which reduces the velocity of the netting out process and therefore leads to unwarranted build up of reserves in some corners of the banking sector where risk avoidance has risen to the front.

⁶ I order to simplify the argument; I consider all transactional money MI.