

# Money

1. **Primary goods and secondary goods (Ernst Friederich Schumacher).** Primary goods are the goods and services that natural, nonhuman processes provide. Secondary goods are the goods and services produced by human beings, generally using primary goods. The primary goods economy makes the secondary goods economy possible. Examples of primary goods are the energy coming from the sun, the topsoil, oceanic fish stocks, breathable air, drinkable water, mineral stocks, fossil fuels, the pollution-absorbing capacities of rivers, biodiversity...

John Michael Greer (2011): *The wealth of nature: economics as if survival mattered.*

2. **Basic difference between primary and secondary goods** As a rule, a secondary good can be substituted by another secondary good without assuming substantial costs. A primary good cannot be replaced by another primary good or, if it can be replaced, the cost is prohibitively high. For instance, a farmer can plant one crop (wheat) or another (maize); but nothing can be used instead of water.

3. **Wealth.** Economic wealth is the total amount of primary and secondary goods available. The goods that can be used to produce more goods are capital goods (or real assets). Examples of capital goods are land, industrial machinery, and, in general, infrastructure.

4. **Financial assets (tertiary economy).** A financial asset is a claim on someone else, an IOU: an instrument by means of which someone acknowledges a debt ("I owe you"). Since, ultimately, debts must involve goods, financial assets can be viewed as claims on wealth.

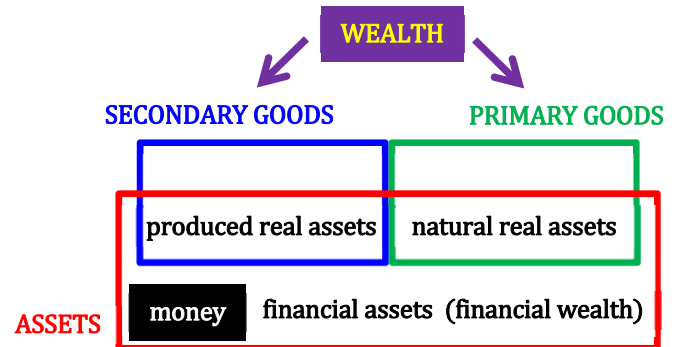
5. **Creation and circulation of financial assets.** Financial assets are created as compensations for something that is received. Suppose agent A delivers some good to agent B. If B has no good that may interest A, then B could compensate A by issuing a financial asset by means of which B promises to deliver some good, or some other financial asset, to A in the future. Alternatively, B could issue a financial asset to be given to A in exchange for other financial asset that A holds.

6. **Basic difference between primary and secondary goods, and financial assets.** Primary and secondary goods exist in limited supply. Even non-material secondary goods, like information, need a material medium (books, computers, optical discs) to be usable. Financial assets are limited by the demand for them.

7. **Money.** Money is a special type of financial asset. Once money is created, the rest of financial assets tend to be created as substitutes for money. That makes money the fundamental financial asset. When money exists, goods will be typically exchanged for money and the promises embodied in financial assets will be more likely to be promises to deliver money.

8. **Purchasing power.** The purchasing power of an amount of money is the amount of goods that can be obtained from it and is therefore a measure of the amount of wealth money commands. The usefulness of money requires a stable purchasing power.

9. **Money ≠ wealth.** Money commands wealth, measures wealth, but is not wealth. The purchasing power of money is a measure of the wealth that money may be said to represent, embody, or command. But neither money nor its purchasing power is itself wealth: at most, money is a claim on wealth. Money is rather an instrument to acquire wealth. Money and wealth stand in a relation similar to an object and its representation. Confusing money with wealth is analogous to confusing an object with a word designating the object. The word ‘bread’ can be used to get bread, but the word itself cannot be eaten: it is a substitute for the object named that is useful for certain purposes, like the distribution of bread (bread could be obtained by uttering ‘I want bread’). Similarly, money is an instrument to distribute wealth. Yet the amount of money need not evolve in accordance with the amount of wealth.



10. **Money vs wealth.** The amount of wealth embodied in money is indeterminate. Goods have a clear value. But value is not something that money has: it has to be given. Yet, it is not always evident the value of money (the wealth embodied in an amount of money). Having more wealth does not seem to be problematic or undesirable. An individual could even equate money with wealth: more money is always better. In the aggregate, ‘too much’ money could be problematic or undesirable: an economy does not generate more wealth by just creating more money.

11. **Money as a sign of poverty.** Purchasing power is inversely related to the general price level (as measured by the CPI): inflation reduces the purchasing power of money, whereas deflation increases it. Under a hyperinflation, increasing amounts of money are needed to buy goods whose prices escalate without apparent limit. In this case, the purchasing power of a given amount of money evaporates exponentially with time. The 100 trillion dollar banknote on the right circulated in Zimbabwe for some months in 2009. It is the banknote with the largest number of zeros printed on it ever issued. The owner of such a banknote is not a rich person, but quite the opposite: as millions of such banknotes circulated, the astronomical face value (large denomination) of the banknote was a sign of poverty rather than prosperity. At some point in 2009, the banknote could just buy a bus ticket. In April 2009 the Zimbabwean dollar stopped being legal tender.



[http://en.wikipedia.org/wiki/Zimbabwean\\_dollar](http://en.wikipedia.org/wiki/Zimbabwean_dollar)

<http://online.wsj.com/news/articles/SB10001424052748703730804576314953091790360>

12. **Textbook properties of money.** Given the difficulties of defining with precision what money is, textbooks adopt the easy escape route of self-referentially defining money as everything considered money: money is as money does. In textbooks, money is supposed to be recognized by four functions.

- Medium of exchange. Goods can be generally obtained in exchange for money, that is, money must be used to make purchases of goods. It is said that the use of money as a medium of exchange facilitates the circulation of goods.
- Store of value. Money has the ability to preserve (at least part) of its purchasing power in time: it is a way of accumulating (to be a repository of) purchasing power.
- Unit of account. As a unit of account, money provides a common measure of value, since the value of goods is expressed in terms of money. For instance, the euro from 1999 to 2002 was not yet physical money (could not be used as medium of exchange or store of value) but existed as unit of account.
- Means of unilateral payment or instrument for settling debts (standard for deferred payments). When performing this function, money must be capable of cancelling debts (taxes, in particular).

**13. The commodity theory of money.** The commodity theory of money holds that money is just a commodity whose quintessential role is to make trade easier. This is the conceptualization of money adopted by orthodox economic theory and most textbooks. It is nonetheless not explained why people is in general entitled to produce commodities, whereas it is illegal to manufacture money. Why is the production of legal money forbidden to ordinary people? The following are characteristics or implications of the commodity theory of money.

- The problem is to find the most convenient commodity to facilitate the exchange of goods: one that is durable, easily recognized, divisible, easy to transport... The choice eventually narrowed down to the metals (<http://mises.org/daily/6122/>).
- Preeminence is given to money as a medium of exchange.
- Money is considered a universal commodity that can be exchanged for any other commodity.
- Money is a “veil” under which the “true” economy (real sector) operates, as money is supposed to simply facilitate the exchange of goods.
- As with any other commodity, an “excessive” amount of money tends to lower its value. When there is “too much” money, more money should be given for goods, so the prices of goods are pushed up. The policy recommendation is to limit the amount of money in circulation.

**14. The credit (debt) theory of money.** The credit theory of money holds that money is not a commodity (a “thing”) but an accounting tool: money is a yardstick that measures debt (or credit). Coins and banknotes constitute promises to pay something. The credit theory asserts that a sale and a purchase is the exchange of a commodity for credit, so the value of credit or money does not depend on the value of any metal, but on the right to get the credit satisfied. The origin of money lies in credit. Money expresses claims and credits. This view emphasizes the unit of account function of money: the ability to use money as a measure of value makes prices and debt contracts possible. The essence of money is that it measures debt. Money is seen as debt that becomes saleable: money is transferable credit (anonymous debt). In a nutshell, money is debt that circulates anonymously to obtain goods.

**15. The state theory of money.** The state theory of money (chartalism, from the Latin *charta*, 'token' or 'ticket') holds that money is not a commodity but "a creature of law": money is created (as fiat money) by the state, which recognizes it as legal tender, to account for and settle debts, the most important of which being tax debts. In this view, money:

- is fiat money, that is, intrinsically worthless pieces of paper or metal (government-issued tokens serving as the unit of money);
- is created by the state by declaring what is accepted as payment for tax debts at the public pay offices and by establishing the nominal unit of account in which tax debts are measured;
- enters circulation through government spending.

**16. Orthodox and heretodox views of money.** In orthodox analysis, money just eases exchange. Heterodox traditions have in common "that money is essentially an abstract measure of value; that money consists in a claim or a credit; that the state, or an authority, is an essential basis for money; that money is not neutral in the economic process," Geoffrey Ingham (2004): *The nature of money*. Heterodox economists alert to the danger of confusing money with the form it takes (coins, for instance). One of the heterodox currents, the postkeynesians, puts the emphasis on money as store of value. The ability of money to store wealth lies behind the existence and persistence of the unequal distribution of wealth. In the orthodox account: (i) the value of money corresponds to its purchasing power, as determined by the inflation rate, which is presumed to be under the control of the central bank); (ii) money is neutral (money is a "veil" over the workings of the real sector, a lubricant of economic activity): only prices, not production, are affected by changes in the amount of money. [By controlling the amount of money so that the interest rate is kept at a high level, creditors benefit, as they get more from lending money. This may increase income inequality and, thereby, casts doubts on the neutrality of money.] A more heterodox view, regards money as an instrument of social control and use of power.

**17. A first money paradox.** In the orthodox account, money could be defined as anything generally accepted as a payment in exchange for goods. But money is accepted for goods because of the belief that it will be subsequently accepted for goods. The conclusion is then that for something to be money it must be believed that that something is already money. When something is believed to be money, how did people manage to create, share, and sustain that belief?

**18. A second money paradox.** Historically, two conflicting views on money have coexisted; see David Graeber (2011), *Debt: The first 5,000 years*, p. 9.

- Lending money is evil (no sympathies for the moneylender)
- Once you borrow, you must pay back (to pay one's debts becomes a moral issue)

The Spanish Minister of Economy and Competitiveness, Luis de Guindos, reminded the Greek government in 2016 that a debtor 'must' repay debts and, specifically, the €26 billion the Spanish government lent the Greek government (a reminder made despite the fact that, as the Minister himself confessed, "Those €26 billion were in pure solidarity with Greece").

<http://www.thelocal.es/20150214/spain-seeks-greek-debt-payback>



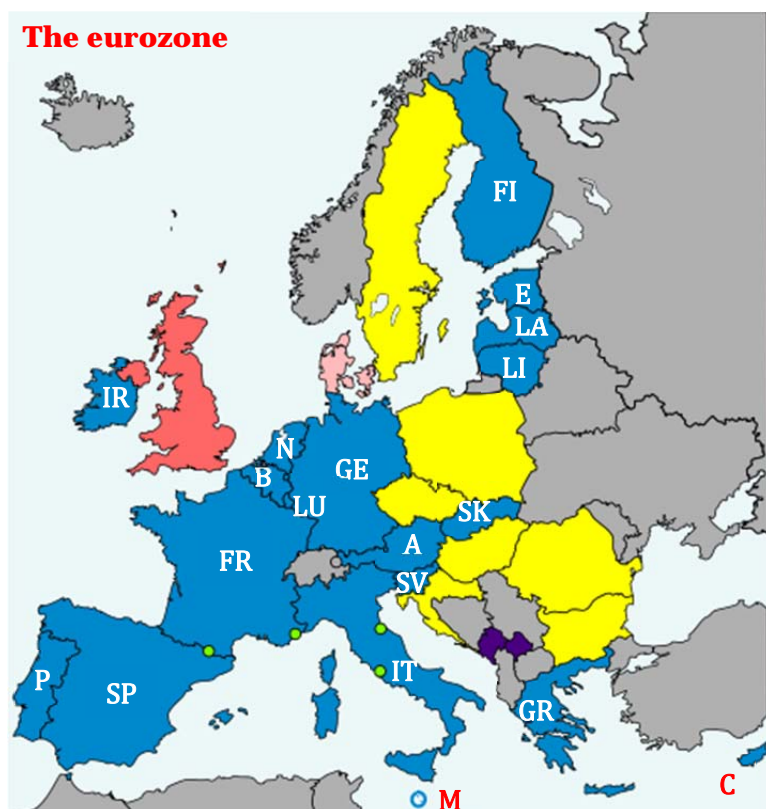
Historically, recurrent cancellations of debt were the norm. Sumerian and Babylonian kings periodically declared all outstanding consumer debt null and void. The bankruptcy laws that nowadays exist implicitly recognize that not all debts must be paid back. And, by willing to lend, is not the lender accepting that lending is a risky undertaking?

**19. The textbook myth on the origin of money.** Orthodox textbooks tell a myth on the origin of money, as a progression from barter to currency (gold and silver coinage) to credit. The historical evidence suggests that things have occurred the other way round: money originated as a means of calculating debts and obligations in primitive (pre-market) societies. Historical evidence points to money as quantified reminders of debts (money served as mere unit of account). Records from Ancient Egypt and Mesopotamia (ca. 3,500 BC) show that a credit system preceded the invention of coinage, which seems to have occurred around 750 BC, in Lydia. In Ancient Mesopotamia, prices and debts (rents, fees, loans) were calculated in silver but had not be paid in silver. Peasants settled their debts mostly in barley and most transactions were based on credit.

“Instead of trying to locate the origins of money in a supposed primitive market originally based on barter, we find the origins in the rise of the early palace community, which was able to enforce a tax obligation on its subjects. [...] Historical evidence suggests that virtually all ‘commerce’ from the very earliest times was conducted on the basis of credits and debits.”

L. Randall Wray (2006): *Understanding modern money*, p. 40

**20. Our money: the euro.** The euro (sign: €; code: EUR) is the official currency of the 19 members of the eurozone (officially called euro area): **A**ustria, **B**elgium, **C**yprus, **E**stonia, **F**inland, **F**Rance, **G**ermany, **G**reece, **I**reland, **I**Taly, **L**atvia, **L**ithuania, **L**UXemburg, **M**alta, **N**etherlands, **P**ortugal, **S**lova**K**ia, **S**lo**V**enia, and **S**Pain.



The euro was born in January 1999 as a unit of account and became currency on 1 January 2002. It is managed by the Euro-system: the European Central Bank plus the national central banks of the eurozone members.

It is the second most traded currency in the world, after the US dollar. By mid-2010, it surpassed the US dollar as the currency with the highest value in circulation.

Fig. 1. The eurozone, as of March 2017  
<http://en.wikipedia.org/wiki/Eurozone>

**21. Monetary aggregates.** Monetary aggregates are technical ways of defining (measuring the amount of) money. Oddly, monetary aggregates define money by examples. It is like defining what a city is by selecting a few cities and declaring the selected cities to be 'the cities', without providing the reasons or characteristics that make the chosen examples cities.

- The monetary aggregate **M0** (also called monetary base, central bank money, narrow money, or high-powered money) is defined as  $M0 = E + R$ , where **E** is the currency held by the public (cash); and **R**, the bank reserves, is the currency held by banks (in the banks' vaults and in ATMs) plus the banks' deposits in the central bank.
- The monetary aggregate **M1** (also called monetary mass, money stock, or money supply) is defined as  $M1 = E + D$ , where **D** is the total amount of sight bank deposits (non-interest-bearing accounts) held by the public in banks.
- The monetary aggregate **M2** is **M1** + savings deposits.
- The monetary aggregate **M3** is **M2** + time deposits + other categories.

**22. Basic forms of money.** Modern money takes three basic forms: currency, reserves, and deposits.

- Currency (cash) = coins (metallic money) + banknotes (paper money). Coins are a sort of residual commodity money. Paper money is, historically, the typical example of fiat money.
- Central bank reserves or, simply, reserves. Reserves are electronic money (or computer money) created by the central bank. As a rule, reserves can only be used by banks and governments (banks use reserves for interbank payments). Reserves cannot be transferred to households or firms: the public are not allowed to receive or use reserves. Reserves do not leave the banking sector to enter the real sector.
- Central bank money (monetary base, **M0**) = cash + reserves.
- Bank money = bank deposits = electronic money created by banks. A bank deposit is a financial asset representing a liability: the bank's legal obligation to pay money on request. A bank deposit is a record of what the bank owes the depositor. A bank deposit is not necessarily created by depositing cash in a bank. That is why it is less confusing to use the expression 'bank money' instead of 'bank deposit.'

**23. Electronic money (e-money) and digital money (digital currencies).** E-money (PayPal, Google Wallet) is a substitute or a way of using bank money. Digital money is a form of money not backed by a public authority and their value comes from its limited supply, as assets. Digital money is like a modern form of gold. Examples include Bitcoin, Litecoin, and Ripple.

**24. The basic forms of money represent IOUs between sectors.** Currency could be viewed as IOUs from the public sector to (essentially) the non-banking private sector (households and firms). Reserves, IOUs from the public sector to (essentially) the banking private sector (banks). And bank money, IOUs from the banking private sector to (essentially) the non-banking private sector. Fig. 2 illustrates the connection between the forms of money and the sectors. Fig. 3 shows, in a stylized representation, where the forms of money appear in the sectoral balance sheets.

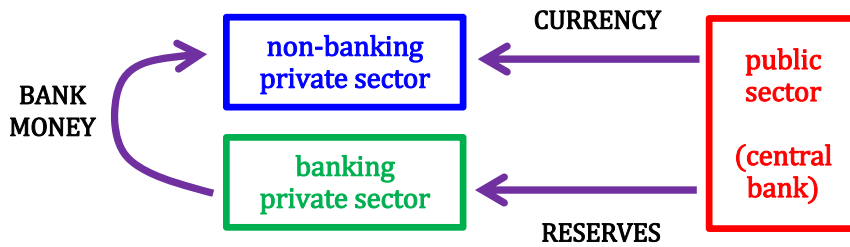


Fig. 2. The basic forms of money as IOUs from one sector to another

central bank		banking sector		banking sector	
assets	currency reserves	currency reserves	deposits	deposits currency	liabilities
		assets	liabilities	assets	

Fig. 3. Mapping IOUs: sectoral balance sheets

25. **The textbook (unaccurate) story of how banks create M1.** Suppose the central bank buys some asset, worth 100, from Bank 1 and pays the purchase with new banknotes. Fig. 4 represents (as T-accounts) the changes that take place in the balance sheets of the central bank and Bank 1 (assets are represented on the left-hand side of a balance sheets and liabilities on the right-hand side).

central bank	
assets	banknotes
100	100

Fig. 4. The central bank buys assets from Bank 1

Bank 1	
<del>assets</del>	
100	
banknotes	
100	

Bank 1	
banknotes	
100	
loans	
100	

Fig. 5. Bank 1 lends the banknotes to a firm

Firm	
banknotes	loans
100	100

Bank 1 cannot stand having banknotes sitting idle in its vault, so Bank 1 satisfies a loan request of 100 by a firm. The firm receives the banknotes from Bank 1. Fig. 5 depicts the impact of this operation on the respective balance sheets. The firm uses the banknotes to pay the wage of one of its workers. The worker gets the banknotes and deposits them in Bank 2. Fig. 6 displays the changes in Bank 2's balance sheet after the worker deposits the banknotes.

Bank 2	
banknotes	deposits
100	100

Fig. 6. Bank 2 receives deposits

Bank 2	
<del>banknotes</del>	deposits
100	100
loans	
100	

Fig. 7. Bank 2 lends the banknotes

Bank 3	
banknotes	deposits
100	100

Fig. 8. Bank 3 receives deposits

Bank 2 is like Bank 1 and cannot resist having banknotes gathering dust in its vault. Hence, Bank 2 grants a loan to a consumer. Fig. 7 shows the resulting change in Bank 2's balance sheet. The consumer spends the banknotes purchasing goods. The seller of the goods is given the banknotes in exchange for the goods and deposits them in Bank 3. Fig. 8 indicates the effect on Bank 3's balance sheet of the seller's deposit. Now it is Bank 3 that is willing to lend the banknotes and the process goes on...

To recap, the central bank has “injected” 100 units of currency (in the form of banknotes) in the economy through Bank 1. Yet, the increase in  $M1$  is larger than the value 100 of the new banknotes. The reason is that, up to the point at which Bank 3 receives the deposit (Fig. 8), new deposits worth  $100 + 100 = 200$  have been created. Hence,

$$\Delta M1 \geq \Delta \text{banknotes} + \Delta \text{deposits} = 100 + 200 = 300 .$$

Moreover, economagically, three agents can make use of the same money: Bank 3 can lend the banknotes; the seller of the goods can use his deposits in Bank 3 to make payments; and the worker can also make use of his deposits in Bank 2 to make payments. The new deposits in Bank 2 and Bank 3 (which add up to 200) are backed by the same banknotes (whose value is only 100). To see why this observation is relevant, imagine that seller and worker would simultaneously like to withdraw their deposits. If Bank 3 has not yet lent the banknotes, the seller’s request can be satisfied. But Bank 2 would have a problem to pay back the banknotes to the worker because the banknotes the worker deposited have been lent. That means that, if Bank 2 has no funds to attend the client’s request, Bank 2 would need to borrow money. In normal circumstances this could be easily done in the interbank money market. During financial crises, interbank markets freeze: no bank is willing to lend money because all banks lack funds (face liquidity constraints).

**26. The textbook model of  $M1$  creation.** The model (which aims to ascertain the final outcome of the process described in the previous example) presumes two behavioural rules. First, banks hold as reserves a fixed fraction  $r$  of the deposits by clients. Second, the public keep in cash a fixed proportion  $l$  of their deposits.

- The cash reserve ratio  $r = R/D$  is the amount of reserves banks hold per unit of deposits. It is the percent of deposits that banks choose (or are required) not to lend.
- The liquidity ratio  $l = E/D$  is the amount of currency that people hold per unit of deposits.

With the above definitions, it is possible to express  $M1$  as a fixed multiple of  $M0$ . If the ratios  $r = R/D$  and  $l = E/D$  are held constant, then

$$M1 = \frac{1 + l}{r + l} \cdot M0 . \quad (1)$$

To prove (1), it follows from  $l = E/D$  that  $E = l \cdot D$ . It follows from  $r = R/D$  that  $R = r \cdot D$ . Therefore,  $M0 = E + R = l \cdot D + r \cdot D = (l + r) \cdot D$ . Solving for  $D$ , it turns out that

$$D = M0/(l + r). \quad (2)$$

On the other hand,  $M1 = E + D = l \cdot D + D = (1 + l) \cdot D$ . Solving for  $D$ , now  $D = M1/(1 + l)$ . The combination of this equation with (2) yields (1).

- The money multiplier  $mm$  defined to be the ratio  $\frac{1 + l}{r + l}$ .



Suppose banks choose  $R$  so that, for a fixed proportion  $0 < r < 1$  and given  $D$ ,  $R = r \cdot D$ . Suppose as well that people choose  $E$  so that, for a fixed proportion  $0 < l < 1$  and given  $D$ ,  $E = l \cdot D$ . Then  $M1 = mm \cdot M0$ ; that is, the money stock  $M1$  is a fixed multiple ( $mm$ ) of the monetary base  $M0$ . Equivalently,

$$mm = \frac{M1}{M0}.$$

This says that the money multiplier  $mm$  indicates how many units of money stock  $M1$  is generated by one unit of monetary base  $M0$ . If  $mm$  remains constant, then  $\Delta M1 = mm \cdot \Delta M0$ . Accordingly, with a fixed money multiplier, a change in  $M0$  causes a fixed proportional change in  $M1$ .

**27. A dynamic numerical version of the textbook model of M1 creation.**  $M0$  is increased by €600 million. For instance, the central bank buys financial assets from the banks and pays by increasing €600 million the reserves of banks in the central bank. Assume that

- $l = \frac{1}{5} = 0.2$ , which means that people hold 0.2 euros in cash for each euro deposited in banks; and
- $r = \frac{1}{10} = 0.1$ , so banks only need to keep 10% of new deposits as reserves and can lend the rest.

Since the deposits  $D$  in banks have not changed, banks have an excess of reserves equal to €600 million. They can then lend the €600 million to consumers and firms. Denote loans by  $L$ . The change  $\Delta L$  in the volume of loans is equal to the change  $\Delta D$  in deposits minus the change  $\Delta R$  in reserves. Let consumers and firms be always willing to borrow any amount offered by banks.

The people that borrow the €600 million will spend them buying goods or financial assets. The sellers of the goods or the financial assets get €600 million. This amount must be allocated between cash and deposits to make the increase in cash  $\Delta E$  divided by the increase in deposits  $\Delta D$  equal to 0.2. The following two equations provide the solution.

- Distribution of 600 between two uses  $\Delta E + \Delta D = 600$
- Fulfillment of the liquidity ratio  $\Delta E / \Delta D = 1/5$  (or, equivalently,  $\Delta D = 5 \cdot \Delta E$ )

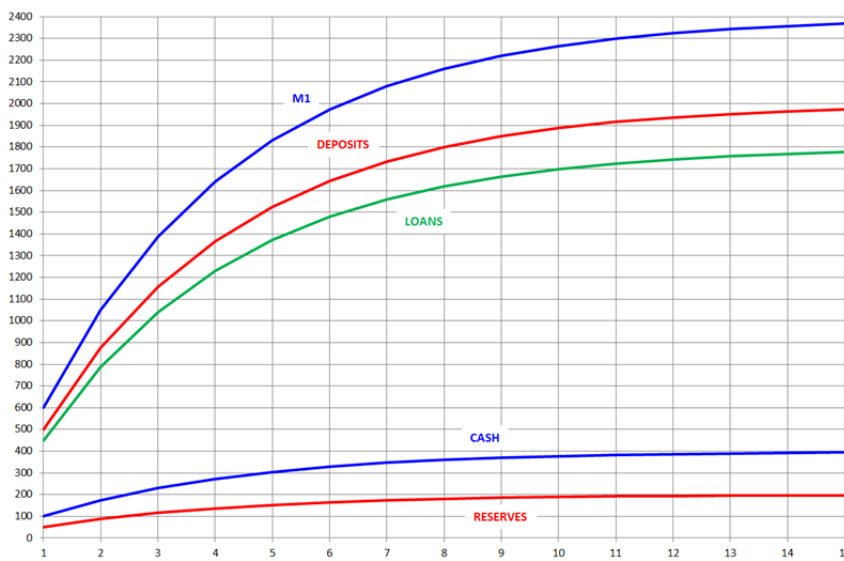
Consequently,  $\Delta D = 500$  and  $\Delta E = 100$ . This means that people deposit €500 million in banks and hold €100 million in cash. With reserve ratio  $r = 0.1$ , banks retain 10% of the new deposits as reserves ( $\Delta R = \Delta D / 10 = 500 / 10 = 50$ ) and lend the rest ( $\Delta L = \Delta D - \Delta R = 500 - 50 = 450$ ). The following table summarizes the process so far.

round	$\Delta M0$	$\Delta D$	$\Delta E$	$\Delta R$	$\Delta L = \Delta D - \Delta R$	$\Delta M1 = \Delta E + \Delta D$
1	600				600	
2		500	100	50	450	600

At this point the process recommences: people borrow and spend 450, and those receiving the 450 keep a part in cash (75) and deposit the rest (375) on banks. The same process is repeated round after round, as shown in Table 9.

round	$\Delta M0$	$\Delta D$	$\Delta E$	$\Delta R$	$\Delta L = \Delta D - \Delta R$	$\Delta M1 = \Delta E + \Delta D$
1	600				600	
2		500	100	50	450	600
3		375	75	37.5	337.5	450
4		281.25	56.25	28.125	253.125	337.5
5		210.9..	42.1...	210.9...	189.84...	253.125
...		...	...	...	...	...
TOTAL	600	2,000	400	200	1,800	2,400

Table 9. The deposits (money) multiplier process and the limit of the process

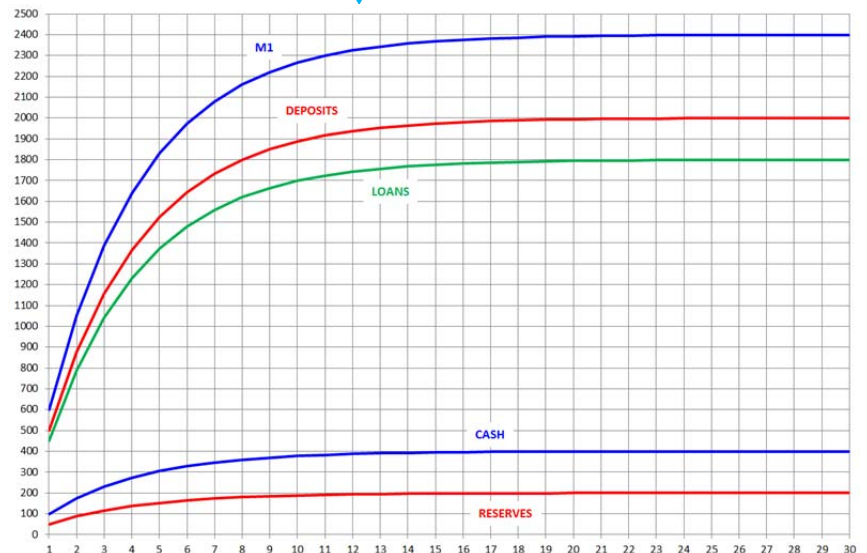


Deposits grow continuously:  $500 + 375 + 281.25 + 210.9 + \dots = 2,000$ .  $M0$  initially increased by 600. The fraction held in cash is the sum  $100 + 75 + 56.25 + 42.18 + \dots = 400$ . Since  $M0 = E + R$ ,  $\Delta M0 = \Delta E + \Delta R$ . That is,  $600 = 400 + \Delta R$ . Thus,  $\Delta R = 200 = 50 + 37.5 + 28.125 + 21.09 + \dots$

Fig. 10. Chart of Table 9 (15 first periods)

Fig. 11. Chart of Table 9 (30 first periods)

On the other hand,  $M1 = E + D$  yields  $\Delta M1 = \Delta E + \Delta D$ . As  $\Delta E = 400$  and  $\Delta D = 2,000$ , it follows that  $\Delta M1 = 2,400$ : an increase of 600 in  $M0$  is transformed into an increase of 2,400 in  $M1$ . Given  $\Delta M1 = \Delta E + \Delta D$  and  $\Delta M0 = \Delta E + \Delta R$ , it turns out that  $\Delta M1 - \Delta M0 = (\Delta E + \Delta D) - (\Delta E + \Delta R) = \Delta D - \Delta R = \Delta L$ . In words, the multiplier effect (the increase  $M1$  of over  $M0$ ) is generated by loans (in the example,  $\Delta L = \Delta M1 - \Delta M0 = 2,400 - 600 = 1,800$ ).

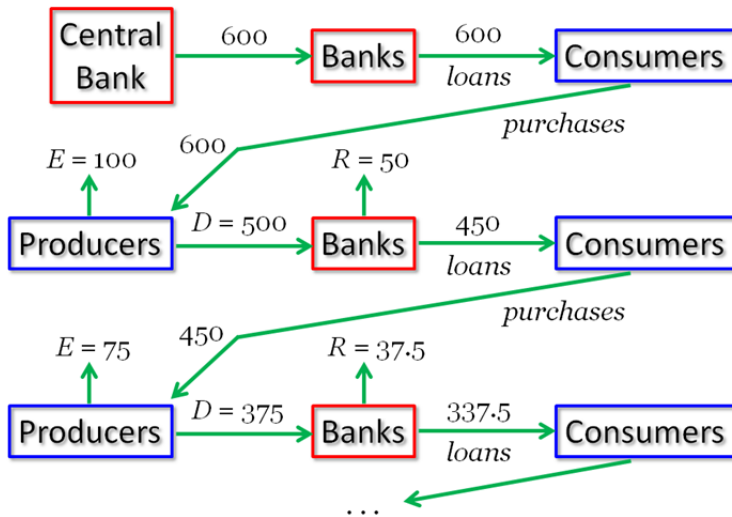


This analysis suggests that the money multiplier  $mm$  has to be 4:  $\Delta M0 = 600$  generates  $\Delta M1 = 2,400$ . In fact,

$$mm = \frac{1 + l}{r + l} = \frac{1 + 0.2}{0.1 + 0.2} = \frac{1.2}{0.3} = \frac{12}{3} = 4.$$

Value  $mm$  is the total effect on the cash held by the people and the deposits created by the process

...  $\Rightarrow$   $\uparrow$  deposits  $\Rightarrow$   $\uparrow$  loans  $\Rightarrow$   $\uparrow$  expenditures  $\Rightarrow$   $\uparrow$  revenues  $\Rightarrow$   $\uparrow$  deposits  $\Rightarrow$   $\uparrow$  loans  $\Rightarrow$  ...



The above sequence illustrates the interaction between the financial sector (deposits and loans) and the real sector (purchases of goods) of the economy. Fig. 12 on the left sketches the process underlying the results in Table 9. The values in the example illustrate the fact that most money (80-90%) is bank money, that is, a digital record in the banks' computer databases.

Fig. 12. The sequence of events behind the deposits (money) creation process

## 28. Implications of the orthodox multiplier model

- Deposits come first and loans are created afterwards. Hence, banks cannot lend until they receive deposits: the money creation process cannot start unless deposits are previously created. This result expresses the view of banks as money intermediaries: banks transfer purchasing power from lenders to borrowers.
- The amount of loans (credit issued) can be controlled by the central bank changing the reserve ratio or the monetary base. Therefore, the banks have no control over the money stock **M1**.
- **M1** cannot grow indefinitely and get out of control, given the parameters of the model.

Josh Ryan-Collins et al. (2012): *Where does money come from?*

## 29. The reality of bank money creation

- A bank can make a loan without previously having to receive cash or accept a deposit. Loans do not need to wait for the arrival of money to the bank. A bank can, simultaneously and at will, create a loan and a bank deposit, the latter representing the extension of credit by the bank. When a bank makes a loan, the money lent is not taken from anyone's account nor from the bank's funds: it is created out of thin air.
- As deposits are accounting entries in a computer, a bank creates the money by crediting its customer's account with the amount of the loan and balancing this liability by registering the amount of the loan as an asset. The bank is not actually providing cash but the promise to provide cash. But that promise, the account at the bank, counts as cash.
- Banks establish the amount of central bank money that the central bank must provide to banks.
- The extent to which banks create bank money depends on the probability that banks attribute to the repayment of the loans: bank money is the product of the bank's confidence. This confidence may be volatile. Excessive confidence of banks in the ability of borrowers to repay loans may fuel a credit bubble. A credit crunch may ensue when banks realize the insustainability of the credit boom. The credit crunch may persist no matter how much central bank money (monetary base) the central bank lends, or makes available, to banks.

**30. Bank run.** A bank run is a sudden and simultaneous demand by customers to withdraw a sufficiently high volume of deposits.

**31. The banking system's shaky foundations.** In the model the banks promise to deliver something that they cannot deliver, because there is not enough cash in an economy to cash all bank deposits. In Table 9, deposits worth €2,000 million are created, but they are backed by only the additional €600 million in cash. If all depositors tried at the same time to withdraw their deposits, banks would be forced to get the remaining €1,400. But what if no one is willing to supply those funds because, for instance, the bank run is on the whole banking system? What is more: if depositors believe that banks face liquidity problems, then the subsequent bank run may actually create the liquidity problems for banks. In Spain, the Deposit Guarantee Fund of Credit Institutions guarantees up to €100,000 per deposit in case of bankruptcy. The fund ended 2012 with a shortfall of €1.263 billion. To sum up, the stability of the banking system relies on the belief that the banking system is stable. <http://www.fgd.es/en/index.html>.

**32. The banking business: between fraud and catastrophe.** The textbook multiplier model illustrates the following ideas.

- Banking works as long as everyone believes it does. If confidence is lost, the system collapses insofar as it relies on the fiction of unexisting money.
- The creation of bank money (loans) rests only on the banks' belief that the borrowers can repay.
- Nothing controls the scale/timing of bank lending. Banks lend freely until they fear a default on repayments. Led by that fear, new loans are refused and economic activity declines. The resulting credit crunch and economic contraction feed each other following the circular sequence  
...  $\Rightarrow$   $\downarrow$  **lending**  $\Rightarrow$   $\downarrow$  **expenditure**  $\Rightarrow$   $\downarrow$  **production**  $\Rightarrow$   $\downarrow$  **employment**  $\Rightarrow$   $\downarrow$  **lending**  $\Rightarrow$  ...

The economy enters a recession which, depending on the severity and intensity of the above snow-ball effect, may turn into a depression.

**33. Banks are not safe-deposit boxes.** The money deposited in a bank does not wait idle in the banks' vaults until it is reclaimed by depositors. It is irrelevant whether depositors did not give banks permission to use their money: once the money is deposited, it legally belongs to the bank.

**34. Banks are not mere financial intermediaries that receive money from savers and lend it to borrowers.** Banks are not just neutral agents that ensure that savings are used by shifting money from those who do not want to use them to those who want. Banks do not simply transform short-term savings into long-term loans, so that savings by the general public are automatically channelled to investment in production activities by firms.

**35. Direction of causality.** If (1) is considered an identity (true by definition), then it is equally justified to claim that causality runs from **M1** to **M0**, with  $\mathbf{M0} = \frac{r+l}{1+l} \cdot \mathbf{M1}$ .

**36. A simple model of endogenous money.** The textbook model of **M1** creation explained above presents money as exogenous, in the sense that the money stock of the economy can be controlled by the monetary authority (in advanced economies, the central bank) that regulates **M0**. Heterodox economists question the exogeneity of **M1** and regard the money stock is endogenous in the sense that “the economy” itself determines **M1**.

In the textbook model, bank money coincide with the volume of loans, which is endogenous: given the parameters of the model, loans are completely determined. This means that banks do not choose how much to lend: they just lend all that they can and what they can is the difference  $\Delta D - \Delta R$ .

A simple way of making the money stock endogenous is to revert the above features, namely, to allow banks to choose the volume of loans. As a result, the volume of loans is now exogenous (not determined by the model). The new model is based on the same equations of the textbook model with the addition of (3); see Ronald Shone (1989): *Open economy macroeconomics*, p. 154.

$$D = L + R \quad (3)$$

Equation (3) was implicit in the textbook model, but with **L** considered endogenous; that is,  $L = D - R$  defined the value of **L**. In the new model, **L** is taken to be exogenous. This means that **L** is chosen by banks (in particular, **L** is determined by their beliefs on the borrowers' ability to repay).

So let the model be described by equations  $M1 = E + D$ ,  $E = l \cdot D$ ,  $R = r \cdot D$ , and (3). In this model, **M1** can be expressed as a function of **L** according to (4).

$$M1 = \frac{1 + l}{1 - r} \cdot L \quad (4)$$

To prove (4), it follows from  $R = r \cdot D$  and (3), that  $D = L + R = L + r \cdot D$ . Solving for **D**,

$$D = \frac{L}{1 - r} \quad (5)$$

By the initial three equations,

$$M1 = E + D = l \cdot D + D = (1 + l) \cdot D.$$

The combination of the last result with (5) yields (4). By (4), if banks can obtain the necessary reserves, then the money stock **M1** depends on the volume of loans **L** that banks find profitable to make. In case that banks consider profitable any loan, **M1** will be determined by the demand for loans; in other words, the demand for money creates its own money. That would correspond to the heterodox view according to which money is endogenous.

The consequences of changing *l* and *r* in (4) and (1) are completely different. A rise in *l* in (1) reduces **M1**, whereas a rise in *l* in (4) increases **M1**. The latter result is explained as follows. The initial impact of an increase in *l* is to rise **E**. Since  $D = \frac{L}{1-r}$  and both *L* and *r* remain constant, **D** also remains constant. As  $M1 = E + D$ , it follows that **M1** goes up when **E** rises and **L** does not vary. Similarly, an increase in *r* causes a fall in **M1** under (1), while it causes a rise under (4).