

International Money and Banking:

3. Central Banks

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Introducing Central Banks

- Modern central banks have a very wide range of functions and policy roles.
- The vast majority of these functions stem from two core characteristics.
 - 1 Central banks are “**the bank for banks**” and handle payments between these banks.
 - 2 Central banks are monopoly issuers of notes and coins and are the only organisation that can create what is known as **base money** i.e. currency or deposits with the central bank that can be exchanged for currency.
- These two characteristics are interrelated
 - ▶ All banks must keep what are known as “reserve” accounts with their central bank and there are regulations requiring banks to keep a certain amount of funds in these accounts.
 - ▶ And it is through adjustments to these accounts that money is created in modern economies.
- Governments also keep their own account at the central bank, depositing tax revenue and paying their bills from this account.
- Central banks are public bodies and they generally return the profits from their operations to the fiscal authorities.

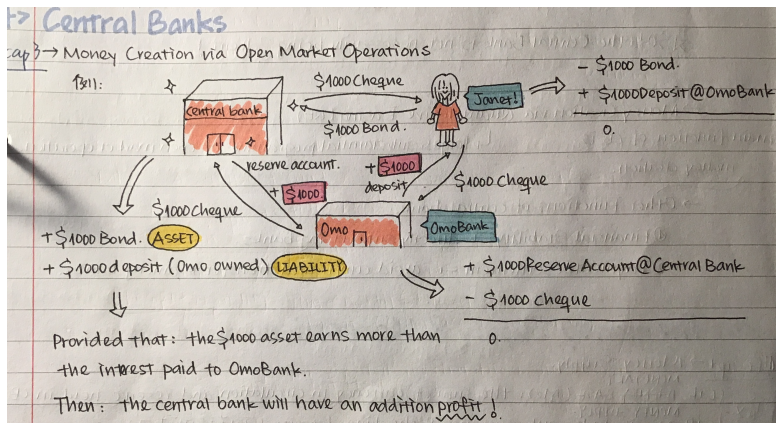
Payments & Settlement

- Because all banks maintain reserve accounts with their central bank, this puts the central banks at the very centre of the banking system.
- This gives them an advantage over other institutions in facilitating payments between banks: If Bank A wants to send money to Bank B, the easiest way to do this is for Bank A to ask the central bank to deduct from its reserve account and to add money to Bank B's reserve account.
- Central banks have developed complex payments and settlement systems, based on sophisticated IT platforms, to make these transfers between banks with minimal delays.
 - ▶ In 2023, the Fed's *Fedwire* system handled 773,267 transfers per day with an average total daily value of \$4.3 trillion.
 - ▶ In 2023, the Euro area's *T2* system processed a daily average of 409,444 transfers, with an average total value of €2.2 trillion.
- These systems ensure that your direct debit payments don't bounce and that your credit or debit cards are accepted for payment. Operating and improving these systems is an important part of central banking.

Money Creation via Open Market Operations

- Where does the cash in your pocket come from? The famous Nobel prize winning economist, Milton Friedman, used a “helicopter drop” of cash as a simple analogy for central bank money creation.
- Since helicopter drops are not practical or fair, in practice, central banks create money via methods such as **open market operations**:
 - ① The central bank purchases a security (e.g. a bond) worth \$1000 from Janet by giving her a cheque for \$1000.
 - ② Janet then deposits the cheque at her bank, call it OmoBank.
 - ③ When OmoBank presents the cheque for payment to the central bank, the central bank credits OmoBank's reserve account by \$1000.
 - ④ OmoBank can, if they wish, swap these additional reserves for cash to put in ATM machines. When OmoBank orders a delivery of cash from the central bank, its reserve account is reduced by that amount.
- Where does the central bank get the money from to increase OmoBank's reserve account? Nowhere! This is the central bank “creating” money.
- Note that the actual printing of cash in this example is driven by the demand from bank customers via removing money from ATM machines.

A Recent Student's Graph of the Open Market Operation Process



Implications of Open Market Operations

- **Janet:** Note that when the Fed created money via the open market operation, Janet was not better off: Janet sold a bond worth \$1000 and received a credit to her deposit account worth \$1000.
- **OmoBank** are not better off. They have increased assets of \$1000 in the form of additional money in a reserve account with the central bank but they also have an additional liability in the form of \$1000 in deposits owed to Janet.
- **Central Bank:** The central bank has a new asset worth \$1000 while it has an additional \$1000 in reserves that are owned by OmoBank. Provided the new asset earns more interest than the central bank pays to OmoBank, then the central bank will have an additional flow of profits and will be able to transfer some of these profits back to central government.

Money Creation via Loans to Banks

- Another way central banks can create money is to make loans to commercial banks.
- To provide the loan, the central bank again just presses a button and credits the commercial bank's reserve account.
- For example the Eurosystem of central banks (meaning the ECB and the national central banks) provides a large quantity of loans to the Euro-area banks at a specified rate. The rate of interest on these loans used to be the ECB's key policy rate. I will provide a lot more information on these lending operations later.
- As a condition for obtaining such loans, banks must pledge some assets to the ECB as **collateral**. This means that if the bank fails to repay the ECB, the central bank will take the collateral in lieu of repayment of the loan.
- As with open market operations, central banks provide loans to banks by crediting their reserve accounts, creating money from nowhere.

Central Bank Balance Sheets

- Due to their money creating activities, central banks build up large stocks of assets over time.
- Depending on how much of the revenue stream from these assets has been passed over to governments over time, the current value of a central bank's assets may exceed the amount of money they have created in the past when acquiring these assets.
- Central banks release a balance sheet to summarise the assets they own and the money they have issued.
- In a stylised example, such as the one below, assets are shown on the left-hand side while the right-hand side lists the amount of money that has been created as “Liabilities”. The difference between the current value of assets and liabilities is labelled “Capital”.

Assets	Liabilities and Capital
Securities	Money Created
Loans	Capital

About Central Bank Liabilities

- Over time, much of the money created by crediting reserve accounts ends up as currency in public circulation.
- So the balance sheet is often expressed as

Assets	Liabilities and Capital
Securities	Currency in Circulation
Loans	Reserve Accounts
	Capital

- The items “Currency in Circulation” and “Reserve Accounts” are always listed as “Liabilities” in the balance sheets published by central banks but we need to be careful in interpreting this literally.
- For example, the cash that is in circulation is not in any meaningful sense a liability of the central bank. The central bank does not pay interest on cash notes and does not make any promise to swap the notes for some quantity of gold or some other asset.

Reserve Accounts as Liabilities

- What about the reserve accounts that commercial banks hold at central banks? Are these liabilities of the central banks?
- Until modern times (circa 2000 or so) very few central banks paid interest to commercial banks on their reserves.
- But all major central banks now pay interest on reserves. We will discuss later why this is but, for now, we will just note that the interest rate paid on reserves is now the key monetary policy interest rate.
- So reserve accounts are central bank liabilities but they are subtly different from the liabilities of “normal” institutions:
 - ▶ Unlike normal liabilities, the central bank never actually needs to borrow money. It can create money from nowhere.
 - ▶ These reserve liabilities don't have any maturity—they never “fall due”—so they are not like a loan that you or I would have.
 - ▶ The central bank gets to set the interest rate on this liability itself.
 - ▶ For a number of years recently, the Eurosystem had a negative interest rate for reserves, meaning banks had to pay the Eurosystem to keep money on deposit with them!

Central Bank Income Statements

- Like commercial banks, as well as publishing a balance sheet, central banks publish an annual income (or profit and loss) statement.
- Central banks earn interest from loans to banks and from securities, make trading gains (or losses) on their financial assets and earn fees from the financial sector.
- Central banks incur interest expenses when they pay interest to commercial banks on the money they hold in their deposit/reserve accounts and they also have other operational expenses (staff, currency printing costs etc.)
- This shows the income they earned as well as their costs. See below for a stylised example.

Income	Expenses
Interest from Loans to Banks	Interest Expenses
Interest from Securities	Other Expenses
Net Gains from Financial Trading	
Other Income	

Central Bank Profits

- Currency is listed on the balance sheet as a liability but, once printed, it does not cause any further costs to the central bank.
- Operational costs such as staff salaries are also typically low relative to the money earned by central banks.
- And the interest rate paid on reserves is typically lower than the interest rates that central banks earn on their assets. For example:
 - ▶ The interest rate the Eurosystem of central banks charges to banks for loans is higher than what it pays them in interest on reserves.
 - ▶ Central banks typically own long-term securities. These bonds usually have a higher interest rate than the interest rate on reserves, which is a short-term rate.
- So central banks generally make profits. Central banks are public organisations, so most of these profits are transferred to the government.
- But central banks can make losses. For example, at present central banks are making interest payments on reserves that are often larger than the interest they are earning on the fixed-rate securities they bought during the low-interest-rate era.

Do Central Banks Need To Be “Solvent”?

- It is natural to look at any balance sheet in which one side is labelled “Assets” and assume that most of what’s on the other side is “Liabilities”.
- Central bank balance sheets list the money they have created as “Liabilities.” But you need to be careful interpreting these balance sheets.
- When a central bank operates a non-fiat currency (e.g. the Gold Standard) it agrees to have sufficient “hard assets” of a particular type so that it can swap its currency for the hard assets at the agreed conversion rate.
- In contrast, in modern fiat currency systems, there is no promise to redeem notes for any particular amount of gold or other assets. These “liabilities” are essentially notional.
- In a fiat currency system, a central bank’s asset holdings could fall below the value of the money it has issued (i.e. the balance sheet could show it to be “insolvent”) without affecting the value of the currency in circulation. A fiat currency’s value—determined by the price level (how much can you buy with a euro)—is not determined by the stock of central bank assets.
- See my blog post “Is the ECB Risking Insolvency? Does it Matter?”

Reasons for Risk Control at Central Banks

- So it's not important that a central bank's balance sheet shows that its assets exceed liabilities.
- And, as noted already, central banks generally make profits. So concerns about solvency are largely theoretical.
- But that does not mean how a central bank manages its assets is irrelevant.
- Two issues make it relevant.
 - ① **Opportunity Cost:** Instead of acquiring a particular asset, the money could have been used to buy an asset which gave the central bank a return and this return could have been passed back to central government.
 - ② **Indirect Cost:** Because expansions in the supply of money can produce inflation, printing money can create an indirect cost by making goods and services more expensive. For these reasons, it is important that central banks have proper risk control procedures aimed at securing a fair return on the assets acquired via money creation.

Monetary Policy

- Open market operations are an example of what is known as **monetary policy**.
- In many textbook treatments of macroeconomics, the focus of the central bank's monetary policy is to control the amount of money that it issues, whether as cash or in the form of bank reserves.
- Over recent decades, however, the focus of central banks has generally not been on controlling the supply of money. Instead, central banks have used their money creation powers to influence the **interest rates** that people can borrow at.
- Later, we will provide a detailed discussion of why interest rates (rather than the supply of money) have been the key focus of monetary policy.
- We will also discuss in detail how the Fed and the ECB use their money-creation powers to influence interest rates in the economy.

Lender of Last Resort

- We have discussed how banks can get into trouble if depositors or other providers of funds withdraw money quickly.
- If the bank does not have sufficient liquid assets to cope with these withdrawals, and other banks are not willing to lend to it, what can it do?
- One option would be to get a loan from the government. This could take the form of a loan from central government but, in practice, it is central banks that have taken on this **Lender of Last Resort** role.
- There are a few reasons why governments prefer to have central banks take on this role.
 - ① Central banks can create money “with the push of a button” and supply it to a bank by crediting its reserve account.
 - ② Central banks can provide the money with more secrecy. Governments would likely have to debate and pass legislation if the loans came from central government.
 - ③ Central bank loans don't get counted as government spending.
- Because of their lender of last resort role, central banks are often given explicit mandates to maintain the stability of the financial system.

Banking Supervision

- Later we will go into more detail about the types of regulations that banks must obey. It is important, however, to distinguish between **banking regulation** (the rules) and **banking supervision**: The latter is the process of checking that banks are complying with the rules. Supervisors can also assess a bank's corporate governance and risk-taking culture. In extreme cases, supervisors can cancel a bank's license to operate.
- There have been debates over the years about whether central banks should be involved in directly supervising banks.
- Some believe there could be conflicts of interest between supervisory objectives and monetary policy objectives such as price stability.
- I do not agree with those arguments. I believe that involvement in banking supervision can be helpful to meeting monetary policy objectives and also makes the central bank's lender of last resort policy function more efficient. See my paper "Should Monetary Policy be Separated From Banking Supervision?" for a discussion of these issues.
- In the euro area, the ECB took over as the single supervisory mechanism (SSM) for all banks in 2015.