

MBHS Economics Club

Monetary Policy Notes

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Review of Monetary Policy:

Monetary policy is the process through which a nation controls the supply of money. As we discussed with Greece, it can be used to affect inflation, interest rates, and price stability, making it an important tool to influence economic growth. Policy can be expansionary (increasing total supply of money more quickly than usual) or contractionary (increasing total supply of money more slowly than usual, or even decreasing total supply of money).

What is Money?

- Before there was money, the primary system of exchange, outside of tribal groups with high levels of internal trust, was barter, a direct exchange of some goods or services for another.
 - This required both parties in any trade to want something the other person could provide.
 - It also makes entering future contracts more difficult, and works poorly with perishables or items with highly variable values.
 - Bartering was highly time inefficient because of these factors and much time that might be spent producing more goods or services would instead be spent bartering. This was prohibitive to the creation of larger markets, as the addition of more people, goods, and services, increased the complexity of trade.
- To alleviate this problem, money was created as a **medium of exchange**: something widely accepted as a payment for goods and services.
 - (Though if you read certain modern anthropology papers, you may find interesting and well substantiated theories that currencies only really began to appear once city-states and empires began to build up large armies, and found it much easier for accounting purposes, to pay them in money than in some amount of grain and goods).
 - This consequently led to money's use as a **unit of account**, the value of \$1 is uniform, and allows one to convert the value of some number of apples to some number of iPhones or brownies. (Recall Marx's theory of commodities.)
- This also allowed money to serve as a **store of value**, and simplified trading perishables and items with highly volatile value.
- To make it simpler to enter future contracts, money also needed to be a **standard of deferred payment**, i.e. it must also have value in the future.
- **Commodity money** — A type of money which derives its value from the material from which it is made. (gold coins).
- **Commodity-backed money** — Money that derives its value from a physical object with commonly agreed upon intrinsic value, which is stockpiled. Essentially, if I went to the bank and gave the cashier gold/silver backed dollars I could get the corresponding value in gold/silver.

- **Fiat money** — Money that derives value from trust in the institution that creates it.

Money Supply

Note: These definitions vary slightly from nation to nation, but all measure similar things.

In order of descending liquidity:

- M0 — Currency in circulation that is not in a depository institution
- MB (Monetary Base) — Total currency in circulation
- M1 — M0 + Traveller Checks* + Demand Deposits (Coins and Currency in Circulation)
- MZM — Money with Zero Maturity
- M2 — M1 + Other Checkable Deposits + Savings Deposits + Time Deposits (Currency + Deposits)
- M3 — M2 + Large Time Deposits
- M4 — M3 + Commercial Paper and Tea Bills

Credit cards are considered short term loans and debit cards are considered money transfers, so these things are already accounted for.



Fig 1.0: *Traveller's checks are essentially outdated paper 'one-use' credit cards. They exist, but nobody uses them anymore, with exception to Eric. Eric only uses traveller's checks.

There are two important things to note here:

1. Much of the money is concentrated in the banking system, making it an effective way of effecting change in the money supply.
2. These numbers are also important because they can be used to predict inflation, understand wealth, etc.

Banks

- **The payment system** — A big accumulation of stuff in a system - Rules, procedures, instruments, institutions - which resolve financial transactions through a transfer of monetary value
- **Transaction costs** — The cost of making a transaction, i.e., the “friction” of economic exchanges
- **Financial intermediary** — An institution which connects people with too much money with people who need
 - **Depository institution** — A place where you can put your money
- Balance sheets & money creation
- **Bankruptcy**
 - Comes from the Italian “banca rotta”, which means “broken bench”, as in Italian banking or business groups, each member would have a physical seat, or bench, and if that person became insolvent, their bench would literally be broken in half.
 - While varying based on jurisdiction, generally means a legal measure taken by a person or group when their debts significantly outweigh their assets to protect themselves from their creditors, in which the person surrenders most of their assets to the courts in return for absolution from their debts. The surrendered assets are then auctioned off in some manner and used to, inasmuch as possible, pay the creditors of the insolvent person.
 - Often used by Donald Trump.
- Reserve requirements
 - A regulation imposed by a central bank upon commercial banks within its jurisdiction which requires said banks to hold a certain fraction of deposits in reserve (that is, to not lend that fraction out).
 - The **money multiplier** is defined as the quantity of money that the banking system can generate from each \$1 of bank reserves. The formula for calculating the multiplier is $1/\text{reserve ratio}$, where the reserve ratio is the fraction of deposits that the bank wishes to hold as reserves. The quantity of money in an economy and the quantity of credit for loans are inextricably intertwined. Much of the money in an economy is created by the network of banks making loans, people making deposits, and banks making more loans.
- Increasing the M1 money supply
 - Banks have a tendency to loan out as much money as allowable, so if they are allowed to loan out a greater fraction of deposits, then the total amount of money in the M1 money supply will increase, and vice versa.

THE BASIC FRACTIONAL RESERVE BANKING CYCLE

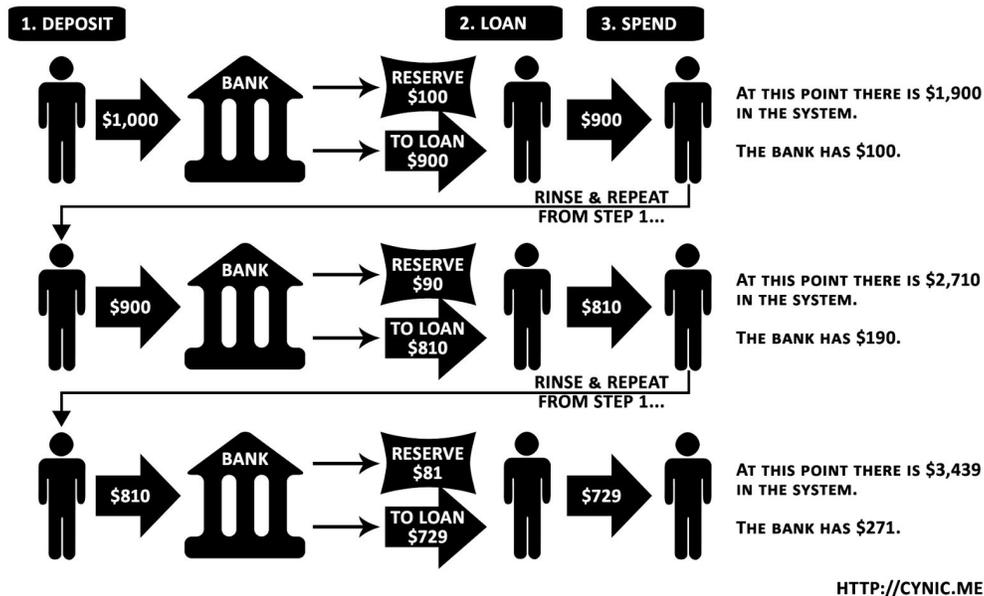


Fig 2.0: This is a more in depth, graphical explanation of how banks “make money.”

The Fed

- The Federal Reserve, often referred to as “the Fed,” is responsible for creating America’s monetary policy.
 - It is headed by the Board of Governors of the Federal Reserve. Each governor is appointed by the President and confirmed by the Senate, and after confirmation serves a 14 year term. Their terms are staggered so that 1 person leaves the board every 2 years. Each governor may serve only one term, and only one governor can be chosen from any of the 12 US federal reserve regions. These policies ensure that the monetary policy of the nation is not swayed by popular opinion, and is always made in the nation's best interest. Of these governors, a Fed Chair is chosen, who serves as the public voice and sets the agenda of the Fed.
 - The aforementioned Federal Reserve Regions has a regional Federal Reserve Bank, each of which supports commercial banks and the general economy in its district. Each of these banks has its own board of directors elected by the commercial banks in its region.
 - **They have a Google reviews score of 2.6/5** (<https://goo.gl/KU8iFQ>).
- The Fed is designed to
 - Conduct monetary policy
 - Promote financial stability

- Provide banking services to commercial banks, other depository institutions, and the federal government
 - All commercial banks have an account with the federal government which allow it to do what a normal person would with a commercial bank. Banks can obtain loans through the Fed, process checks, ensures that banks have enough money, and ensures that banks follow consumer protection laws.
 - It is interesting to note that the Fed actually pumps a significant amount of money into the economy come holiday shopping season, and then that removes most of that money come january, just to make sure banks can meet all of the withdrawal needs of citizens.
- To promote financial stability, the Fed is responsible for bank regulation. Among the regulations are reserve requirements, capital requirements, and restrictions on the types of investments banks may make.
 - Bank Runs were fun & Deposit insurance stopped them.

The Fed's Toolbox

- **Changing Discount Rate**
 - The Fed was initially founded after the financial panic of 1907, where many banks failed due to bank runs, which gave it the role of '**lender of last resort.**' Essential, if there are bank runs solvent banks could borrow as much money as they needed from the Fed's discount window to end the run. The interest rate on these loans is called the **discount rate**. If people were confident that the banks could handle all withdrawals, there would be no need for bank runs.
 - This was the original purpose of the Fed, but its role has grown significantly since then.
- **Open Market Operations**, the most common and powerful tool, are the buying or selling of US Treasury bonds in order to influence the quantity of bank reserves and the level of interest rates, specifically the federal funds rate. The **federal funds rate** is the interest rate charged by commercial banks making overnight loans to other banks. This is a very short term interest rate, but reflects the financial markets well. The Federal Open Market Committee makes the decisions regarding open market operations.
 - Banks typically hold some amount of money in bonds. When the government buys bonds from them, it increases the supply of money in banks, which they will loan out, triggering the aforementioned money multiplier.
 - To best understand how this works, we treat the central bank as being outside the banking system. When a central bank purchases bonds money is flowing into the system. When it sells bonds, money flows out.

- The Federal government has the power to do this because when it needs money to purchase bonds, it can just print more money.
- **Changing Reserve Requirements**
 - If banks are required to hold a greater amount in their reserves, they have less money to lend out.
 - In practice large changes in reserve requirements are rarely used because they are highly disruptive, and difficult to comply with.
- **Traditional Monetary Policy**
 - Monetary policy affects interest rates and the available quantity of loans, and hence, indirectly, influences aggregate demand.
 - **Expansionary Monetary Policy** (aka loose monetary policy) — A policy that lowers interest rates, which stimulates borrowing.
 - **Contractionary Monetary Policy** (aka tight monetary policy) — A policy that raises interest rates, which reduces borrowing.
 - The central banks raises or lowers interest rates by changing the federal funds rate, because all interest rates mirror that rate. Of course, because it is a short term rate, it will affect things like long term loans taken when purchasing a house or car significantly less than short term ones. Monetary policy pushes the range of rates higher or lower, but the market forces set the interest rates for specific markets of lending.
 - In contractionary policy, when interest rates are higher, business investment declines because it is less attractive for firms to borrow money, and firms with money find it more lucrative to invest in financial instruments rather than in physical capital, decreasing two large components of aggregate demand. Expansionary policy yields the opposite.
- Hence, expansionary policy can be used to move to Potential GDP when in a recession or a situation with high unemployment. Conversely, if the economy is producing output higher than potential GDP, a contractionary policy should be adopted to reduce the inflationary pressures for a rising price level.
 - This implies that monetary policy should be **countercyclical**, i.e. that the policy should always balance the business cycles' peaks and troughs. However, if a government over compensates, loose monetary policy can shift Aggregate demand too far to the right, and trigger inflation, and tight monetary policy can shift Aggregate demand to the left, leading to a recession.
 - Because Keynes developed his idea during the Great Depression, one of the key focuses of Keynesian theories, with regard to monetary policy, was the use of expansionary monetary policy.

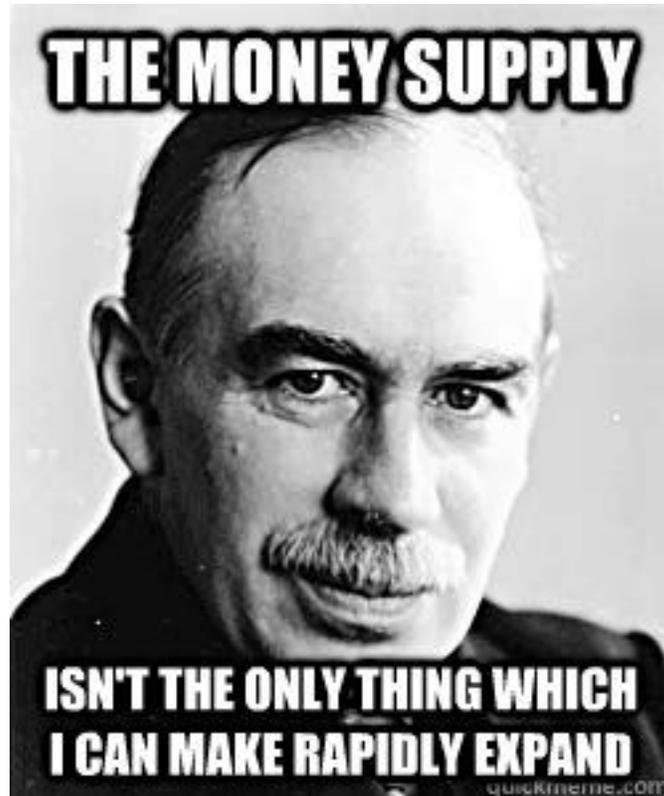


Fig 3.0: Keynes was also aware of the rapidly expanding universe.

- After the 2008 crash, the Fed engaged in a policy of purchasing long-term government and private mortgage-backed private securities to stimulate AD, a policy known as **Quantitative Easing** (QE). This differs from traditional monetary policy in two ways. Instead of targeting short term rates, the Fed targeted long term rates, because short term rates were already extremely low. It also helped remove toxic assets from the financial system, increasing stability. These actions have been thought of as temporary measures, but will be much more difficult to remove than they have been to implement, because businesses have become so reliant on them.

Issues with Monetary Policy

Monetary policy in the real world, just like everything else in economics, doesn't always follow the theory. For example, it takes time for information to reach the federal reserve, time for them to convene and deliberate, time for the policy to be enacted, and time for the effects of that policy to fully manifest themselves. As such, monetary policy is really only felt 1-3 years after its inception.

If the government were to take an extreme monetary policy action, the lag might lead to compensation, triggering inflation.

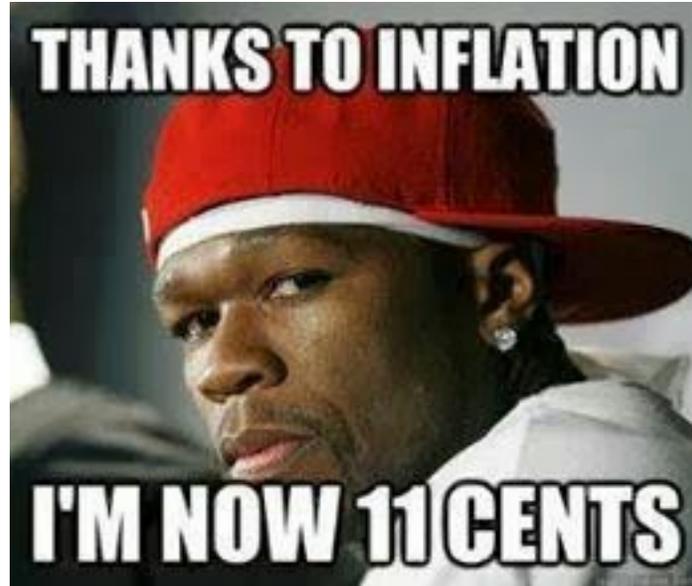


Fig 4.0: If the government were to overcompensate with monetary policy, at least we would solve the fiddy cents problem.

There are numerous other hurdles facing effective policy as well, which are outlined below. While the issues don't mean that we should have monetary policy, it shows that the Fed should act humbly, or it may do as much economic harm as help.

- Although banks are required to hold a minimum level of reserves, nothing prohibits them from holding **excess reserves**. If the central bank enacts expansionary policy, but banks are concerned about providing loans, or businesses and consumers are not eager to borrow money, the increase in the money supply will not affect Aggregate Demand.
- $velocity = \frac{Nominal\ GDP}{Money\ Supply}$
 - Through some simple math, this can be shown to affect monetary policy:
 - Recall that $Nominal\ GDP = Price\ Level \times Real\ GDP$
 - hence, $Money\ Supply \times Velocity = Nominal\ GDP = Price\ Level \times Real\ GDP$
 - This is known as the **basic quantity equation of money**
- If the velocity of money varies significantly, it can hinder the effectiveness of monetary policy, and we don't know what causes major shifts in the velocity of money.
- Asset Bubbles and Leverage Cycles
 - When times are good, the banks and the financial sector are eager to lend, and people are eager to borrow. A surge of lending can often exaggerate economic growth and can lead to skyrocketing prices of certain assets, like stocks or housing, to rise at unsustainably high rates. The sharp reduction in credit combined with deflating prices at the end of such a cycle, as seen

in the dotcom bubble, make the economic downturn worse than it might otherwise be.



Fig 5.0: This is what the Fed should be aiming for: small, but successful.