

# Money and Public Purpose

## ***Week 3: Currency, Money and Banking***

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## **What is money?**

- What gives currency value?
- Why do we seek to earn USD?
- Is our currency valuable because it's backed by gold?

## **“Taxes Drive Money”**

- Gold convertibility suspended for domestic transaction during 1930s, international transactions in 1971
- Legal tender laws alone not sufficient to create demand for currency
- Tax obligations ultimately drive demand for currency
- Taxes are only payable in USD
- USD has no “intrinsic” value

## **Other Functions of Taxation**

- Altering behavior (e.g. cigarette tax)
- Limiting social & political power
- Slowing down an “overheating” economy

## **The Money of Account**

- Sovereign government determines money of account
  - E.g. US dollar, British pounds, Japanese yen
- Government spends, taxes, fines, and enforces contracts in money of account
- Government is the monopoly issuer of its currency

## **National Currency = Government IOUs**

- National currency = government IOU
- What does the government “owe” us?
  - Some other combination of dollars (1 \$20 bill = 2 \$10 bills)
  - Ability to cancel tax obligations

## **Non-Government IOUs**

- Non-government IOUs are denominated in national money of account
- Some examples:
  - PayPal balance
  - Venmo balance
  - Amazon gift card
- All IOUs are liabilities of the issuer of those IOUs

## **Example: Employer & Employee**

- 10 hours of work at \$10 per hour = \$100 liability to employer
- Employer pays \$100 to employee's Chase checking account on payday
- \$100 in checking account is employee's asset and Chase's liability
- Employee can now withdraw \$100 in government currency, canceling Chase's liability

**Liabilities change hands and forms but the \$100 is  
always denominated in USD.**



## **A Massive Scoreboard**

- Modern financial system can be thought of as a spreadsheet that tracks credits and debits
- Where does a scorekeeper “find” points to add to scoreboard?
- He doesn't; he marks the scoreboard up or down as necessary

## **Exchange Rates**

- Exchange rate is the amount of currency that can be purchased by a different unit of currency
- Today, \$1 USD = €0.90 Euro
- National government can allow its currency to be freely exchanged (i.e. floating) or it can try to manage the exchange rate (i.e. fixed)

## **The Role of Banks**

Commercial banks:

- Are profit-seeking firms
- Are public-private “franchises” governed by the Federal Reserve
- Have accounts with the Fed, which links the entire banking system

## **Commercial Banking Business Model**

- Banks earn profit by making loans
- In order to earn profit, bank must receive more interest from customers than it pays in interest on the funds it borrows

## **Three Conditions Necessary for Lending:**

1. Non-bank firms/households seeking loans
2. Firms/households are creditworthy
3. Banks anticipate loans will be profitable

## **Bank Lending Is Not Reserve-Constrained**

- Banks loan first, finds necessary reserves afterwards
- Loan officers do not check reserve positions before lending
- Decision to lend is based on anticipated profitability

## **Banks Do Not Lend Reserves**

- Bank reserves do not leave the interbank payment system
- Loans create deposits
- New money is “keystroked” into existence

## **Example: Bank Loan**

- I request \$5,000 loan
- Bank checks my credit, determines I'm credit-worthy
- Bank marks up my checking account by \$5,000
  - \$5,000 is my asset and my liability to bank
  - \$5,000 loan is bank's liability to me and bank's asset
- I can now spend this \$5,000



## **In the previous example...**

- Bank loaned money independently of reserve positions
- Bank created new money in my checking account
- An example of endogenous money creation

## **Reserves Are Used to Clear Payments Between Banks**

An example:

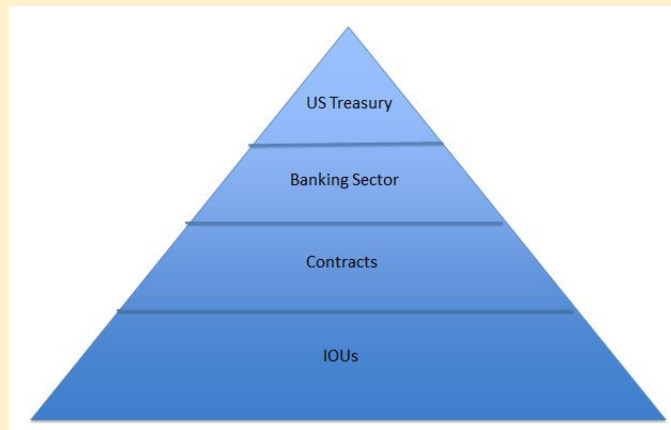
- I write you a \$100 check from my Chase checking account
- You deposit the \$100 check at Bank of America
- Chase and BoA both have accounts at the Fed
- When you deposit my check, Chase debits \$100 from my checking account, transfers \$100 of reserves to BoA
- BoA credits your checking account with \$100 USD

## **Demand Deposits Are Convertible on Demand**

An example:

- I have \$1,000 in my Chase checking account
- I go to an ATM and withdraw \$100
- I now have \$900 remaining in my checking account
- The bank has debited \$100 from their reserves and given it to me

## Currency Pyramid



**Private liabilities are denominated *and* ultimately convertible into the government's currency.**

## Terminology

### Recall from Week 1:

- One course objective is to enable you to participate in public discussions of economics and policy
- We must introduce terminology you'll encounter in press and media
- Not MMT-specific
- Draws largely from Chapter 10 of *Macroeconomics* by Mitchell, Wray and Watt



## Monetary Base

Consists of:

- Notes and coins held by public (non-government sector), including banks
- Deposits of banks at central bank: **reserves**

Monetary base is the most liquid measure of the money supply. (Macro, 148)

## **M1**

Consists of:

- Monetary base
- Demand deposits (checking accounts)

## **M2**

Consists of:

- M1
- Most savings accounts
- Money market accounts
- Retail money market mutual funds
- Small denomination time deposits



## Variations in Liquidity and Interest Rates

As we go up from the monetary base we are encountering **increasingly illiquid** monetary aggregates

- Demand deposit: 0 or negligible interest
- All others: higher interest rates to compensate for “locking up” funds
- Interest rate sought is expression of liquidity preference

## Financial Assets and Real Assets

All these elements of money supply are **financial assets**

- Financial assets also includes stocks, bonds, etc.

**Real assets** include your house, car, factories, business equipment, etc.

- You might take on financial liabilities to obtain real assets

From household lender's point of view, your mortgage liability is his financial asset

## **Bonds**

"A bond is a formal contract to repay a loan (IOU) with interest at fixed intervals"  
(Macro, 148)

**Issue price:** What investors pay for the bond when it is first issued

**Term:** How long until bond is repaid

**Face value:** What will be paid back upon bond's maturity

**Coupon rate / Nominal yield:** Interest rate paid on face value of bond

## **Bonds Trade after Issuance**

After issuance, bonds can trade either at a premium or a discount to the issue price

- Depending in part on perceived riskiness
- If a bond is perceived as risky, its market price will fall below its issue price
- Its effective interest rate -- its **current yield** -- will rise above its coupon rate

**Yield to maturity:** Takes into account both bond's current yield and difference between its current market price and face value that issuer will pay out when the bond is held to maturity. (Macro, 150)

## **Interest Rates Are Expected to Vary with Term of Bonds**

A 10-year bond locks up the purchaser's money longer than a 2-year bond does

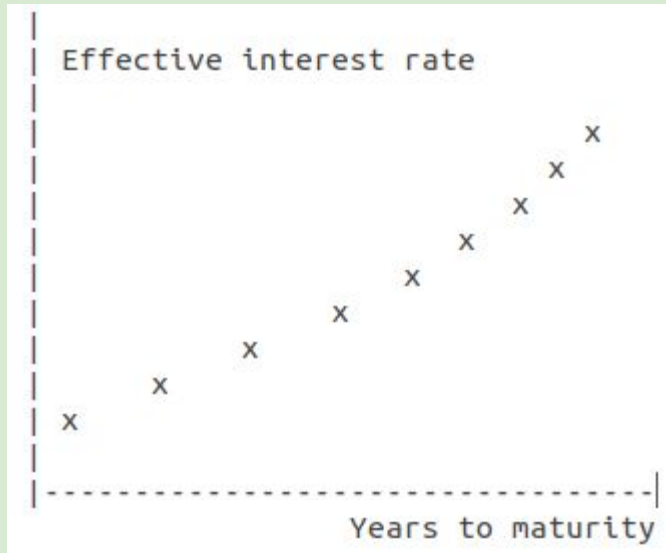
Hence, 10-year bond should pay higher interest rate

Compensation for:

- Higher risk of default
- Inflation risk
- Uncertainty

## Yield Curve

Yield curve (normal)



## **Yield Curve as Macroeconomic Indicator**

*"Movements in the yield curve are ... closely watched by economists due to the information that they convey about the general health of the economy, possible central bank interest rate adjustments, and inflationary expectations in the non-government sector." (Macro, 152)*

## Government Bonds (1)

Distinguish between:

- bonds issued by state and local governments and their associated public authorities ...
  - Example: New York State Thruway Authority
- ... and bonds issued by the U.S. government (known as Treasuries)





## Government Bonds (2)

MMT perspective: **State and local governments are currency users**

- Must raise revenue before they spend
- Impose taxes to raise revenue
- Can also sell bonds to raise revenue

## Government Bonds (3)

### **MMT: Federal government is currency issuer**

- Does not have to raise revenue before it spends
  - Does not have to collect taxes before it spends
  - Does not have to borrow before it spends
- It must spend so people in non-government sector have currency needed to pay taxes
- U.S. Government bonds are purchased with currency already spent into the economy by the government

## Government Bonds (4)

What happens when I buy a Treasury bond?

- Exchange one type of financial asset for another
  - Checking account for Treasury bond
- Expression of my liquidity preference

What is effect of Treasury bond sale?

- Changes **asset portfolio composition** of non-government sector
- Funds drawn out of money supply in exchange for very safe financial assets

## **Banks and Credit Creation (1)**

Banks seek profits

Making loans can secure profits, as long as the rate of interest received on loans is greater than rate paid on deposits (borrowed funds)

Three conditions for profitable lending:

- There must be non-bank firms seeking loans to finance spending on goods, services or assets
- These potential loan customers must be creditworthy
  - Creditworthiness is something that varies over the course of the business cycle
- Banks must anticipate that the loans will be profitable for them

## **Banks and Credit Creation (2)**

When a bank decides to make a loan to a customer, it credits the checking account of the borrower

### **Bank Balance Sheet**

<b>Assets</b>		<b>Liabilities</b>
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Promissory note (IOU)		Borrower's new demand deposit

### **Borrower's Balance Sheet**

<b>Assets</b>		<b>Liabilities</b>
-----		-----
New demand deposit		Promissory note (IOU)

## **Loans Create Deposits**

New demand deposits created by loans get counted in **M1** money supply

Hence, bank lending causes money supply to grow

## **Credit Creation Is Public-Private Franchise**

Banks are licensed by the government to conduct lending

- To engage in the process of credit creation

Credit creation is public-private franchise arrangement

- Government is franchisor
- Bank franchisee
- What gets franchised is credit creation

You might well ask ...

Q: *"When a bank makes a loan, is it lending out its depositors' funds which the bank has previously accumulated?"*

A: No

When bank makes a loan, it is creating new money by opening a demand deposit for the borrower

- It is not transferring the funds of existing depositors

"Banks do not wait for deposits to come in before they make loans"

(Macro, 155)



You might also ask ...

Q: *"Don't banks have to keep a certain amount of their deposits as reserves? And doesn't that mean that the volume of bank lending is constrained by their current reserve position?"*

A: That's two questions; we'll take the second first

## **Bank lending is not constrained by bank's reserve position**

"Banks make loans independently of their reserve positions .... Bank managers generally neither know, nor care, about the aggregate level of reserves in the banking system. ... Bank lending decisions are affected by the price of reserves and expected returns, not by reserve positions."  
(Macro, 154-155)

## **Reserve requirements**

Not all countries impose reserve requirements on their banks

- Canada, for instance, does not
- United States: banks must meet reserve requirements set by the government

But reserve requirements don't necessarily restrain lending

## **If bank falls below reserve requirements ...**

Bank can borrow reserves from other banks

- Overnight interbank lending market
- Interbank lending rate: **federal funds rate** ("fed funds") rate

## **If bank cannot borrow in interbank market ...**

Bank can borrow from the central bank

- In the U.S.: Federal Reserve
- Rate of interest: **discount rate**
- Discount rate is higher than the federal funds rate
- So banks generally try to avoid borrowing 'at the discount window'

*But:* To keep payments system working, central bank has to accommodate banks by providing reserves

- This is what Fed had to do Monday-Tuesday, Sept 16-17!

## **Banks do not loan out reserves**

"Loans create deposits that are then backed up by reserves after the fact."  
(Macro, 155)

## **What role, then, do bank reserves play?**

"Banks must hold reserve balances with the central bank as part of the payments system. The reserves are used to make interbank payments."  
(Macro, 156)

## **Central bank liquidity management**

Central bank is tasked with liquidity management of banking system as a whole

- Provide reserves when system as whole is short
  - As Fed did last week
- Drain reserves when system as whole is in excess



## Central bank interest rate targeting

Central bank wants to maintain a target for interbank lending rate

Central bank **usually can** maintain good control over interbank lending rate

Central bank **cannot** effectively control size of money supply

- Size of money supply reflects volume of bank lending
- More technically: money supply is **endogenous**

"The supply of bank money is determined 'endogenously' by the demand for bank loans, plus the willingness of banks to lend (which gives rise to the creation of deposits)." (Macro, 156)

## **Monetary Policy vs. Fiscal Policy**

- Monetary policy (interest rates) handled by Federal Reserve
- Fiscal policy (taxes/spending) handled by Congress

## **Some of the Fed's Responsibilities**

- Regulation of the financial system
- Maintenance of the payments system
- Providing liquidity to the banking system
- Lender of last resort to the banking system in the event of a crisis

## **The Fed's Role in The Economy**

- The Fed's "Dual Mandate": reach full employment, maintain stable prices
- I.e. keep inflation low, employment high
- Fed Chair testifies before each house of Congress twice per year

## **Two Questions**

- What are the tools of monetary policy which the fed uses?
- How well do these tools work?

## **The Fed's Toolbox**

- Changes in interest rates
- Rate changes affect decisions to borrow
- Conventional thinking says borrowing decreases as rates rise

## The Federal Funds Rate

- Interest rates which lenders charge are markups on the rate at which banks lend to each other overnight
- Banks must meet reserve requirements imposed by Fed
- If banks are short on reserves, the quickest way to obtain them is to borrow them overnight from banks with excess reserves
- This overnight interbank rate is called the “**federal funds rate**”

## The Federal Funds Rate (2)

- The fed funds rate is the Fed's most important policy target
- Fed aims to keep FFR within a narrow range
- FFR is currently 1.75-2.00% per year (as of Sept 19)



## **Other Rates Controlled by the Fed**

- **Interest on reserves:** the rate of interest banks are paid on their reserve holdings
- **The discount rate:** the rate charged to banks that need to borrow directly from the Fed

## **How does the Fed manage rates? Through “open market operations”**

- Excess reserves in the banking system tends to put downward pressure on rates (via supply & demand)
- To drain reserves, Fed offers Treasury bonds to member banks
- Exchanging reserves for bonds alleviates downward pressure on rates

***Monetary Policy Operations***

How does the Fed manage rates? Through “open market operations” (2)

- If system is short on reserves, there will be upward pressure on rates
- In this case, the Fed buys Treasury bonds from banks and credits reserve accounts

## **Open Market Operations (OMOs)**

- OMOs change the composition of bank asset portfolios
- OMOs is the mechanism by which the fed adjusts interest rates
- OMOs do not change the level of net financial assets within the banking system

## **Reserve Requirements**

- US imposes reserve requirements, other countries do not
- This is a political decision
- Banks can always meet reserve requirements after making loans

## **Long-Term Rates**

- Fed's main focus is on overnight interbank rate
- However, it can influence long-term rates as well
- If the Fed sells a large quantity of 10-year Treasury bonds, this puts downward pressure on the price of these bonds

## **Fed as Lender of Last Resort**

- Fed may purchase assets other than Treasury bonds from banks in times of crisis
- During Great Financial Crisis, the Fed purchased bad debt from banks in order to keep them solvent

## **Treasury Bonds**

- Treasury bond sales do not “pay for” spending
- Treasury bonds must be purchased with currency that’s already been spent into existence



## Treasury Bonds (2)

- Why sell Treasury bonds then?
- They are a safe, liquid, and interest-bearing alternative to cash

## **The MMT View on Monetary/Fiscal Policy**

- Bond sales are monetary policy
- Treasury and Federal Reserve work together closely to conduct both fiscal and monetary policy