MACROECONOMICS

THE 3 PRICES OF MONEY

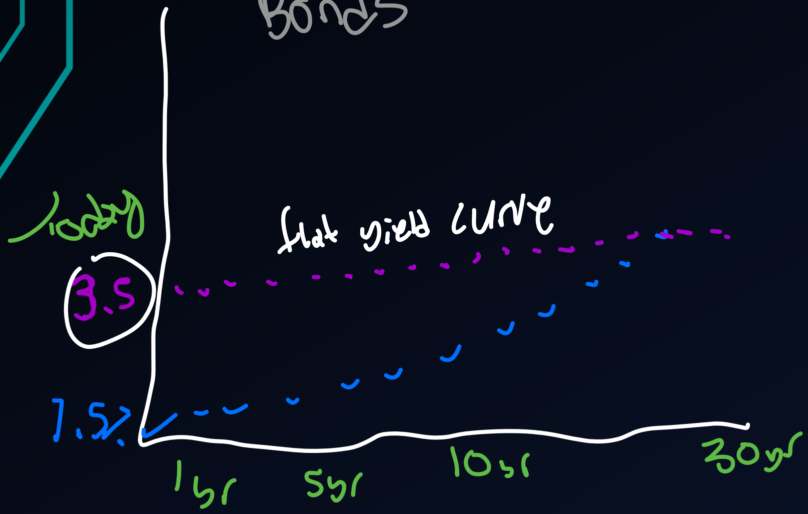
1. Price relative to time --------------------------------> *Interest rate*
2. Price relative to foreign currency ------------------> *Exchange rate*
3. Price relative to all goods and services ---------> *Aggregate price level*

STANDARD 'TEXTBOOK' MONETARY RELATIONSHIPS

- Why is 2 yr bond yield the same as 10 yr bond?
  inflation is priced into short time frame bond

Increase in money supply
- Interest rate falls
- Exchange rate depreciates
- Prices rise (Inflation)

Bonds



Decrease in money supply
- Interest rate rise
- Exchange rate appreciates
- Prices fall (Deflation)

MONEY AND ITS EFFECT ON INTEREST RATES, EXCHANGE RATES, AND INFLATION

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The ***interest rate*** can be thought of as the price of holding money

🤔 What would be your preference, to receive $100 in cash now or to receive the same $100 in cash a year from now?

→ This trade-off is often referred to as the "**time value of money**"

When interest rates rise, money obviously becomes more expensive, thus the cost of buying things today (as compared with next year) goes up. *Therefore, rising interest rates tend to slow the growth of economic output, whereas falling interest rates tend to accelerate economic growth.*

MONEY AND ITS EFFECT ON INTEREST RATES, EXCHANGE RATES, AND INFLATION

An ***exchange rate*** is simply the price of one currency relative to another

- ✓ When a country's exchange rate depreciates, foreigners will find it cheaper to by buy that country's currency, which may lead them to buy more of that country's goods.
  - For this reason, a depreciating exchange rate is often regarded as being favorable for a country's exports
  - A depreciating currency also means that foreign currencies appear more expensive to the country's citizens, thus reducing their overall purchasing power. increasing inflatio

MONEY AND ITS EFFECT ON INTEREST RATES, EXCHANGE RATES, AND INFLATION

regressive tax

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Inflation is an increase in the average level of prices across an economy

- ✓ Modest inflation as the norm, can be a characteristic of a growing economy
  - ➢ However, in periods of hyperinflation, prices typically rise faster than incomes, thereby leading to lower standards of living
  - ➢ In periods of deflation, where prices on average are decreasing, people often put off spending in order to wait for a lower price

Wages go up more prevalent → inflation more permanent

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NOMINAL VERSUS REAL

Nominal money

A measure expressed in (or relative to) current market prices and thus ***uncorrected*** *for inflation*

- Variables are typically quoted in terms of **money** (e.g., prices, wages, etc.)

Real quantities

A measure expressed in (or relative to) constant prices, and thus ***corrected*** *for inflation*

- Variables that are quoted in terms of **quantities** (e.g., number of people employed) buying bonds = lenders

NOMINAL VERSUS REAL INTEREST RATES

bonds 30 yrs

3.5%

8%

Real interest rate = Nominal interest rate – Expected inflation

= - 4.5% = want to borrow

Simply put, the real interest rate represents the effective rate of interest on a loan after controlling for inflation

Example:

	Nominal rate on loan	Rate of inflation	Real Interest Rate	Effective cost of borrowing
Scenario 1	10%	0%	10%	Very high
Scenario 2	10%	10%	0%	Very low

TYPES OF INFLATION

Demand–pull

usually occurs when economy is strong

- Occurs when consumer demand for goods and services outstrips supply
- Producers can't meet demand, or expand capacity to boost supply
- Scarcity of labor or raw materials might also be an issue not a huge factor
- The most common cause of rising prices

Cost–push

Supply chain by Covid

- Occurs when the costs of production rise (raw materials, intermediate goods, labor)
- Can be temporary, but may be sustained if it is the result of a lasting policy change, such as new regulations or taxes

Potentially inflationary

CAUSES OF INFLATION

- A growing economy textbook def
- Expansion of the money supply the fed controls
- Government regulation must do cost-benefit analysis, 5th 3rd
- Economic stimulus 7 trillion
- Deficit spending Spending what you dont have
- Fluctuations in the Exchange Rate exchange rate↓ more expensive to buy = inflation ↑
- global conflicts ~ commodity prices increase

EXPECTATIONS drive behavior of every economic decision

Expectations about the future play a pivotable role in every market economy, influencing in one way or another nearly every economic transaction and decision

Expectations and Inflation

For expectations of inflation to be low, the public must believe that the central bank will aggressively and effectively combat inflation the moment the price level begins to rise too much

Expectations and Output

If individuals expect bad times ahead, they may hold back on their expenditures, including both consumption and investment, thus opening up a gap between *potential GDP* (i.e., feasible supply) and *actual GDP* (effective demand).

economy decreases

🤔 What's more important, current reality or expectations?

CENTRAL BANKS … DEFINED

Historically

A bank that provided banking services to other banks, and often, to the government

Today

Typically, an institution that exercises authority over a nation's monetary policy

CENTRAL BANKS AND MONETARY POLICY

CENTRAL BANKS AND MONETARY POLICY

Central Bankers can use monetary policy in the pursuit of many different objectives

Lower Interest Rates	Raise Interest Rates
GDP growing too slowly	Rising inflation expectations
Unemployment is too high	
Currency has appreciated	
2008 Stabilize the financial system	

MONETARY POLICY OBJECTIVES

In practice, central banks tend to be mindful of the following objectives:

- Vigorous but sustainable GDP Growth
- Low unemployment -> lower rates
- Low inflation -> higher rates
- Steady exchange rates
- A stable financial system

TOOLS OF MONETARY POLICY

fed raised

1 **Discount Rate** 2.5% today

The rate of interest that a central bank charges on loans to commercial banks. Traditionally, central banks made these loans by buying assets from commercial banks at a small discount – hence the term "discount rate."

2 **Reserve Requirement** zero today

The proportion of total deposits that a bank must, by law, hold on reserve (and thus not lend out). These reserves are generally held as deposits at the central bank

3 **Open Market Operations** Conducts monetary Policy QE is Continued

The purchase or sale of securities on the open market by the central bank, for the purpose of raising or lowering the monetary base (and thus lowering or raising the short-term interest rate)..

QUANTITATIVE EASING (QE)

why my deposit interest rate is near Ø

Crisis

QE is is an unconventional monetary measure of continued open market purchases of financial assets by a central bank, even after the benchmark interest rate has been effectively driven to 0%

The Fed significantly expanded its balance sheet via the purchase of financial assets in response to the2007-2008 financial crisis and COVID-19

Total assets increased from $870 billion in 2006 to over $9 trillion by 2022

In a world of negative real interest rates, one can point directly to QE as a primary cause

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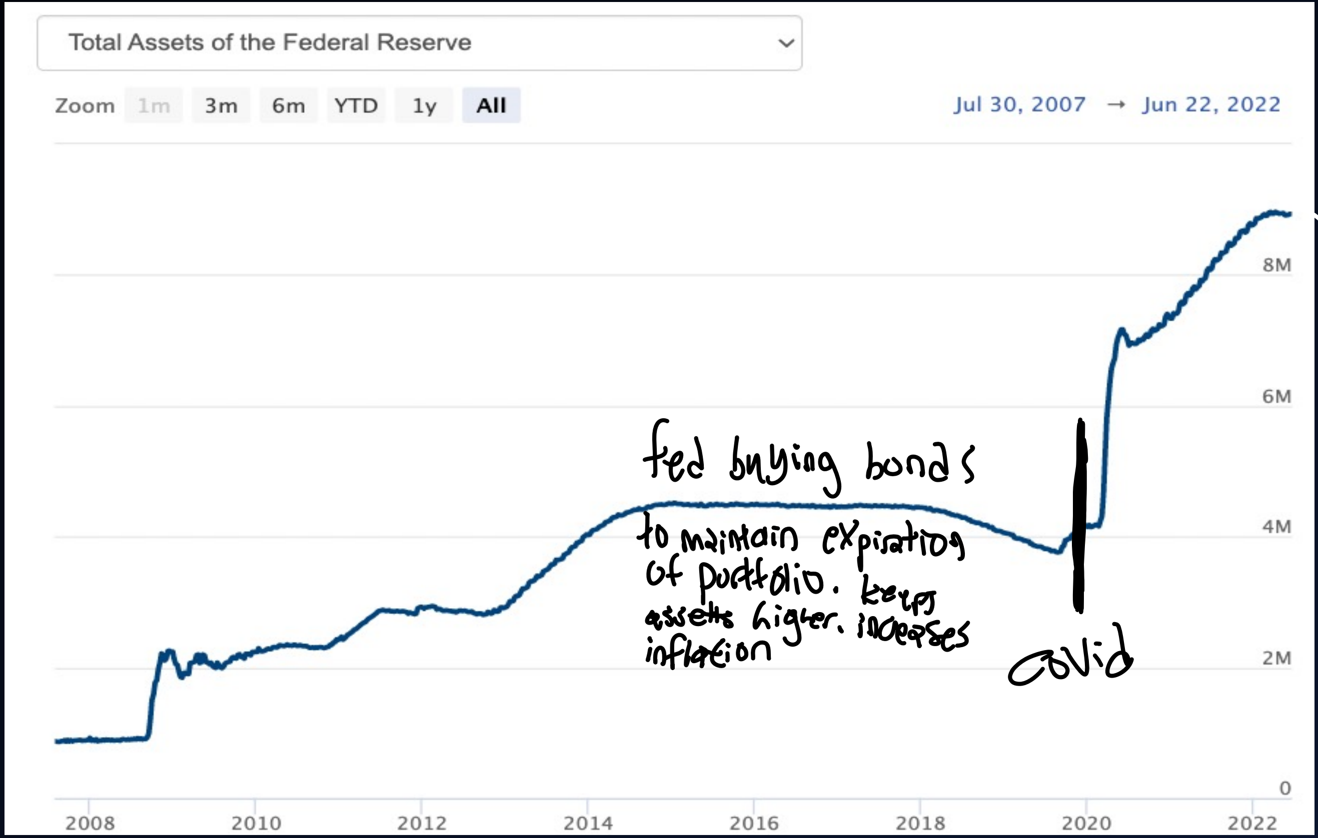
FEDERAL RESERVE BALANCE SHEET

bonds and other assets



must sell bonds or let bond portfolio expire. Interest rates go up. Inflation decreases

THE FED'S 5 KEY FUNCTIONS

Controls short term rates

1 **Conduct Monetary Policy**

Goal is to promote maximum employment, stable prices, and moderate long-term interest rates in the US economy

2 **Maintain the Stability of the Financial System**

The Fed seeks to minimize and contain systemic risks through active monitoring and engagement in the US and abroad

3 **Supervise and Regulate Financial Institutions**

The Fed seeks to minimize and contain systemic risks through active monitoring and engagement in the US and abroad

4 **Foster Payment and Settlement System Safety and Efficiency**

… through services to the banking industry and the US government that facilitate US-dollar transactions and payments.

5 **Promote Consumer Protection and Community Development** political

… through consumer-focused supervision, identification of emerging trends, community development, and administration of consumer laws and regulations.

FINANCIAL UTILITIES

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FINANCIAL INTERMEDIARIES

A financial intermediary refers to an institution that acts as a middleman between two parties in order to facilitate a financial transaction

Examples of Financial Intermediaries:

Banks	Investment Banks	Broker/Dealers
Clearing Agents	Pension Funds	Financial Advisors → invest $ in my behalf
Custodians	Mutual Funds	Exchanges
Transfer Agents	Clearing Houses	Regulators

FINANCIAL INTERMEDIARIES

Short squeeze

Hedge funds
Short selles
forced to cover
positions

banks sell me GOOG shares?

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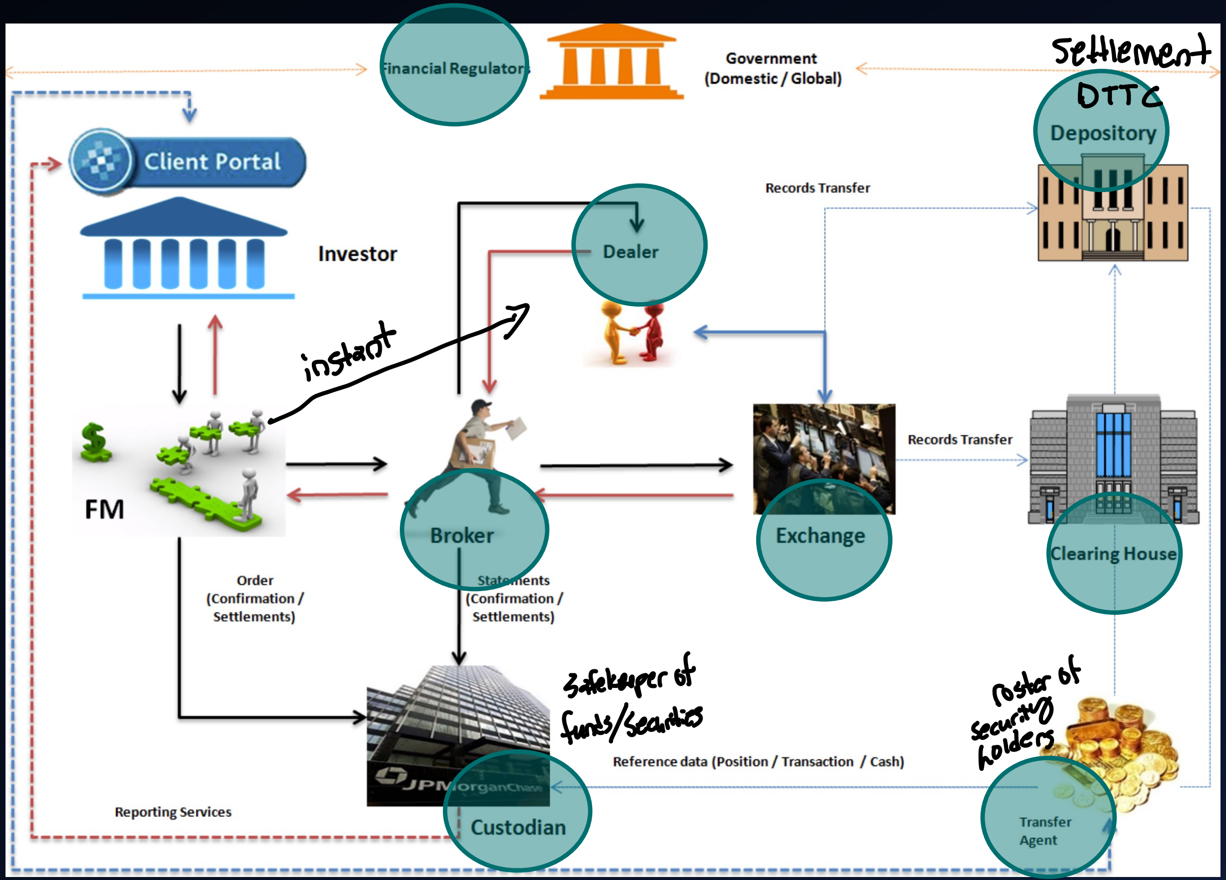
Lifecycle of a Trade



FINANCIAL MARKET UTILITIES – Critical

- Financial Market Utilities provide the ***essential infrastructure for transferring, clearing, and settling payments, securities, and other financial transactions*** among financial institutions or between financial institutions
- These institutions are ***critical components of the financial infrastructure***
- The smooth and reliable functioning of this financial infrastructure is ***vitally important to the stability of the financial system*** and the health of the broader economy

FSOC AND FMUs

2010 legislation post 2008 crisis

- The US Financial Stability Oversight Council (FSOC) has the authority to designate financial market utilities (FMU) as systemically important
- This subjects the FMU to heightened regulatory requirements and risk management procedures
- Failure of a FMU designated as systemically important could create liquidity or credit risk which could spread among financial institutions, thereby threatening the stability of the U.S. financial system
- Currently, there are eight FMUs designated as systemically important in the US

8 SYSTEMICALLY FMUs

★ review these of systematic importance

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FMU	The Clearing House Interbank Payments System (CHIPS)	CLS Bank International (CLS)	Chicago Mercantile Exchange (CME) Com. fut. trade comm.	ICE Clear Credit LLC (ICC)
Regulator	FRB fed res. board	FRB	CFTC	CFTC
Function fed oversees banking activities	The Clearing House Interbank Payments System (CHIPS) is an electronic payments system that transfers funds and settles transactions in U.S. dollars. CHIPS enables banks to transfer and settle international payments more quickly by replacing official bank checks with electronic bookkeeping entries. As of January 2002, CHIPS had 59 members, including large U.S. banks and U.S. branches of foreign banks.	CLS Bank International is a special purpose bank that settles simultaneously both "legs" that arise from a single FX transaction. The CLS payment-versus-payment (PVP) settlement model ensures that one payment leg of a FX transaction is settled only if the corresponding payment leg is also settled, eliminating settlement risk when each leg of is settled separately.	Chicago Mercantile Exchange, Inc. (CME), through its U.S. clearing division (CME Clearing), provides central counterparty clearing services for futures, options, and swaps contracts.	ICE Clear Credit L.L.C. (ICC) provides central counterparty clearing services for standardized credit-default swap (CDS) contracts.

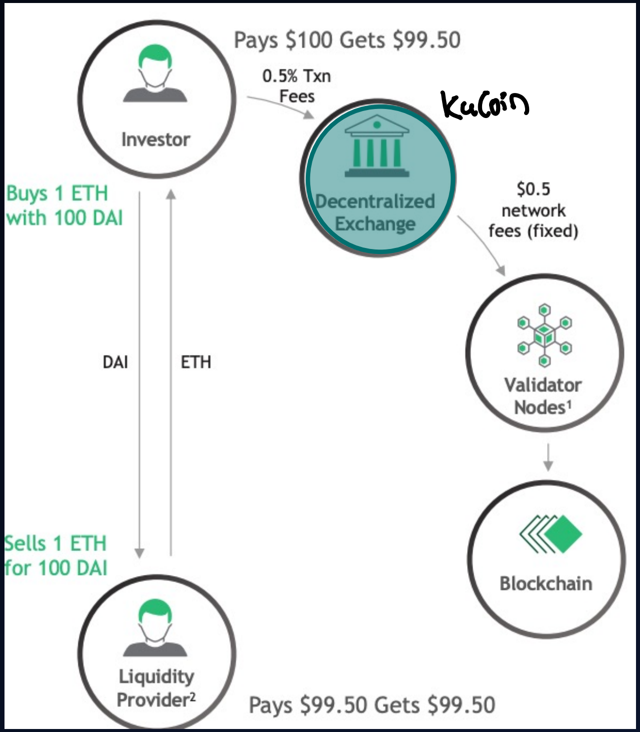
8 SYSTEMICALLY FMUs

FMU	The Depository Trust Company (DTC)	Fixed Income Clearing Corporation (FICC)	National Securities Clearing Corporation (NSCC)	The Options Clearing Corporation (OCC)
Regulator	SEC Sec. exch. comm.	SEC	SEC	comm. fut. trading. Commission **SEC**, CFTC oversees derivatives
Function Securities industry	DTC is a central securities depository and settlement system for eligible securities including equities, corporate and municipal bonds.	GSD is a central counterparty for U.S. Treasury and agency debt securities. MBSD is a central counterparty for U.S. Agency pass-through mortgage-backed securities. FICC is composed of the Government Securities Division (GSD) and the Mortgage-Backed Securities Division (MBSD).	he National Securities Clearing Corporation (NSCC), a subsidiary of DTCC, is a central counterparty that provides clearing and settlement services for U.S. equities, corporate and municipal bonds, exchange-traded funds, and unit investment trusts.	The Options Clearing Corp (OCC) provides central counterparty clearing services for U.S. options, futures, and options on futures contracts. OCC is a clearing agency registered with the SEC and a derivatives clearing organization registered with the CFTC. The SEC is the Supervisory Agency for OCC under Title VIII of the Dodd-Frank Act.

DISINTERMEDIATION

Decentralized Exchanges provide a low-cost, fast alternative without relying on a 3rd party for clearing and settlement

Lifecycle of a CeFi Trade



Source: BCG, Crypto.com