

Definition

Money can be anything that can serve as a

- (1) store of value, which means people can save it and use it later—smoothing their purchases over time;
- (2) unit of account, that is, provide a common base for prices; or
- (3) medium of exchange, something that people can use to buy and sell from one another.

- **Essential Function:**

- Money plays a crucial role in facilitating the functioning of society and fulfilling human needs.

- **Three Essential Functions:**

1. **Store of Value:** Allows people to save money and use it later, smoothing their purchases over time.
2. **Unit of Account:** Provides a common base for prices, facilitating comparison and valuation of goods and services.
3. **Medium of Exchange:** Enables transactions by serving as something people can use to buy and sell from one another.

Example:

- Consider a person who wants to buy groceries. With money:
- They can store value by saving money for groceries over time.
- They can easily compare prices of different groceries using a common unit of account.
- They can exchange money for groceries as a medium of exchange without the need for barter.

Impact of Lack of Money:

- Without money, society would revert to a barter economy, making transactions inefficient and difficult.

Barter Economy Challenges:

- Difficulty in finding specific individuals to trade with.
- Specialization becomes challenging, leading to decreased efficiency and productivity.

Benefits of Money:

- Money allows for specialization and a broader market for goods and services.

Efficiency of Money:

- People don't need to find specific trading partners; they can exchange goods and services in a market using money.

Evolution of Money:

- Money has taken various forms throughout history, including cowry shells, barley, peppercorns, gold, and silver.

Fiat Money:

- Over time, precious metals were replaced by paper notes representing ownership of gold or silver deposits.
- Fiat money, backed by the collective agreement of a nation, has value despite being materially worthless.

Fiat money is a type of currency that doesn't have any intrinsic value. Instead, its value is determined by the government that issues it and the trust people have in it.

For example, imagine a country where the government prints paper bills and coins and declares them to be worth certain amounts, like \$1, \$5, \$10, etc. These bills and coins have value because the government says they do, and people believe in the government's promise to accept them as payment for goods and services. This is fiat money.

Fiat money is not backed by a physical commodity like gold or silver. Instead, it is backed by the trust and confidence people have in the issuing government and its economy. Central banks often hold reserves such as foreign currency, government bonds, or gold to support the value of their currency and stabilize the economy. However, these reserves are not directly tied to the value of the currency in circulation

Example:

- A person can use fiat currency, such as paper money or digital currency, to purchase goods and services, relying on the collective trust in its value.

Conclusion:

- Money's definition and role have evolved over time, from barter to fiat money backed by governments, reflecting changes in societal needs and economic systems.

There are some general characteristics that money should possess in order to make it serve its functions as money. Money should be:

- generally acceptable
- durable or long-lasting
- effortlessly recognizable.
- difficult to counterfeit i.e. not easily reproducible by people
- relatively scarce, but has elasticity of supply
- portable or easily transported
- possessing uniformity; and
- divisible into smaller parts in usable quantities or fractions without losing value

Demand for Money:

- **Concept:** Demand for money refers to the desire of individuals and firms to hold money as a means to command real goods and services, emphasizing liquidity and value storage.
- **Derived Demand:** It is derived from its purchasing power and represents a desire for real balances.
- **Functions:** People hold money for day-to-day transactions and as a store of value despite offering little or no return.
- **Factors Influencing Demand:**
 - **Income:** Higher income leads to higher demand for money to finance expenditure.
 - **Price Level:** Demand for money is directly proportional to prevailing price levels.
 - **Interest Rate:** Higher interest rates increase the opportunity cost of holding money, reducing demand.
 - **Financial Innovation:** Innovations like internet banking reduce the need for physical cash.
- **Role in Economy:** Demand for money influences interest rates, prices, and income levels in an economy.
- **Importance:** Understanding money demand is crucial for monetary authorities in setting targets and formulating policies.
- **Universal Application:** Both households and firms hold money for similar reasons, emphasizing its importance across different economic agents.

THEORIES OF DEMAND FOR MONEY

Classical Approach: The Quantity Theory of Money (QTM)

- **Introduction to Quantity Theory of Money (QTM):**
 - Proposed by Irving Fisher in 1911, later supported by neoclassical economists.
 - Highlights the relationship between money and price level.
 - Asserts that changes in the quantity of money determine changes in price levels or the value of money.
- **Fisher's Equation of Exchange:**
 - $MV = PT$
 - Where:
 - M: Total amount of money in circulation.
 - V: Transactions velocity of circulation (average number of times money is spent).
 - P: Average price level ($P = MV/T$).
 - T: Total number of transactions.
- **Expansion of Equation to Include Demand Deposits:**
 - Fisher extended the equation to include demand deposits (M') and their velocity (V').
 - Expanded equation: $MV + M'V' = PT$
 - Where:
 - M' : Total quantity of credit money.
 - V' : Velocity of circulation of credit money.
- **Total Supply of Money:**
 - Consists of actual money (M) and its velocity of circulation (V).
 - Velocity of money in circulation (V) and velocity of credit money (V') remain constant.
- **Role of Total Transactions (T):**
 - Initially represented by T, later replaced by real output Y.
 - Total volume of transactions (T) multiplied by the price level (P) represents the demand for money.
- **Equilibrium:**
 - Demand for money (PT) equals the supply of money ($MV + M'V'$).
 - Total value of transactions equals PT , and the value of money flow equals $MV + M'V'$.
- **Aggregate Demand for Money:**
 - Demand for money increases with the number of transactions people want.
 - Total volume of transactions multiplied by the price level (PT) represents the demand for money.

Explanation

The Quantity Theory of Money is a theory that says the amount of money in an economy affects prices. Imagine you have a small town with only ten dollars in circulation. If suddenly more money is printed, say another ten dollars, people will have more money to spend. With more money to spend, prices might go up because there's more demand for things. This is like when everyone wants the same toy, but there's only a few available, so the price goes up.

The theory uses an equation: $MV = PT$. Let's break it down:

- M is the total amount of money.
- V is how fast money moves around (how many times it's spent).
- P is the average price level.
- T is the total number of transactions.

So, if M (money) or V (velocity of money) goes up, PT (total transactions times price) goes up too.

For example, let's say there are ten people in town, and each has \$1. That's \$10 in total. Now, if each person spends their \$1 twice a day, then V (velocity) is 2. If suddenly each person gets \$2 instead of \$1, the total money (M) becomes \$20. With the same velocity ($V = 2$), the total transactions (T) would be $20/2 = 10$. So, PT stays the same. But if velocity increases or more money is printed, PT would go up, meaning more demand for money.

Cambridge Approach to Quantity Theory of Money:

- **Key Figures:** Prof. Alfred Marshall, A.C. Pigou, D.H. Robertson, and John Maynard Keynes, who was then associated with Cambridge, presented a fundamentally different approach to the quantity theory of money.
- **Two Ways Money Increases Utility:**
 1. **Split-up of Sale and Purchase:** Money enables the split-up of sale and purchase into different points of time rather than requiring simultaneous transactions.
 2. **Hedge Against Uncertainty:** Money serves as a hedge against uncertainty by providing a temporary store of wealth.
- **Transaction and Precautionary Motives:**
 - **Transaction Motive:** Similar to Fisher's view, the need for money to facilitate transactions.
 - **Precautionary Motive:** Money is demanded as a temporary abode of purchasing power to overcome uncertainty, indicating a precautionary motive.
- **Demand for Money Equation:**
 - **$Md = kPY$:** The demand for money balances (Md) equals the proportion (k) of nominal income (PY), where:
 - Md is the demand for money balances.
 - Y represents real national income.
 - P denotes the average price level of currently produced goods and services.
 - PY signifies nominal income.
 - k reflects the proportion of nominal income (PY) that people want to hold as cash balances.
- **Determinants of Money Demand:**
 - **Income (Y):** Higher income leads to greater quantities of purchases, increasing the need for money as a temporary store of value to overcome transaction costs.
 - **Wealth and Interest Rates:** Other factors influencing money demand, alongside income.
 - **Interpretation of 'k':**
 - **Cambridge k:** It is a parameter reflecting economic structure and monetary habits, representing the ratio of total transactions to income and the ratio of desired money balances to total transactions.
 - **Significance:** Determines the proportion of total money income demanded as cash balances.
- **Comparison with Neoclassical Theory:**
 - **Focus Shift:** The neoclassical theory shifted the focus of the quantity theory of money towards money demand, proposing that demand for money is solely a function of money income.
 - **Transactional Focus:** Both versions are chiefly concerned with money as a means of transactions or exchange, presenting models of transaction demand for money.

Explanation

The Cambridge approach offers a nuanced understanding of money's role in the economy, emphasizing its functions beyond just a medium of exchange and highlighting the complexities of money demand determinants.

The Cambridge approach to the quantity theory of money, pioneered by economists like Alfred Marshall and John Maynard Keynes, emphasizes that money serves not only as a medium of exchange but also as a store of value and a hedge against uncertainty.

For instance, consider a scenario where an individual receives their monthly salary. They may hold onto a portion of that money as a precautionary measure for future uncertainties, such as unexpected expenses or changes in income. This represents the precautionary motive for holding money balances according to the Cambridge approach.

Additionally, when making purchases, individuals often do not engage in simultaneous transactions. They may buy goods today but sell assets or services at a later date. In this case, money facilitates the split-up of sale and purchase transactions, allowing for flexibility in timing. This illustrates the transaction motive for holding money balances.

The demand for money (M_d) is determined by factors such as income (Y), wealth, and interest rates. Higher income leads to greater demand for money as individuals need more liquidity to conduct transactions and hedge against uncertainty. The proportion of nominal income (PY) that individuals desire to hold as cash balances (represented by 'k') reflects their preferences and economic structure.

Compared to the neoclassical theory, which focuses solely on money demand as a function of income, the Cambridge approach offers a more comprehensive understanding of money's multifaceted role in the economy, encompassing transactional and precautionary motives.

Speculative Demand for Money:

Definition: The speculative motive reflects individual's desire to hold cash to exploit attractive investment opportunities requiring cash expenditure.

Key Concepts by Keynes:

- **Expected Return on Money and Bonds:** Keynes assumed that the expected return on money is zero, while the expected returns on bonds consist of interest payments and expected capital gains.
- **Inverse Relationship between Bond Prices and Market Interest Rates:** Changes in the market rate of interest inversely affect the market value of bonds. A rise in interest rates leads to a decrease in bond prices, and vice versa.
- **Investors' Perception of the Market:**
- **'Normal' or 'Critical' Interest Rate:** Investors compare the current rate of interest with a 'normal' or 'critical' rate.

Decision Making: If the current rate of interest is perceived as high compared to the 'normal' rate, investors expect a future fall in interest rates and convert cash balances into bonds to earn high returns and expect capital gains.

- Conversely, if the current interest rate is low compared to the 'normal' rate, investors expect future rate increases, leading them to hold wealth in liquid cash rather than bonds to avoid capital losses and potentially earn higher returns on money balances.

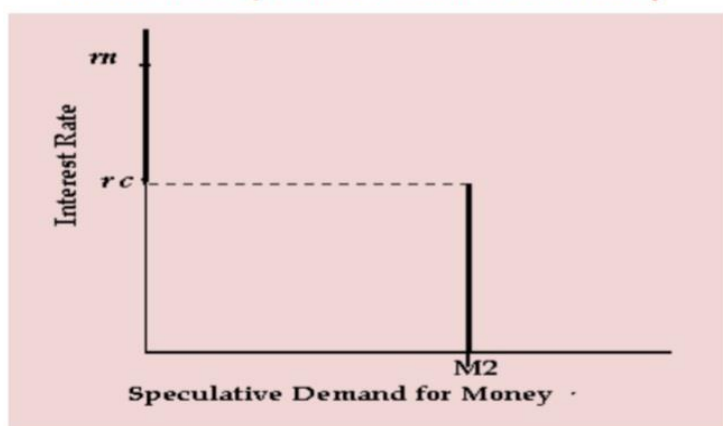
Relationship between Speculative Demand for Money and Interest Rates:

- **Inverse Relationship:** As long as the current rate of interest exceeds the 'critical' rate, investors hold government bonds. When the current rate falls below the 'critical' rate, investors hold cash. When both rates are equal, investors are indifferent between cash and bonds.
- **Inference:** Speculative demand for money and interest rates are inversely related.

The speculative demand for money highlights how investors' perceptions of future interest rate movements influence their portfolio allocation between cash and bonds, impacting both market dynamics and individuals' wealth management strategies.

Diagram

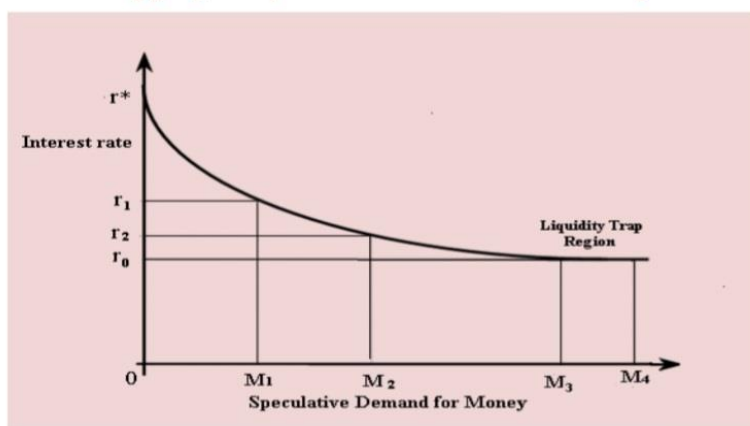
Individual's Speculative Demand for Money



The discontinuous portfolio decision of a typical individual investor is shown in the figure above. When the current rate of interest (rn) is higher than the critical rate of interest (rc), the entire wealth is held by the individual wealth-holder in the form of government bonds. If the rate of interest falls below the critical rate of interest (rc), the individual will hold his entire wealth in the form of speculative cash balances.

When we go from the individual speculative demand for money to the aggregate speculative demand for money, the discontinuity of the individual wealth-holder's demand curve for the speculative cash balances disappears and we obtain a continuous downward sloping demand function showing the inverse relationship between the current rate of interest and the speculative demand for money as shown in figure below:

Aggregate Speculative Demand for Money



According to Keynes, higher the rates of interest, lower the speculative demand for money, and lower the rate of interest, higher the speculative demand for money.

A liquidity trap

A liquidity trap happens when increasing the amount of money in the economy doesn't boost interest rates or encourage spending. People hold onto money instead of spending it, even when interest rates are very low or even at zero. They do this because they're worried about bad things happening, like deflation or war.

For example, imagine the government tries to encourage spending by making money easier to borrow, but people still don't want to borrow or spend. This is because they'd rather keep their money in cash than invest it, even if the government tries to make borrowing cheaper. This means the government can't use its usual tricks to help the economy, like lowering interest rates, because people are too cautious with their money. This situation, where monetary policy doesn't work, is called a liquidity trap.

Inventory Approach to Transaction Balances:

Developed by Baumol and Tobin:

- Baumol (1952) and Tobin (1956) devised the inventory theoretic approach to transaction demand for money.
- Money is seen as an inventory held for transaction purposes.
- **Two Media for Storing Value:**
 - Money: Non-interest bearing
 - Interest-bearing alternative financial assets (e.g., bank deposits)
- **Fixed Transfer Costs:**
 - Costs associated with switching between money and alternative assets, such as broker charges.
 - Even though alternative assets offer returns, transaction costs justify holding money.
- **Baumol's View:**
 - Money is held optimally for day-to-day transactions, incurring a cost due to forgone interest.
 - Opportunity cost: Interest forgone by holding money instead of interest-bearing assets like savings deposits, bonds, or shares.
- **Reasons for Holding Money:**
 - Convenience and ease of use for transactions.
- **Effect of Interest Rates:**
 - Transactions demand for money is influenced by interest rates.
 - As interest rates on savings deposits increase, people hold less money and vice versa.
 - Individuals compare costs and benefits between holding money with no interest versus holding savings deposits with interest.
- **Baumol's Cost-Minimization Formula:**
 - The average cash withdrawal that minimizes cost is given by:
 - Let's break down the formula

Step by step with simple example :

C : This represents the optimal cash withdrawal amount.

b : Refers to the brokerage fee or the cost associated with transferring money between cash and interest bearing assets like savings deposits

Y : Stands for the individual's income, representing the size of their transactions.

r : Denotes the interest rate on alternative assets like savings deposits.

Let's break down the formula $C = \sqrt{\frac{2bY}{r}}$

Example : Let's say John earns \$1000 per month ($Y = \1000) and wants to optimize his cash withdrawals to minimize costs. The brokerage fee (b) for each transfer between cash and savings deposits is \$5 and the interest rate (r) on savings deposits is 2% per years

Using the formula :

$$C = \sqrt{\frac{2bY}{r}}$$

Plug in the values :

$$C = \sqrt{\frac{2 \times 5 \times 1000}{0.02}}$$

$$C = \sqrt{\frac{10000}{0.02}}$$

$$C = \sqrt{500000}$$

$$C \approx \$707.11$$

So, John should ↓ draw approximately \$707.11 each time to minimize his

- **Impact of Transfer Costs on Money and Bond Demand:**

- The demand for money and bonds depends on the cost of transferring between them (e.g., brokerage fees).
- An increase in brokerage fees raises the transaction's demand for money and reduces average bond holdings.
- Individuals adjust their asset portfolio to minimize overall holding costs.

Explanation

Think of the Inventory Approach to Transaction Balances like managing your wallet. You have some money in your wallet for everyday expenses, like buying groceries or paying bills. But you also have the option to put some of that money into a savings account, where it can earn interest.

Now, imagine there's a fee every time you move money between your wallet and your savings account, like a brokerage fee. You want to find the right balance: if you keep too much money in your wallet, you miss out on potential interest earnings. But if you move money to your savings account too often, you'll pay a lot in fees.

So, just like a business managing its inventory to minimize costs, you try to find the best balance between keeping cash in your wallet and putting it in your savings account to minimize the total cost of managing your money. Opportunity Costs of Money Holdings: If you could be making more money by investing elsewhere, you might not want to keep too much money in cash. But if other investments aren't doing well, you might feel safer holding onto cash instead.

Inflation: When prices go up over time (inflation), the value of your money goes down. So, you might want to hold onto less cash and invest in things that will hold their value better over time.

Positive function of income (Y): When people have more income, they tend to hold more money because they have more to spend. For example, if you get a raise at work, you might decide to keep more cash in your wallet for everyday expenses.

Positive function of price level (P): When prices are higher, you need more money to buy the same things. So, people tend to hold more money when prices are high. For instance, if the price of groceries goes up, you might keep more cash on hand to cover the increased cost.

Positive function of transactions costs (c): If it's expensive or inconvenient to make transactions, like paying fees for each transaction or having to travel to make a purchase, people might hold more money to avoid those costs. For example, if there's a fee every time you use your credit card, you might keep more cash instead.

Negative function of nominal interest rate (i): When interest rates are high, people are more likely to save their money in interest-bearing accounts or invest it, rather than holding onto cash. So, the higher the interest rate, the less money people tend to hold. For instance, if the bank offers a high-interest savings account, you might keep less cash at home and put more in the bank to earn interest.

Overall, the optimal average money holding balances these factors to meet people's needs for spending, considering their income, the price of goods, transaction costs, and the opportunity cost of holding onto money instead of investing it.

Friedman's restatement of the Quantity Theory:

Friedman, in 1956, added to Keynes' idea about how people decide to keep or spend money. He said that instead of just focusing on how much money people have now, we should also think about how much they expect to have in the future. He called this "permanent income." For him, money is just like any other thing people buy and use. So, whether people want to keep or spend money depends on a few things:

Permanent income: This is how much money people think they'll have in the future, not just what they have now. If people expect to have a lot of money later on, they might not mind spending some now. But if they're not sure about their future income, they might want to keep more money for later.

Returns on other things: This means looking at how much money people could make from other investments, like stocks or bonds. If those investments offer good returns and aren't too risky, people might prefer to invest instead of just keeping their money in cash. But if other investments don't look so good, people might prefer to keep more money on hand.

So, according to Friedman, how much money people want to keep or spend depends on how much they expect to have in the future and how good other investment options are.

Permanent Income: Instead of looking at how much money someone makes right now, Friedman says we should focus on how much they expect to make in the future. For example, if you have a steady job and can predict your future income, you might not feel the need to hold onto a lot of money. But if your income is unpredictable, you might want to keep more money on hand for emergencies.

Relative Returns on Assets: This means comparing how much money you could make from different kinds of investments. If other investments like stocks or bonds offer better returns than just holding onto money, you might be tempted to invest instead of keeping your money in cash. But if those investments are risky or don't offer good returns, you might prefer to keep more money on hand.)

Total Wealth: This is about how much money and other valuable things you own. If you have a lot of wealth, you might not need to keep as much money in cash because you have other valuable assets. But if you don't have much wealth, you might rely more on cash to cover your expenses.

Price Level (P): This simply means that if prices go up, you might need more money to buy the same things. So, when prices rise, people tend to hold onto more money to keep up with their expenses.

Opportunity Costs of Money Holdings: If the returns on alternative assets like bonds and stocks decline, the demand for money rises, and vice versa. This means that when the returns on other investments decrease, individuals might choose to hold more money rather than investing in those assets. For example, if interest rates on bonds decrease, individuals might prefer to hold more money instead of investing in bonds, increasing the demand for money.

Inflation: Inflation influences the demand for money because a positive inflation rate reduces the real value of money balances, thereby increasing the opportunity costs of holding money. In other words, when prices rise, the purchasing power of money decreases, leading to a higher demand for money to maintain the same level of purchasing power. For instance, if inflation is high, people might anticipate that the value of their money will decrease over time, so they might prefer to hold less money and invest in assets that can provide higher returns to hedge against inflation.

Demand for Money as Behavior Toward Risk:

- **James Tobin's Analysis:**
 - Tobin assumes that people prefer more wealth to less.
 - Investors face the decision of how much of their portfolio to keep as ready money (earning no interest) and how much to invest (earning interest), such as in bonds or shares.
- **Portfolio Diversification:**
 - When faced with safe and risky assets, individuals diversify their portfolio by holding a balanced combination of both.
 - Risk aversion: Individuals prefer portfolios with a mix of safe and risky assets rather than all risky assets or only safe assets.
- **Risk and Return Tradeoff:**
 - Holding a greater proportion of risky assets like bonds or shares in the portfolio leads to higher average returns but also higher risk.
 - Risk-averse individuals avoid portfolios heavily weighted towards risky assets.
- **Preference for Diversified Portfolios:**
 - Individuals prefer mixed portfolios consisting of money, bonds, and shares, each with a different balance between risk and return.
- **Tobin's Liquidity Preference Function:**
 - Tobin developed a liquidity preference function to show the relationship between the rate of interest and the demand for money.
 - As the rate of return on bonds increases, individuals are attracted to hold more bonds and less ready money.
 - Higher interest rates lead to lower demand for holding money, and vice versa.

- Graphical Representation:

- Tobin's liquidity preference function curve slopes downwards, with the demand for money on the horizontal axis and the rate of interest on the vertical axis.
- The curve shows that as the interest rate on bonds falls, the demand for holding money in the portfolio increases.

- Aggregate Liquidity Preference Curve:

- Tobin derives the aggregate liquidity preference curve by analyzing how changes in interest rates affect the asset demand for money in people's portfolios.

- Empirical Validation:

- Empirical studies confirm Tobin's liquidity preference theory by measuring the interest elasticity of the demand for money as an asset.

Tobin's analysis highlights how individuals balance risk and return in their investment decisions and how changes in interest rates influence their demand for money and other assets in their portfolios.

Explanation

Imagine you have some money and you're trying to decide how to invest it. Tobin's theory says that people don't like taking big risks with their money. They prefer to play it safe.

So, when you're deciding how to invest, you'll probably put some of your money in a safe place, like a savings account, where it won't lose value. That's because the return on keeping your money safe is more certain compared to investing it in things like stocks or bonds, which can go up and down in value.

But even though keeping all your money safe might give you a lower overall return, you might still choose to do it because you're avoiding the risk of losing money in the stock market. Tobin calls this "risk-averse" behavior.

Now, when interest rates go up, it means you can earn more money by taking on more risk. So, you might decide to move some of your money from the safe place (like a savings account) to riskier investments (like stocks or bonds) because the potential reward is higher. This means you'll hold less money overall.

How money is measured?

In official statistics, the amount of money in an economy is generally measured through what is called broad money, which encompasses everything that provides a store of value and liquidity.

Liquidity refers to the extent to which financial assets can be sold at close to full market value at short notice. That is, they can easily be converted into another form of money, such as cash.

Although currency and transferable deposits (narrow money) are included by all countries in broad money, there are other components that may also provide sufficient store of value and liquidity to count as broad money.

Among the things the IMF (2000) says can be counted as broad money are the following:

- National currencies (generally issued by the central government).
- Transferable deposits, which include demand deposits (transferable by check or money order), bank checks (if used as a medium of exchange), travelers checks (if used for transactions with residents), and deposits otherwise commonly used to make payments (such as some Foreign-Currency deposits).

- Other deposits, such as nontransferable savings deposits., term deposits (funds left on deposit for a fixed period of time), or repurchase agreements (in which one party sells a security and agrees to buy it back at a fixed price).
 - Securities other than shares of stock. Such as tradable certificates of deposit and commercial paper (which is essentially a corporate IOU).
- The term '**public**' encompasses all economic units such as **households, firms, and institutions, excluding** the producers of money, namely the **government** and the **banking system**.
 - The government includes both central and state governments, as well as local bodies.
 - The banking system consists of the Reserve Bank of India (RBI) and all banks that accept demand deposits, particularly Current Account Savings Account (CASA) deposits.
 - 'Public' also **includes local authorities, non-banking financial institutions, and non-departmental public-sector undertakings**.
 - Foreign entities like central banks and governments, along with the International Monetary Fund (IMF), holding Indian money in India in the form of deposits with the RBI, are considered part of the 'public'.
 - When discussing the definition of the supply of money and standard measures of money, interbank deposits and money held by the government and the banking system are excluded

Sources of Money Supply

- Money supply in an economy is determined by:
 - Decisions made by the central bank.
 - Responses of commercial banks to changes in policy variables set by the central bank.

Types of Money

- Money can have intrinsic value or represent ownership of commodities or debt instruments.
- In modern economies, currency issued by the central bank serves as legal tender and is essentially a debt instrument.

1. Central Bank's Role:

- Central banks have the authority to issue currency, making them the primary source of money supply.
- The currency issued by central banks is called fiat money, backed by reserves and guaranteed by the government.
- Many countries use a minimum reserve system where central banks hold reserves of gold and foreign securities to back the currency they issue.
- currencies issued by Central Bank is also known as **High Powered Money**.

2. Commercial Banks' Role:

- Commercial banks also contribute to the money supply by creating credit through borrowing and lending activities.
- This credit-created money is known as credit money and complements high-powered money issued by the central bank.

Evolution of Money:

- Money has evolved from commodity to metallic currency to paper currency and now to digital currency.
- Technological advancements have led to the development of Central Bank Digital Currencies (CBDCs).

3. Central Bank Digital Currencies (CBDCs):

- CBDCs are digital forms of legal tender issued by central banks.
- They are exchangeable at par with existing currency and serve as a medium of payment and store of value.
- CBDCs would appear as liabilities on a central bank's balance sheet.

4. Current Status of Cryptocurrencies:

- Cryptocurrencies face legal uncertainties and are not recognized as currency in India.
- The Reserve Bank of India (RBI) prohibits banks and financial entities from dealing with virtual cryptocurrencies based on a 2018 order.

Overall, the supply of money in an economy is influenced by the actions of the central bank and the commercial banking system, with advancements in technology leading to the emergence of digital currencies like CBDCs, while cryptocurrencies face regulatory challenges in some jurisdictions like India.

The measurement of money supply in India:

1. Background:

- Measurement of money supply is complex due to the variety of money types, especially credit money.
- Different countries use different measures of money supply, which can vary over time and for different purposes.

2. Reserve Bank of India's (RBI) Role:

- RBI compiles and publishes monetary statistics since July 1935.
- Initially, till 1967-68, RBI published a single narrow measure of money supply called M1, consisting of currency and demand deposits.

3. Introduction of Broader Measures:

- From 1967-68, RBI introduced a broader measure of money supply called Aggregate Monetary Resources (AMR).
- AMR encompassed a wider range of monetary assets compared to M1.

4. Expansion of Measures:

- Following the recommendations of the Second Working Group on Money Supply (SWG) in April 1977, RBI started publishing data on four alternative measures of money supply: M1, M2, M3, and M4, in addition to reserve money.
- Each measure represents a broader definition of money supply, capturing different components of the monetary system.

5. Detailed Definitions:

- **M1:** Includes currency notes and coins held by the public, demand deposits with the banking system (current and savings accounts), and other deposits with RBI.
- **M2:** Includes all components of M1 plus savings deposits with post office savings banks.
- **M3:** Includes all components of M1 plus time deposits with the banking system.
- **M4:** Includes all components of M3 plus total deposits with the Post Office Savings Organization, excluding National Savings Certificates.

(All monetary aggregates are arranged in descending order of liquidity)**6. Purpose of Different Measures:**

- Each measure serves a specific purpose and provides insights into different aspects of the money supply.
- They help policymakers and economists analyze trends and make informed decisions regarding monetary policy and economic stability.

Overall, the evolution of measures of money supply in India reflects the changing dynamics of the financial system and the need for comprehensive data to monitor and manage monetary conditions effectively.

The determinants of money supply:**1. Two Theories:**

- Exogenous Theory: Money supply is determined externally by the central bank.
- Endogenous Theory: Money supply is determined internally by changes in economic activities affecting people's preferences for holding currency versus deposits, interest rates, etc.

2. Money Multiplier Approach:

- Current practice focuses on the money multiplier approach, which relates money stock to the monetary base or high-powered money.
- The monetary base includes currency in circulation and bank reserves.

3. Concept of Money Multiplier:

- The money multiplier represents the ratio of the total money supply to the monetary base.
- It illustrates how changes in the monetary base affect the overall money supply through the banking system's lending and deposit creation processes.

4. Determinants of Money Supply:

- Determined by the joint behavior of the central bank, commercial banks, and the public.
- Factors influencing money supply include central bank policies, reserve requirements, lending practices of commercial banks, and public preferences for holding currency versus deposits.

Overall, understanding the determinants of money supply involves analyzing the interplay between central bank actions, banking system operations, and public behavior, with the money multiplier approach providing insights into the relationship between the monetary base and overall money supply.

CONCEPT OF MONEY MULTIPLIER**1. Money Creation Process:**

- The Reserve Bank of India creates the monetary base, also known as high-powered money.
- Commercial banks create money through lending, utilizing their excess reserves to make loans or investments.

2. Definition of Money Supply:

- Money supply (M) consists of currency held by the public (C) and bank deposits (D):
 $M = C + D$.

3. Relationship with Monetary Base:

- Money supply (M) is determined by the money multiplier (m) and the monetary base (MB): $M = m * MB$.

4. Calculation of Money Multiplier:

- The money multiplier (m) is derived as the ratio of money supply to the monetary base: $m = M / MB$.
- For example, if an injection of Rs. 100 Cr leads to an increment of Rs. 500 Cr in the money supply, the money multiplier is 5.

5. Understanding Money Multiplier:

- Money multiplier indicates the multiple by which the monetary base is transformed into money supply.
- It shows how changes in the monetary base affect the overall money supply.

6. Assumptions:

- Two simplifying assumptions are made:
- Banks never hold excess reserves.
- Individuals and non-bank corporations never hold currency.

7. Determinants of Money Multiplier:

- Money multiplier is inversely related to the reserve ratio (R).
- Reserve ratio (R) represents the fraction of deposits that banks must hold as reserves.
- Each unit of money reserves generates $1/R$ money, indicating the money multiplier.
- For example, if the reserve ratio is 10%, the money multiplier is 10; if the reserve ratio is 5%, the money multiplier is 20.

8. Impact of Currency Holding:

- If some portion of the increase in high-powered money is held as currency, it does not undergo multiple deposit expansion.
- Money multiplier decreases when funds are held as cash rather than as demand deposits.

9. Example:

- Suppose the reserve ratio is 10%. This means banks must hold 10% of deposits as reserves.
- For every Rs. 1 of reserves, banks can create Rs. 10 of deposits, resulting in a money multiplier of **10**.
- If the reserve ratio decreases to 5%, banks can create Rs. 20 of deposits for every Rs. 1 of reserves, resulting in a money multiplier of 20.

In summary, the money multiplier concept explains how changes in the monetary base, combined with the reserve ratio, affect the overall money supply, with lower reserve ratios leading to higher money multipliers and vice versa.

The difference between money multiplier and credit multiplier lies in the mechanisms through which they influence the expansion of money supply:

1. Money Multiplier:

Definition: Money multiplier refers to the ratio of the total money supply to the monetary base or high-powered money.

Mechanism: It illustrates how changes in the monetary base, such as currency in circulation and bank reserves, affect the overall money supply through the banking system's lending and deposit creation processes.

Example: Suppose the Reserve Bank of India injects Rs. 100 crore into the banking system through open market operations. If this injection leads to an increase of Rs. 500 crore in the money supply, the money multiplier would be 5.

2. Credit Multiplier:

Definition: Credit multiplier refers to the ratio of the total credit extended by banks to the monetary base or high-powered money.

Mechanism: It focuses on the expansion of credit by commercial banks through lending activities, which in turn leads to the creation of new deposits and an increase in the money supply.

Example: Let's say a commercial bank receives a deposit of Rs. 100 crore. If the bank lends out 90% of this deposit, i.e., Rs. 90 crore, the borrower deposits this amount into another bank. The second bank can then lend out 90% of Rs. 90 crore, which is Rs. 81 crore, and so on. This process continues, resulting in the creation of credit and a multiplier effect on the money supply.

Key Difference:

- Money multiplier focuses on the relationship between the monetary base and the overall money supply, emphasizing the role of central bank actions and banking system operations.
- Credit multiplier, on the other hand, highlights the expansion of credit by commercial banks and the subsequent creation of new deposits, which contribute to the increase in the money supply.

In summary, while both concepts involve the amplification of the money supply, the money multiplier primarily relates to changes in the monetary base, whereas the credit multiplier focuses on the expansion of credit by commercial banks.

THE MONEY MULTIPLIER APPROACH TO SUPPLY OF MONEY

1. Behaviour of the Central Bank (Reserve Bank of India):

- The central bank controls the issue of currency and influences the supply of high-powered money (H).
- Money stock is determined by the money multiplier, with the monetary base (H) being controlled by the central bank.
- If the behavior of the public and commercial banks remains unchanged, the total supply of money in the economy varies directly with the supply of high-powered money issued by the central bank.

2. Behaviour of Commercial Banks:

- Commercial banks create credit, which determines the total amount of nominal demand deposits.
- The behavior of commercial banks is reflected in the reserve ratio, which is the ratio of their cash reserves to deposits.
- Smaller reserve ratios result in larger money multipliers, as banks can lend out more of their deposits, leading to a greater expansion of the money supply.
- interest rate , if interest rates are high opportunity cost is also high banks keep less reserves and provides more loans which increases credit creation and ultimately the money supply of the economy and vice

Total Reserve (TR) is = Required Reserve RR + Excess Reserves (ER)

- Excess reserves (ER), which are funds held beyond regulatory requirements, also play a crucial role in determining money supply.
- The excess reserves ratio (ER/D) is negatively related to the market interest rate, as higher interest rates increase the opportunity cost of holding excess reserves.

3. Impact of Expected Deposit Outflows:

- If banks anticipate increased deposit outflows, they will want more assurance and increase the excess reserves ratio.
- Conversely, a decline in expected deposit outflows reduces the benefit of holding excess reserves, leading to a decrease in excess reserves.
- During shocks banks fear to lend money, specially to small sectors hence less credit creation occurs and ultimately the money supply falls.

4. Behaviour of the Public:

- Demand deposits undergo multiple expansions, while currency does not, affecting the money multiplier.
- The currency ratio - it represents the proportion of money in total money supply that is ratio of currency to money supply.

Higher liquidity preference shows lower banking habits among the people which forces Bank to keep high reserve and lend less it results in lower money supply

- The currency-deposit ratio (c) represents the extent to which people adopt banking habits and affects the level of multiple expansion.
- A smaller currency-deposit ratio leads to a larger money multiplier, as more high-powered money is available for reserves.
- The time deposit-demand deposit ratio (TD/DD) also influences the money multiplier, with an increase indicating greater availability of free reserves and an enlargement of multiple deposit expansion and monetary expansion.

In summary, the behaviour of the central bank, commercial banks, and the public all influence the determination of aggregate money supply in an economy, with factors such as reserve ratios, excess reserves, and currency-deposit ratios playing significant roles.

In summary, the money multiplier approach to determining the money supply considers three key ratios: the required reserve ratio (r) set by the central bank, the excess reserve ratio (e) set by commercial banks, and the currency ratio (c) set by the public. A lower value of these ratios results in a larger money multiplier, indicating a greater expansion of the money supply.

The relationship can be expressed as :

$$m = \frac{1+c}{r+c+e}$$

Where

- m represents the money multiplier
- c is the currency deposit ratio set by depositors
- e is the required reserve ratio set by the central bank

An example can help illustrate this concept:

- Suppose the currency deposit ratio c is 0.1 the excess reserve ratio e is 0.05 and the required reserve ratio r is 0.2
- Using the formula we calculate the money multiplier m :
- Using the formula, we calculate the money multiplier m :

$$m = \frac{1+0.1}{0.2+0.05} \downarrow \frac{11}{0.36} \approx 3.14$$

In essence, the money multiplier depends on how much currency the public holds, how many excess reserves banks maintain, and the reserve requirements set by the central bank, all of which influence the expansion of the money supply.

In summary, monetary policy plays a crucial role in influencing the money supply and stimulating economic activity. Central banks, through tools like open market operations (OMO), can inject liquidity into the system by purchasing government securities, thereby increasing the monetary base.

- **Effect of Open Market Operations (OMO):**
 - OMO involves the central bank buying government securities, which injects high-powered money into the system and stimulates economic activity.
 - Assuming banks do not hold excess reserves and people do not increase their currency holdings, the banking system's credit creation process leads to an increase in the money supply.
 - The formula to calculate the change in money supply due to a change in reserves is: $\Delta \text{Money supply} = 1/R \times \Delta \text{Reserves}$.
- **Effect of Open Market Sale:**
 - Conversely, an open market sale by the central bank reduces reserves and decreases the money supply.
- **Possibility of Zero Money Multiplier:**
 - It is possible for the value of the money multiplier to be zero, especially when interest rates are very low.
 - In such cases, banks may prefer to hold newly injected reserves as excess reserves, without lending them out due to minimal risk and low returns.

In essence, monetary policy tools like open market operations allow central banks to influence the money supply, which in turn impacts economic activity. However, the effectiveness of these tools can be influenced by factors such as interest rates and banking behavior, potentially leading to scenarios where the money multiplier becomes zero.

Practical sums

1. Calculate Narrow Money (M1) from the following data
 Currency with public ₹ 90,000 crore
 Demand Deposits with Banking System ₹ 2,00,000 crore
 Time Deposits with Banking System ₹ 2,20,000 crore
 Other Deposits with RBI ₹ 2,80,000 crore
 Saving Deposits of Post office saving banks ₹ 60,000 crore
2. Compute credit multiplier if the required reserved ratio is 10% and 12.5% for every ₹ 1, 00,000 deposited in the banking system. What will be the total credit money created by the banking system in each case?
3. Calculate currency with the Public from the following data (₹ Crore)
 - 1.1 Notes in Circulation 2496611
 - 1.2 Circulation of Rupee Coin 25572
 - 1.3 Circulation of Small Coins 743
 - 1.4 Cash on Hand with Banks 98305

4. Calculate M2 from the following data (₹ Crore)
- Notes in Circulation 2420964
 - Circulation of Rupee Coin 25572
 - Circulation of Small Coins 743
 - Post Office Saving Bank Deposits 141786
 - Cash on Hand with Banks 97563
 - Deposit Money of the Public 1776199
 - Demand Deposits with Banks 1737692
 - 'Other' Deposits with Reserve Bank 38507
 - Total Post Office Deposits 14896
 - Time Deposits with Banks 178694
5. If the required reserve ratio is 10 percent, currency in circulation is ₹ 400 billion, demand deposits are ₹ 1000 billion, and excess reserves total ₹ 1 billion, find the value of money multiplier.

Monetary policy

- The Reserve Bank of India uses monetary policy to control the economy and keep prices stable.
- They do this by adjusting how much money is available, mainly by buying or selling securities.
- By doing this, they can change short-term interest rates, which affects how much people spend and borrow.
- When they lower interest rates, it's easier to borrow money, so it's called easing. When they raise interest rates, it's harder to borrow, so it's called tightening.

Objectives :

The objectives of monetary policy are crucial because they guide policymakers and are closely linked to overall economic policy goals. For instance, if a country aims for stable prices and robust economic growth, its monetary policy will reflect these objectives.

Legal Framework: The Reserve Bank of India Act, 1934, outlines the objectives of the central bank, emphasizing maintaining monetary stability, regulating currency issuance, and managing the credit system to benefit the nation.

Primary Objective: Historically, the primary aim of monetary policy in India has been to strike a balance between price stability and fostering economic growth. This means controlling inflation while supporting expansion.

Developing Country Focus: In developing nations like India, monetary policy incorporates specific goals tailored to their needs. These include promoting economic growth, ensuring sufficient credit flow to productive sectors like agriculture and small businesses, maintaining favorable interest rates to encourage investment, and establishing efficient government securities markets.

Financial Stability: With India's increasing integration into the global economy and ongoing financial reforms, maintaining financial stability and exchange rate stability has become paramount. This ensures resilience against external shocks and fosters investor confidence.

Example: In response to a period of high inflation coupled with sluggish economic growth, the Reserve Bank of India may implement a monetary policy that involves tightening credit by raising

interest rates. This action aims to curb inflationary pressures while also signaling to investors that the central bank is committed to price stability. Additionally, measures may be taken to ensure adequate credit flows to key sectors like agriculture and manufacturing to support economic growth.

Transmission of Monetary Policy: The process of how changes in monetary policy set by the Reserve Bank of India affect economic activity and inflation is known as the transmission mechanism. This process is intricate and can vary in timing and impact.

Stages of Transmission: The transmission of monetary policy can be simplified into two stages:

1. **Interest Rate Impact:** Changes in monetary policy, such as adjusting the cash rate, influence interest rates in the economy.
2. **Effect on Economic Activity and Inflation:** These interest rate changes then affect economic activity and inflation rates.

CHANNELS OF MONETARY POLICY TRANSMISSION:

1. **Saving and Investment Channel:**

Explanation: Monetary policy influences economic activity by altering incentives for saving and investment, impacting consumption, housing investment, and business investment.

Example: Lower interest rates on bank deposits reduce the incentive for households to save, encouraging them to spend instead. Similarly, lower interest rates on loans incentivize households and businesses to borrow more, leading to increased demand for assets like housing and stimulating investment spending by businesses on capital goods.

2. **Cash-flow Channel:**

Explanation: Changes in interest rates affect the cash flow of households and businesses, influencing their spending decisions. This channel is particularly important for those constrained by liquidity, such as individuals who have borrowed up to their maximum limit.

Example: A reduction in lending rates decreases interest repayments on debt, freeing up more cash for households and businesses to spend on goods and services. However, lower interest rates also reduce income from deposits, prompting some to restrict their spending.

3. **Asset Prices and Wealth Channel:**

Explanation: Asset prices and individuals' wealth play a significant role in influencing borrowing and spending behavior, impacting consumption and investment.

Example: Lower interest rates support asset prices, such as housing and equities, by boosting demand for these assets. Higher asset prices increase individuals' wealth, leading to higher consumption and investment as households tend to spend a portion of any increase in their wealth.

4. **Exchange Rate Channel:**

Explanation: Changes in the exchange rate can affect economic activity and inflation, particularly for export-oriented sectors or those exposed to competition from imported goods and services.

Example: If the Reserve Bank lowers the cash rate, it signals lower interest rates in India compared to other countries. This reduces returns on assets in India relative to other countries, leading to a decrease in demand for Indian assets and a shift of funds to foreign assets. Consequently, a lower exchange rate makes foreign goods and services more expensive compared to domestically produced ones, leading to an increase in exports and domestic activity. However, it also contributes to inflation as imports become more expensive in Indian rupees.

OPERATING PROCEDURES AND INSTRUMENTS:**Quantitative Tools:****1. Reserve Ratio:**

Cash Reserve Ratio (CRR): Banks are mandated to keep a portion of their deposits as cash reserves with the RBI, without earning any interest. For example, if the CRR is set at 4%, a bank with deposits of ₹100 crore must keep ₹4 crore with the RBI.

Statutory Liquidity Ratio (SLR): Banks must maintain a certain percentage of their deposits in the form of approved securities like government bonds. They can earn interest on these securities, albeit at a lower rate. For instance, if the SLR is 18%, a bank with ₹100 crore in deposits must hold ₹18 crore in government securities.

2. Open Market Operations (OMO):

The RBI buys and sells government securities in the open market to regulate money supply. For example, when the RBI sells securities, it drains liquidity from the market, thereby reducing money supply. Conversely, when it buys securities, it injects liquidity into the market, increasing money supply.

Qualitative Tools:**1. Margin Requirements:**

- The RBI sets minimum margins against collateral for loans, impacting borrowing behavior.
- For instance, if the RBI raises margin requirements, borrowers may be able to access less credit, reducing money supply in specific sectors.

2. Moral Suasion:

- The RBI persuades banks to invest in government securities rather than certain sectors through moral suasion.
- For example, the RBI may encourage banks to prioritize investments in government bonds over riskier ventures.

3. Selective Credit Control:

- The RBI regulates credit by directing banks to refrain from lending to specific industries or speculative ventures.
- For instance, the RBI may restrict lending to speculative real estate projects to curb speculative bubbles.

4. Market Stabilisation Scheme (MSS):

- The RBI issues securities to absorb excess liquidity in the market, preventing inflationary pressures.
- For example, when there is excess liquidity due to a surge in foreign capital inflows, the RBI may issue MSS securities to absorb the surplus funds.

Policy Rates:**1. Bank Rate:**

- The rate at which the RBI lends long-term funds to banks, used to penalize banks for not maintaining required reserve ratios.
- For instance, if a bank fails to meet the CRR or SLR requirements, it may face penalties in the form of higher interest rates on funds borrowed from the RBI.

2. Liquidity Adjustment Facility (LAF):

- **Repo Rate:** The rate at which banks borrow short-term funds from the RBI against government securities.
- **Reverse Repo Rate:** The rate at which the RBI borrows funds from banks, linked inversely to the repo rate.
- **Marginal Standing Facility (MSF) Rate:** The penal rate at which banks borrow from the RBI in emergencies, slightly higher than the repo rate.
- For example, if the repo rate is 4%, the reverse repo rate would be 3%, and the MSF rate would be 5%.

Organisational Structure for Monetary Policy Decisions:**1. Introduction of Monetary Policy Committee (MPC):**

- The RBI Act, 1934 was amended in 2016 to establish a Monetary Policy Committee (MPC), providing a statutory backing to the Monetary Policy Framework Agreement (MPFA).
- The MPFA is an agreement between the Government of India and the RBI on the maximum tolerable inflation rate to achieve price stability.

2. Flexible Inflation Targeting Framework:

- The amended RBI Act (2016) lays the foundation for implementing a 'flexible inflation targeting framework'.
- Inflation targeting involves announcing an official target range for inflation, aiming to achieve price stability.

3. Inflation Target and Tolerance Limits:

- The Central Government, in consultation with the RBI, sets the inflation target once every five years.
- The notified target for the period from August 5, 2016, to March 31, 2021, is 4% Consumer Price Index (CPI) inflation, with an upper tolerance limit of 6% and a lower tolerance limit of 2%.

4. Monetary Policy Report:

- The RBI is mandated to publish a Monetary Policy Report every six months, explaining the sources of inflation and forecasts for the coming six to eighteen months.

5. Failure to Achieve Inflation Target:

- The Central Government notifies factors constituting a failure to achieve the inflation target.
- If inflation stays too high or too low for too long, it means the government and RBI didn't do a good job with monetary policy.
- Failure occurs if the average inflation exceeds the upper tolerance level for three consecutive quarters or falls below the lower tolerance level for three consecutive quarters.

6. Choice of CPI as Anchor:

- Consumer Price Index (CPI) was chosen as the anchor for inflation targeting because it closely reflects the cost of living and influences inflation expectations significantly.
- India's adoption of CPI aligns with other countries like New Zealand, USA, UK, European Union, and Brazil.

7. Moving Away from Inflation Targeting:

- While many countries are adopting inflation targeting, some are shifting towards targeting nominal GDP growth instead.