



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE  
SUNDARAKKOTTAI, MANNARGUDI - 614016.**

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**PG & RESEARCH DEPARTMENT OF ECONOMICS**

**MONETARY ECONOMICS (16ACCEC8)  
II B.A ECONOMICS**

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DEPARTMENT OF ECONOMICS**

**Objective :** To explain the theoretical aspects of monetary and banking sectors to the students.

**Module I : Evolution of Money**

Evolution and Functions of Money – Forms of Money – Money and Near Money – Supply of Money (M1, M2, M3 and M4) – Value of Money – Quantity Theory of Money – Fisher's version – Cambridge version.

**Module II : Demand for Money**

Demand for Money – Keynes's theory of Demand for money – Friedman's Restatement of the quantity theory of money – Patinkin's Real Balance Effect – Tobin's portfolio balance theory.

**Module III: Banking**

Commercial and Central Banking – Functions – Balance Sheet – Credit Creation – Nationalization of Banks – Performance of Public Sector Banks in India – RBI Functions.

**Module IV: Trade Cycle**

Trade Cycle – Causes and control - Phases of Trade Cycle – Theories of Trade Cycle – Schumpeter – Hawtrey – Hicks and Samuelson.

**Module V : Inflation**

Economics of Inflation – Meaning – Types – Causes and Measures – Theories: Demand Pull, Cost-Push and Structural Inflation – Phillips Curve – Stagflation.

**References:**

1. Mithani, D.M.(1997), Money, Banking, International Trade and Public Finance, Himalaya Publishing House, New Delhi.
2. Seth, M.L. (2001), Monetary Economics, Lakshmi Varain Agarwal – Agra.
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## MODULE I : EVOLUTION OF MONEY

### Evolution and Functions of Money

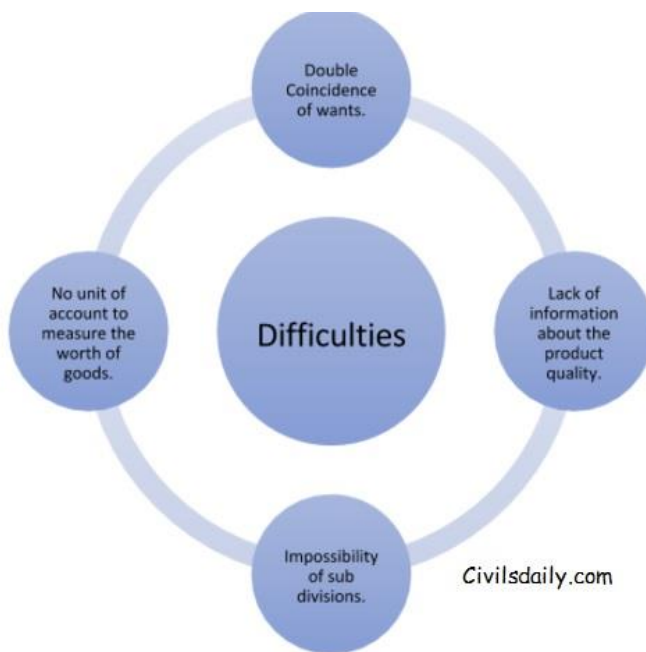
Money as a medium of exchange was not used in the early history of mankind. Exchange of the goods was not very frequent as households were self-sufficient. Whatever exchange took place between the households was in the form of barter, that is, exchange of goods for other goods.

The barter system does not provide for the direct purchase of goods since there was no common unit of account and medium of exchange (Money).

**Note for Students:** Example, if a person grows only wheat and after his self-consumption, he wants to exchange it for apple. He can do so only if the other person having apples wants wheat. If that is not the case, no exchange will take place. This problem is called double coincidence of wants.

Moreover, if they both agree to trade an apple for wheat, then the next problem is how to determine how much apple is worth one kg of wheat and vice versa. Both the individuals will argue for more of another person commodity in return of his. Therefore, exchange of goods will be limited and most of the time will not take place at all.

### Difficulties under Barter System of Trade



To overcome the problems of Barter trade, early humans started devising a system of payments and exchange that allows direct purchase of goods using any instrument that has following features:

- **A unit of Account (it must be measured)**
- **High Liquidity**
- **It can be stored**
- **It must be wanted by everyone (It should have high demand)**
- **It can be exchanged easily (Medium of Exchange)**

## Evolution of Money

Commodity Money	Metallic Money	Paper Money
In the very beginning, there exist few commodities which were needed by everyone. Commodities like arrows, bows, sea shells which are used mostly in hunting become the first form of medium of exchange and hence acted as money.	With further progress of civilisation commodity money is replaced by precious items like Gold and Silver for monetary use. Gold and Silver largely formed the Metallic Money.	The advent of State and political structure had given rise to a new form of money which although has no underlying value but has a guarantee by the governments. The government guaranteed money is known as Paper Money.
In the second stage of the evolution, when the early human shifted from hunting to agriculture, animals like cattle's, goats, sheep become the medium of exchange and acted as money.	The Metallic money offered several advantages. They were easy to handle. They can be easily stored.  They do not deteriorate.  They have the right degree of scarcity which made them valuable for all, hence acted as a perfect medium of exchange.	Paper money acted as money not because it has some value (unlike gold which has high value) but simply because they are guaranteed by the governments and are scared. With time, paper money took the form of Bank Notes to be printed by the Central Banks.
Since commodities have certain limitations like lack of a standard unit of account, limited supply and natural factors etc. Their use limited and replaced by other forms of money.	With time and technology, the hard form of gold and silver was replaced by coinage system (gold and silver coins) which were to widely used as money.	The last stage of evolution of money was in the form of Bank Deposits Especially Demand deposits, which people hold with the commercial banks and that can be withdrawn at any time. Thus, providing high liquidity.

## Money and its Functions

### Definition of Money:

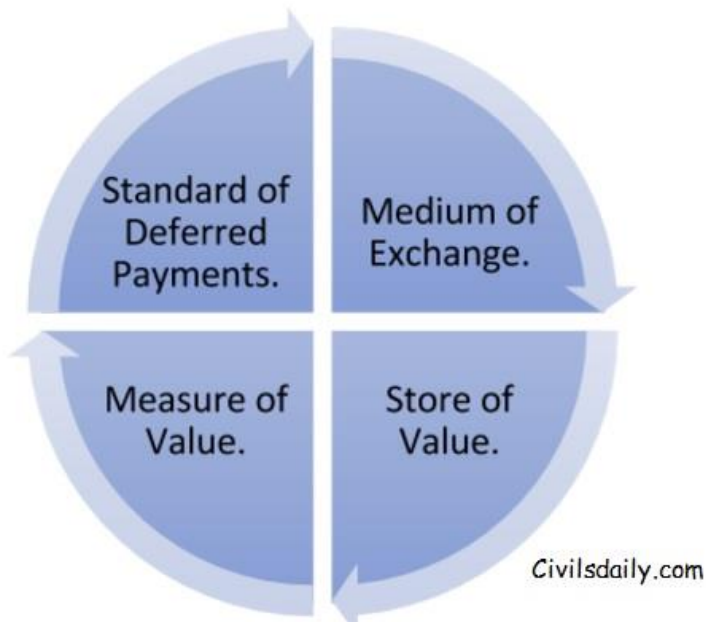
“Anything which is widely accepted in payment of goods or in the discharge of other kind of payment obligations”.

“Money can be defined as anything that is generally acceptable as a medium of exchange and at the same time act as a measure and a store of value”.

Economist has simply defined money as “Money is what Money does”. That is money is anything which performs the function of money.

## Functions of Money:

The four main functions of money are;

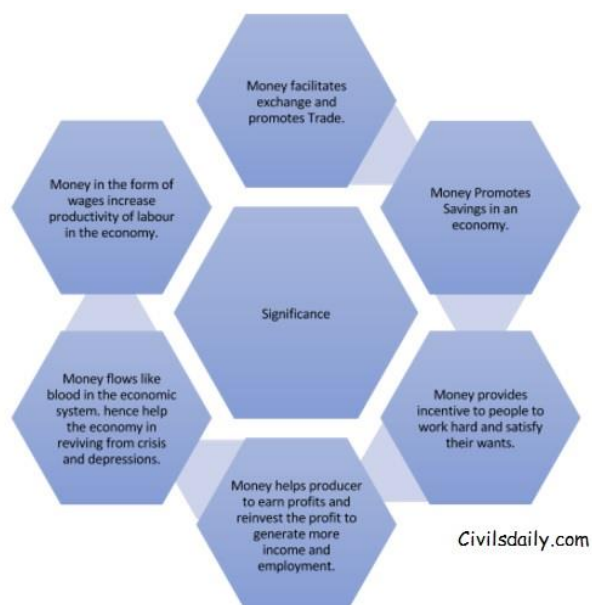


Medium of Exchange	Store of Value	Measure of Value	Standard of Payments
<p>A can sell goods to B and in return can demand money for his sale. B can use the money to buy other goods from C.</p> <p>As long as the money is accepted, the process of exchange keeps on happening.</p> <p>This feature of money is known as Medium of Exchange.</p>	<p>Money act as a store of value. Money being the most liquid asset is the most convenient way to store wealth.</p> <p>Thus, money can be stored as an asset.</p> <p>It thus, becomes very important that the good chosen as money should be such that can be easily stored.</p> <p>The case for other liquid assets like gold or real estate is different; they first have to be sold and converted into money. The money realised from them can be used to buy goods and services.</p>	<p>Money serves as a common measure of value or a unit of account. As the value of all goods and services are now measured in terms of money, the relative comparison of goods is possible.</p> <p>Each commodity has its own price and monetary value now. A car is worth Rupee 10 Lakh, and A kg of apple is worth Rupee 100. One can simply pay the price and buy car or apple.</p>	<p>Money also serves as a standard mode of Deferred payments. If a loan is taken today, it will be paid back in future time using the money.</p> <p>The loan amount is measured in terms of money and is paid back in money.</p>

## Modern Monetary Systems

Convertible Paper Money/Full Reserve System	In-convertible/ Fiat Money	Minimum Reserve System
<p>Paper money has come to occupy a very important place in the modern monetary system of almost all the countries.</p> <p>The term paper money applies only to the notes issued by the government and the central banks.</p>	<p>With the passage of time, the relative scarcity of gold and silver has increased. Therefore, the governments find it very difficult to back all their legal currency with an equal value of gold and silver. Thus, nowadays paper currency is of inconvertible type.</p>	<p>The 'Minimum Reserve System' is the current form of currency system practised World over and in India too since 1957.</p>
<p>For quite a long time, Paper money remained a convertible paper money. Under this system, money is convertible into standard coins made of gold and silver.</p> <p>The Paper money issued by the governments and central banks was fully backed by the gold and reserve of equal value. Therefore, this paper currency system is called 'Full Reserve System'.</p>	<p>Under the Inconvertible monetary system, money is not convertible into gold or silver or other precious metals.</p> <p>The paper money issued by the central banks is not backed by underlying precious metal. The issuing authorities is not responsible to convert the paper notes into gold and silver.</p> <p>Thus, the currency notes issued by the Central Banks are 'Fiat Money', that is, they are issued by a 'Fiat' (which means 'Order') of the government.</p> <p>Fiat Paper money is in the form legal tender promised by the governments. Since they are legal tender, they can be widely used to purchase goods and services.</p>	<p>Under this system, the central banks are required to keep only a minimum amount of gold and other approved securities (In India the RBI is required to keep Rupee 200 Crores).</p> <p>On the basis of minimum reserve, the central banks can issue the currency in any number subject to the economic condition of the country.</p>

## Importance and Significance of Money



## **Forms of Money**

There are many forms of money. Following are the main forms of money.

1. Metallic Money
2. Paper Money
3. Bank Money
4. Legal Money
5. Plastic Money
6. Near Money

### **1. Metallic Money**

The money made of any metal such as gold, silver etc is called metallic money. It exists in the form of coins. In our country the coins of Rs. 1, 2 and 5 are the current examples of metallic money. Due to its weight, it is difficult to use this money in large quantity.

Therefore coins are used in small amounts only the metallic money has the following two types:

- A) Full Bodied Coins
- B) Token Money

#### **A) Full Bodied Coins**

When the face value of the coin is equal to the value of metal contained in the coin, the coin is called a full bodied coin. The gold and silver coins of old times are examples of full bodied coins.

#### **B)Token Money**

When the face value of a coin is greater than the value of the metal it contains, it is called token money. In our country, all the coins are token money.

### **2. Paper Money**

Paper money refers to notes of different value made of paper which issued by the central bank or government of the country.

The paper money can be classified into following types:

- A) Representative Money
- B) Convertible Money
- C) Inconvertible Money/fiat Money

#### **A) Representative Money**

Representative money is that money which is fully backed by equal metallic reserve. The holder of a bank note can easily get it converted into metallic (gold & silver) form on demand

#### **B) Convertible Money**

It is the form of money which can be converted into gold, silver i.e. metallic reserves. But all these notes issued by the government are not fully backed by gold. The amount of gold kept by the government is a particular proportion of the notes issued.

#### **C) Inconvertible/Fiat Money**

Inconvertible or fiat money is one that we have in our pocket and use in daily business. The face value of such money is more than the value of the paper. e.g. the value of the paper of 100 rupee note is almost nil but its purchasing power is equal to Rs.100. it has this value because it has been declared as legal money by the government, so it is generally accepted as a medium of exchange.

### **3. Bank Money**

This is the most modern form of money this money is also called credit. It only consists of cheques, bill of exchange and drafts.

#### **A) Cheques**

A cheque is an unconditional order by the client on his bank to pay a certain sum of money to him or to any other party.

#### **B) Bills of Exchange**

A bill of exchange is an order by the drawer to the drawee to pay a sum of money to the drawer or to any other party.

**C) Draft:** Draft is a cheque drawn by a bank on its own branch or the branches of another bank requesting it to pay on demand a specific amount to a person named on it.

### **4. Legal Tender Money**

The money that a person accepts as a means of payment and in discharge of debt is called legal tender notice. All the notes and coins issued by the govt. and the central bank are legal tender money. Legal tender money is of two types:

#### **A) Limited Legal Tender Money**

The money which can be used a means of payment up to a certain limit is called limited tender money e.g. coins.

#### **B) Un-limited Legal Tender Money**

The money that can be used a mean of payment up to any limit or amount e.g all the notes issued by SBP.

#### **Non legal tender money**

Bank money is the form of cheques, bills of exchange, a promissory notes is not legal tender money. Robertson says it “optional money”. So non legal tender money is money which a person may or may not accept as a mean of payment.

### **5. Plastic Money**

Plastic money means the credit cards, smart cards. Plastic cards which have specially printed set of characters. Recently the use of this money has increase.

### **6. Near Money**

A type of money which can easily be converted into money. It included deposits, government bonds, printed bonds etc.

### **Money and Near Money**

Near-money can be distinguished from money on the following grounds:

#### **1. Definition:**

Money consists of coins, currency notes and demand deposits of the banks. Near-money, on the other hand, includes the financial assets, like time-deposits, bills of exchange, bond, shares, etc.

#### **2. Liquidity:**

Money possesses 100 per cent liquidity; *i.e.*, it is perfectly liquid or can be readily acceptable as a means of payment. Near-money lacks 100 per cent liquidity, *i.e.*, it involves time cost for its conversion into money.

#### **3. Function:**

Money serves as a unit of account or a common measure of value. All prices are expressed in terms of money. Near-money on the other hand, does not perform such functions. Rather, its own value is expressed in terms of money.

#### 4. Use in Transactions:

Money is directly used for making transactions. Near-money, on the other hand, is an indirect medium of exchange; it has to be first converted into ready money and then used for transactions.

#### 5. Income-Yielding Quality:

Money is not an income-yielding asset. On the contrary, near-money assets are income yielding assets.

### Supply of Money

The money supply is all the currency and other liquid instruments in a country's economy on the date measured. The money supply roughly includes both cash and deposits that can be used almost as easily as cash.

Governments issue paper currency and coin through some combination of their central banks and treasuries. Bank regulators influence money supply available to the public through the requirements placed on banks to hold reserves, how to extend credit and other regulation.

**Measures of Money Supply**

- ✓ M0 = Currency in Circulation + Bankers' Deposits with RBI + Other deposits with RBI
- ✓ M1 = Currency with public + Demand deposits with the Banking system (current account, saving account) + Other deposits with RBI
- ✓ M2 = M1 + Savings deposits of post office savings banks
- ✓ M3 = M1 + Time deposits with the banking system
- ✓ M4 = M3 + All deposits with post office savings banks

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Let's discuss these one by one:

1. **Reserve Money (M0):** It is also known as High-Powered Money, monetary base, base money etc.  $M0 = \text{Currency in Circulation} + \text{Bankers' Deposits with RBI} + \text{Other deposits with RBI}$   
It is the monetary base of economy.
2. **Narrow Money (M1):**  
 $M1 = \text{Currency with public} + \text{Demand deposits with the Banking system (current account, saving account)} + \text{Other deposits with RBI}$
3.  $M2 = M1 + \text{Savings deposits of post office savings banks}$



4. **Broad Money** (M3)  
M3 = M1 + Time deposits with the banking system
5. M4 = M3 + All deposits with post office savings banks

## **Value of Money**

The value of money is determined by the demand for it, just like the value of goods and services. There are three ways to measure the value of the dollar. The first is how much the dollar will buy in foreign currencies. That's what the exchange rate measures. Forex traders on the foreign exchange market determine exchange rates. They take into account supply and demand, and then factor in their expectations for the future.

For this reason, the value of money fluctuates throughout the trading day. The second method is the value of Treasury notes. They can be converted easily into dollars through the secondary market for Treasuries.

The third way is through foreign exchange reserves. That is the amount of dollars held by foreign governments. The more they hold, the lower the supply. That makes U.S. money more valuable. If foreign governments were to sell all their dollar and Treasury holdings, the dollar would collapse. U.S. money would be worth a lot less.

No matter how it's measured, the dollar's value declined from 2000 to 2011. That was due to a relatively low fed funds rate, a high federal debt, and a slow-growth economy. Since 2011, the U.S. dollar has risen in value despite these factors. Why? Most of the economies in the world had even slower growth. That made traders want to invest in the dollar as a safe haven. As a result, the dollar strengthened against the euro.

## **When the Value of Money Steadily Declines**

Inflation is when the value of money steadily declines over time. Once people expect that prices will rise, they are more likely to buy now, before prices go higher. That increases demand, which tells producers they can safely pass on more costs. They drive prices up more, and inflation becomes a self-fulfilling prophecy.

That's why the Federal Reserve watches inflation like a hawk. It will reduce the money supply or raise interest rates to curb inflation. A healthy economy can sustain a core inflation rate of 2%. Core inflation is the price of everything except food and gas prices, which are very volatile. The Consumer Price Index is the most common measure of inflation.

## **When It Increases**

Federal Reserve Bank of San Francisco. That sounds like a great thing, but it is worse for the economy than inflation. Why? Think about what happened to the housing market from 2007 to 2011. That was massive deflation. Prices dropped more than 20%. Many people could not sell their houses for what they owed on their mortgage. Buyers were afraid that the price would drop right after they purchased it. No one knew when prices would turn back up.

True, the value of money increased. You received more house for the dollar in 2011 than in 2006. But families lost homes. Construction workers lost jobs. Builders went bankrupt. That's what makes deflation so dangerous. It's a fear-driven downward spiral.

## **Quantity Theory of Money**

Monetary economics is a branch of economics that studies different theories of money. One of the primary research areas for this branch of economics is the quantity theory of money. According to the quantity theory of money, the general price level of goods and services is proportional to the money supply in an economy. While

this theory was originally formulated by Polish mathematician Nicolaus Copernicus in 1517, it was popularized later by economists Milton Friedman and Anna Schwartz after the publication of their book, "A Monetary History of the United States, 1867-1960," in 1963.

According to the quantity theory of money, if the amount of money in an economy doubles, price levels will also double. This means that the consumer will pay twice as much for the same amount of goods and services. This increase in price levels will eventually result in a rising inflation level; inflation is a measure of the rate of rising prices of goods and services in an economy.

The same forces that influence the supply and demand of any commodity also influence the supply and demand of money: an increase in the supply of money decreases the marginal value of money—in other words, when the money supply increases, the buying capacity of one unit of currency decreases. As a way of adjusting for this decrease in money's marginal value, the prices of goods and services rises; this results in a higher inflation level.

The quantity theory of money also assumes that the quantity of money in an economy has a large influence on its level of economic activity. So, a change in the money supply results in either a change in the price levels or a change in the supply of goods and services, or both. In addition, the theory assumes that changes in the money supply are the primary reason for changes in spending.

One implication of these assumptions is that the value of money is determined by the amount of money available in an economy. An increase in the money supply results in a decrease in the value of money because an increase in the money supply also causes the rate of inflation to increase. As inflation rises, purchasing power decreases. Purchasing power is the value of a currency expressed in terms of the amount of goods or services that one unit of currency can buy. When the purchasing power of a unit of currency decreases, it requires more units of currency to buy the same quantity of goods or services.

Throughout the 1970s and 1980s, the quantity theory of money became more relevant as a result of the rise of monetarism. In monetary economics, the chief method of achieving economic stability is through controlling the supply of money. According to monetarism and monetary theory, changes in the money supply are the main forces underpinning all economic activity, so governments should implement policies that influence the money supply as a way of fostering economic growth. Because of its emphasis on the quantity of money determining the value of money, the quantity theory of money is central to the concept of monetarism.

According to monetarists, a rapid increase in the money supply can lead to a rapid increase in inflation. This is because when money growth surpasses the growth of economic output, there is too much money backing too little production of goods and services. In order to curb a rapid rise in the inflation level, it is imperative that growth in the money supply falls below the growth in economic output.

When monetarists are considering solutions for a staggering economy in need of an increased level of production, some monetarists may recommend an increase in the money supply as a short-term boost. However, the long-term effects of monetary policy are not as predictable, so many monetarists believe that the money supply should be kept within an acceptable bandwidth so that levels of inflation can be controlled.

Instead of governments continually adjusting economic policies through government spending and taxation levels, monetarists recommend letting non-inflationary policies—like a gradual reduction of the money supply—lead an economy to full employment.

Many Keynesian economists remain critical of the basic tenets of the quantity theory of money and monetarism, and challenge the assertion that economic policies that attempt to influence the money supply are the best way to address economic growth.

Keynesian economics is a theory of economics that is primarily used to refer to the belief that the government should use activist stabilization and economic intervention policies in order to influence aggregate demand and achieve optimal economic performance. John Maynard Keynes was a British economist who developed this theory in the 1930s as part of his research trying to understand, first and foremost, the causes of the Great Depression. At the time, Keynes advocated for a government response to the global depression that would involve the government increasing their spending and lowering their taxes in order to stimulate demand and pull the global economy out of the depression.

In the 1930s, Keynes also challenged the quantity theory of money, saying that increases in the money supply actually lead to a decrease in the velocity of circulation and that real income—the flow of money to the factors of production—increased. Therefore, the velocity of circulation could change in response to changes in the money supply. In the years since Keynes' made this argument, other economists have proved that Keynes' contention with the quantity theory of money is, in fact, accurate.

Some of the tenets of monetarism became very popular in the 1980s in both the U.S. and the U.K. Leaders in both of these countries, such as Margaret Thatcher and Ronald Reagan, tried to apply the principles of the theory in order to achieve money growth targets for their countries' economies. However, it was revealed over time that strict adherence to a controlled money supply did not provide a solution for economic slowdowns.

### **Fisher's Quantity Theory of Money**

In this article we will discuss about:- 1. Fisher's Equation of Exchange 2. Assumptions of Fisher's Quantity Theory 3. Conclusions 4. Criticisms 5. Merits 6. Implications 7. Examples.

#### **Fisher's Equation of Exchange:**

The transactions version of the quantity theory of money was provided by the American economist Irving Fisher in his book- *The Purchasing Power of Money* (1911). According to Fisher, "Other things remaining unchanged, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa".

#### **Fisher's quantity theory is best explained with the help of his famous equation of exchange:**

$$MV = PT \text{ or } P = MV/T$$

Like other commodities, the value of money or the price level is also determined by the demand and supply of money.

#### **i. Supply of Money:**

The supply of money consists of the quantity of money in existence (M) multiplied by the number of times this money changes hands, i.e., the velocity of money (V). In Fisher's equation, V is the transactions velocity of money which means the average number of times a unit of money turns over or changes hands to effectuate transactions during a period of time.

Thus, MV refers to the total volume of money in circulation during a period of time. Since money is only to be used for transaction purposes, total supply of money also forms the total value of money expenditures in all transactions in the economy during a period of time.

#### **ii. Demand for Money:**

Money is demanded not for its own sake (i.e., for hoarding it), but for transaction purposes. The demand for money is equal to the total market value of all goods and services transacted. It is obtained by multiplying total amount of things (T) by average price level (P).

Thus, Fisher's equation of exchange represents equality between the supply of money or the total value of money expenditures in all transactions and the demand for money or the total value of all items transacted.

Supply of money = Demand for Money

Or

Total value of money expenditures in all transactions = Total value of all items transacted

$$MV = PT$$

or

$$P = MV/T$$

Where,

M is the quantity of money

V is the transaction velocity

P is the price level.

T is the total goods and services transacted.

The equation of exchange is an identity equation, i.e., MV is identically equal to PT (or  $MV = PT$ ). It means that in the ex-post or factual sense, the equation must always be true. The equation states the fact that the actual total value of all money expenditures (MV) always equals the actual total value of all items sold (PT).

What is spent for purchases (MV) and what is received for sale (PT) are always equal; what someone spends must be received by someone. In this sense, the equation of exchange is not a theory but rather a truism.

Irving Fisher used the equation of exchange to develop the classical quantity theory of money, i.e., a causal relationship between the money supply and the price level. On the assumptions that, in the long run, under full-employment conditions, total output (T) does not change and the transactions velocity of money (V) is stable, Fisher was able to demonstrate a causal relationship between money supply and price level.

In this way, Fisher concludes, "... the level of price varies directly with the quantity of money in circulation provided the velocity of circulation of that money and the volume of trade which it is obliged to perform are not changed". Thus, the classical quantity theory of money states that V and T being unchanged, changes in money cause direct and proportional changes in the price level.

Irving Fisher further extended the equation of exchange so as to include demand (bank) deposits (M') and their velocity, (V') in the total supply of money.

**Thus, the equation of exchange becomes:**

$$MV + M'V' = PT$$

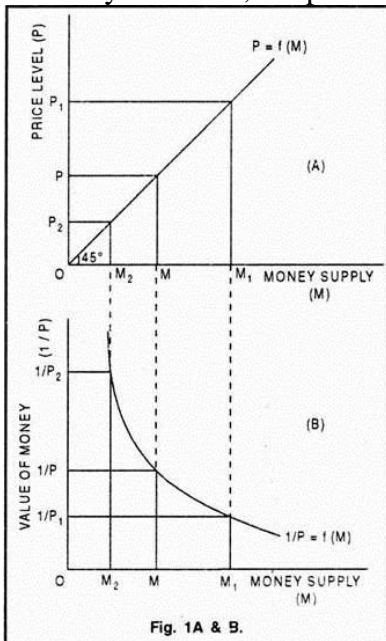
or

$$P = \frac{MV + M'V'}{T}$$

**Thus, according to Fisher, the level of general prices (P) depends exclusively on five definite factors:**

- (a) The volume of money in circulation (M);
- (b) Its velocity of circulation (V) ;
- (c) The volume of bank deposits (M');
- (d) Its velocity of circulation (V'); and
- (e) The volume of trade (T).

The transactions approach to the quantity theory of money maintains that, other things remaining the same, i.e., if V, M', V', and T remain unchanged, there exists a direct and proportional relation between M and P; if the quantity of money is doubled, the price level will also be doubled and the value of money halved; if the quantity of money is halved, the price level will also be halved and the value of money doubled.



**Example:**

Fisher's quantity theory of money can be explained with the help of an example. Suppose  $M = \text{Rs. } 1000$ .  $M' = \text{Rs. } 500$ ,  $V = 3$ ,  $V' = 2$ ,  $T = 4000$  goods.

$$P = \frac{MV + M'V'}{T}$$

$$P = \frac{(1000 \times 3) + (500 \times 2)}{4000}$$

$$= \text{Rs. } 1 \text{ per good}$$

Value of money ( $1/P$ ) = 1

*If the supply of money is doubled*

$$P = \frac{(2000 \times 3) + (1000 \times 2)}{4000}$$

$$= \text{Rs. } 2 \text{ per good}$$

Value of money ( $1/P$ ) = 1/2

Thus, when money supply is doubled, i.e., increases from Rs. 4000 to 8000, the price level is doubled, i.e., from Rs. 1 per good to Rs. 2 per good and the value of money is halved, i.e., from 1 to 1/2.

*If the supply of money is halved*

$$P = \frac{(500 \times 3) + (250 \times 2)}{4000} = \text{Rs. } 1/2 \text{ per good}$$

Value of money ( $1/P$ ) = 2

Thus, when money supply is halved, i.e., decreases from Rs. 4000 to 2000, the price level is halved, i.e., from 1 to 1/2, and the value of money is doubled, i.e., from 1 to 2.

**Quantity Theory of Money: Cambridge Version:**

An alternative version, known as cash balance version, was developed by a group of Cambridge economists like Pigou, Marshall, Robertson and Keynes in the early 1900s. These economists argue that money acts both as a store of wealth and a medium of exchange. Here, by cash balance and money balance we mean the amount of money that people want to hold rather than savings.

According to Cambridge economists, people wish to hold cash to finance transactions and for security against unforeseen needs. They also suggested that an individual's demand for cash or money balances is proportional to his income. Obviously, larger the incomes of the individual, greater is the demand for cash or money balances.

**Thus, the demand for cash balances is specified by:**

$$M_d = kPY \dots(4.6)$$

where  $Y$  is the physical level of aggregate or national output,  $P$  is the average price and  $k$  is the proportion of national output or income that people want to hold. Let us assume that the supply of money,  $M_s$ , is determined by the monetary authority, i.e.,

$$M_s = M \dots(4.7)$$

Equilibrium requires that the supply of money must equal the demand for money, or

$$M_s = M_d \dots (4.8)$$

$$\text{or } M_d = kPY \dots (4.9)$$

$$\therefore M = kPY \dots(4.10)$$

$$\text{or } P = \frac{M}{kY} \dots(4.11)$$

$k$  and  $Y$  are determined independently of the money supply. With  $k$  constant given by the transaction demand for money and  $Y$  constant because of full employment, increase or decrease in money supply leads to a proportional

increase and decrease in price level. This conclusion holds for Fisherian version also. Note that Cambridge 'k' and Fisherian V are reciprocals of one another, that is,  $1/k$  is the same as V in Fisher's equation.

The classical relationship between money supply and price level can be illustrated in terms of Fig. 4.1. This diagram is interesting in the sense that it first establishes the relationship between money supply and national output or national income below the full employment stage ( $Y_F$ ). For this relationship, the origin 'O' is important. Now the relationship between money supply and price level after the full employment stage can be established assuming  $O'$  as the origin. Before the attainment of full employment state ( $Y_F$ ), an increase in money supply (from  $OM_1$  to  $OM_2$  and to  $OY_F$ ) causes national income (shown by the steep output curve) to rise more rapidly than the price level.

By utilising its resources efficiently and fully, an economy can increase its output level by increasing the volume of investment consequent upon an increase in money supply. Since there is a limit to output expansion due to full employment (i.e., beyond which output will not increase), an increase in money supply from ( $M_3$  to  $M_4$ ) will cause price level to rise from ( $P_3$  to  $P_4$ ) proportionally (shown in the upper panel).

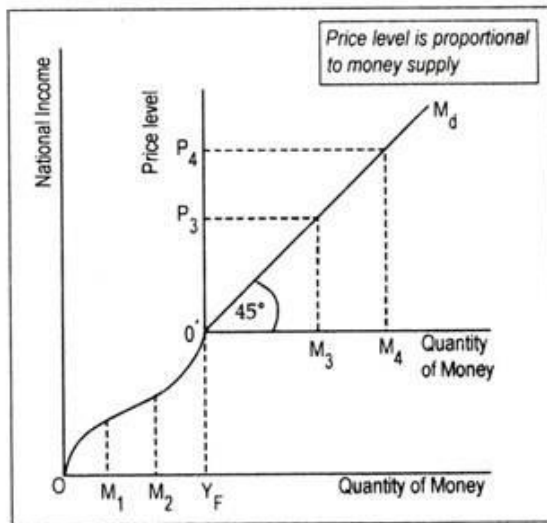


Fig. 4.1: Quantity of Money and Price Level

For stability in price level money supply should grow in proportion to increases in output.

### 3. Limitations:

**This theory has been criticised on several grounds:**

#### (i) Inoperative below Full Employment:

It is alleged that the quantity theory of money comes into its own only during period of full employment of resources. Assuming constancy in  $V$ ,  $V'$ ,  $T$ ,  $Y$ , etc., a change in money supply will bring about a change in price level. During the period of full employment,  $T$  or  $Y$  remains unchanged. During such a time, even if money supply rises,  $T$  or  $Y$  will not change.

On the other hand, price level will rise. But, in reality, full employment of resources is a rare possibility. What we find in reality is unemployment or underemployment of resources. During underemployment an increase in money supply will tend to raise output level and, hence,  $T$ , but not  $P$ . So, quantity theory of money breaks down when resources remain at full employment.

#### (ii) $V$ , $T$ , etc., do not Remain Fixed:

Secondly, in a dynamic economy  $V$ ,  $V'$ ,  $T$ , the ratio of  $M$  to  $M'$  never remain constant. In such an economy, a change in any of the variables may cause a change in price level, even if money supply does not change. In this sense, these are not independent variables, although the authors of this theory assumed quantity of money as independent of other elements of the equation.

**(iii) It is Identity, That is, Always True:**

Thirdly, Fisher's equation is an identity.  $MV$  and  $PT$  are always equal. In fact, the quantity theory of money is a hypothesis and not an identity which is always true.

**(iv) Aggregate Demand/Expenditure, and not M, Influences Price Level:**

Fourthly, Keynes argued that price level in an economy is not influenced by money supply. The important determinant of money supply is the income level and the total expenditure of the country. According to Keynes, an increase in money supply is tantamount to an increase in effective demand.

After attaining the stage of full employment, an increase in effective demand which is the sum of consumption expenditure, investment expenditure and government expenditure (i.e.,  $C + I + G$ ) will raise the price level, but not proportionately.

**(v) Too much Emphasis on Money Supply:**

Fifthly, change in price level is caused by various factors, besides money supply. For example, an increase in cost of production has an important bearing on the price level. For instance, an increase in wage rate following a revision in the pay scale of employees or an increase in the price of raw materials (say, hike in the price of petroleum products) will definitely push the price level up, whether the economy stays on or below the full employment level. The quantity theory attaches too much importance on money supply.

**(vi) M Influences P via Interest Rate:**

Sixthly, the classical theory establishes a direct and proportional relationship between money supply and price level. Critics say that the relationship is not a direct one. Fisher ignored the influence of the rate of interest on the price level. Supply of bank money or credit money is influenced largely by the interest rate.

It is argued that the increase in money supply first affects the rate of interest which influences total output and price level in the ultimate analysis. The casual relationship is: Change in the stock of money → change in interest rate change in investment → change in income, employment and output → change in general prices.

**Conclusion:**

Despite these criticisms, the quantity theory of money has certain merits. Whenever money supply rose abnormally in the past in an economy, inflationary situation developed there. May not be the relationship a proportional one, but excessive increase in money supply leads to inflation.

In the 1950s, Milton Friedman came out with a thesis that 'inflation is always and everywhere a monetary phenomenon'. This Friedmanian words are enough to establish the essence of quantity theory of money inflation is largely caused by the excessive growth of money supply and by nothing else.

**MODULE II : DEMAND FOR MONEY**

**Demand for Money**

In monetary economics, the **demand for money** is the desired holding of financial assets in the form of money: that is, cash or bank deposits rather than investments. It can refer to the demand for money narrowly defined as  $M1$  (directly spendable holdings), or for money in the broader sense of  $M2$  or  $M3$ .

Money in the sense of  $M1$  is dominated as a store of value (even a temporary one) by interest-bearing assets. However,  $M1$  is necessary to carry out transactions; in other words, it provides liquidity. This creates a trade-off between the liquidity advantage of holding money for near-future expenditure and the interest advantage of temporarily holding other assets. The demand for  $M1$  is a result of this trade-off regarding the form in which a person's funds to be spent should be held. In macroeconomics motivations for holding one's wealth in the form of  $M1$  can roughly be divided into the transaction motive and the precautionary motive. The demand for those parts

of the broader money concept M2 that bear a non-trivial interest rate is based on the asset demand. These can be further subdivided into more microeconomically founded motivations for holding money.

Generally, the nominal demand for money increases with the level of nominal output (price level times real output) and decreases with the nominal interest rate. The real demand for money is defined as the nominal amount of money demanded divided by the price level. For a given money supply the locus of income-interest rate pairs at which money demand equals money supply is known as the LM curve.

The magnitude of the volatility of money demand has crucial implications for the optimal way in which a central bank should carry out monetary policy and its choice of a nominal anchor.

Conditions under which the LM curve is flat, so that increases in the money supply have no stimulatory effect (a liquidity trap), play an important role in Keynesian theory. This situation occurs when the demand for money is infinitely elastic with respect to the interest rate.

A typical *money-demand function* may be written as

where  $M$  is the nominal amount of money demanded,  $P$  is the price level,  $R$  is the nominal interest rate,  $Y$  is real income, and  $L(\cdot)$  is real money demand. An alternate name for  $L(\cdot)$  is the *liquidity preference function*.

### **The Keynes' Theory of Demand for Money!**

Keynes treated money also as a store of value because it is an asset in which an individual can store his (her) wealth.

To Keynes an individual's total wealth consisted of money and bonds.

Keynes used the term 'bonds' to refer to all risky assets other than money.

So money holding was the only alternative to holding bonds. And the only determinant of an individual's portfolio choice was the interest rate on bonds.

This would affect an individual's decision to divide his portfolio into money and bonds. To Keynes, it costs money to hold money and the rate of interest is the opportunity cost of holding money. At high rates of interest an individual loses a large sum by holding money or by not holding bonds.

### **Capital gain/loss:**

Another factor affecting an individual's portfolio choice was expected change in the rates of interest which would give rise to capital gain or loss. According to Keynes when the interest rate was high relative to its normal level people would expect it to fall in near future. A fall in the rate of interest would imply a Capital gain on bonds. According to Keynes at a high rate of interest there would be low demand for money as a store of value (wealth).

### **There are two reasons for this:**

(i) At high rate of interest the opportunity cost of money holding (in terms of forgone interest) is high.

(ii) At a high rate of interest future capital gain on bonds is likely due to a fall in the rate of interest in future. It is because there is an inverse relation between the rate of interest and the price of old bonds. Thus if the present rate of interest is high, people will expect it to fall in near future, in which case they will expect to make capital gain.



Since the demand for money would fall at high rates of interest, and increase at low rates of interest, there is an inverse relation between the asset (speculative) demand for money and the rate of interest.

Keynes also considered transactions and precautionary demand for money whose primary determinant was income. Such demand would increase proportionately with increase in income.

So Keynes' demand function for money can be expressed as

$$M_d = L(Y, i) \dots (3)$$

where Y is income and i is nominal interest rate and L stands for liquidity preference.

### ***Policy Conclusions:***

Thus, in Keynes' view, the demand for money is a function of both income and interest rate, though in the classical theory, it was a function of income alone. This point is important in explaining the differences in policy conclusions between the classical and Keynesian models.

### **1. Determination of nominal income by the supply of money:**

If the demand for money is exactly proportional to income, as in equations (1) and (2), then nominal income (PY) is completely determined by the supply of money. Since  $M = M_d = kPY$ , if k is assumed to remain fixed in equation (1) an increase in money supply (M) in equilibrium would result in a proportional increase in PY. So we get

$$\Delta M = k\Delta PY$$

$$\text{or, } 1/k \Delta M = \Delta PY \dots (4)$$

Thus equation (4) makes it abundantly clear that PY can change only when M changes, k remaining fixed. This means that changes in fiscal policy or autonomous changes in investment demand have no role in determining the equilibrium value of income. This is indeed the classical case of vertical LM curve, in which if M is fixed the level of income is automatically fixed. And any shift of the IS curve will only affect the rate of interest.

### **2. Role of fiscal policy change in income determination:**

In Keynes' money demand function, income is not proportional to the supply of money. This means that income changes can occur due to changes in fiscal policy and autonomous shifts in investment demand. In this case the LM curve will be upward sloping and any shift of the IS curve will change the equilibrium value of income. Of course, slopes of the IS and LM curves will determine the relative importance of monetary factors and other determinants of income (that shift the IS curve).

### **The Monetarists' View:**

The monetarists believe that the LM curve is quite steep, although not vertical. This largely, if not entirely, explains why money exerts a dominant influence on nominal income.

### **The Regressive Expectations Model:**

According to Keynes the demand for money refers to the desire to hold money as an alternative to purchasing an income-earning asset like a bond. All theories of demand for money give a different answer to the basic question: If bonds earn interest and money does not why should a person hold money? The first theory to answer these questions known as the Keynesian theory of demand for money is based on a model called the regressive expectations model.

This essentially says that people hold money when they expect bond prices to fall, that is, interest rates to rise, and, thus, expect that they would incur a loss if they were to hold bonds. 'Bonds' here represent the whole range of risky assets that exist in reality. Since people's estimates of whether the interest rate is likely to rise or fall —

and by how much — vary widely, at any given interest rate there will be some people expecting it to rise and, thus, they would be holding money.

According to the regressive expectations model a bond holder has an expected return on the bond from two sources, the bond's yield — the interest, payment he receives — and a potential capital gain — an increase in the price of the bond from the time he buys it to the time he sells it. The bond's yield  $i$  is normally expressed as a percentage yield equal to  $Y$  divided by the face value of the bond. Thus

$$i = Y/P_b \dots (5)$$

Since the yield  $Y$  is fixed percentage of the bond's face value, the market price of a bond is given by the ratio of yield to market rate:

$$P_b = Y/i \dots (6)$$

The expected percentage capital gain is the percentage increase in price from the purchase price  $P_b$  to the expected sale price  $P_b^e$ . From this we can derive the percentage capital gain,  $g = (P_b^e - P_b)/P_b$ . From equations (5) and (6), with a fixed  $Y$  on the bond, we can get an expected price  $P_b^e$ , corresponding to an expected interest rate,  $i^e = Y/P_b^e$ . Thus, in terms of expected and current interest rates, the capital gain can be expressed as

$$g = \frac{\frac{Y}{i^e} - \frac{Y}{i}}{\frac{Y}{i}}$$

**Cancelling  $Y$  and multiplying the numerator and denominator by  $i$  we get**

$$g = \frac{i}{i^e} - 1, \dots (7)$$

This is the expression for expected capital gain in terms of current and expected interest rates.

The total percentage return (earning) on a bond — denoted by  $e$  — is the sum of the market rate of interest at the time of purchase plus capital gains,  $e = i + g$ . Now if we substitute for  $g$  from equation (7), we get an expression for the total percentage return as the sum of interest yield and capital gains:

$$e = i + \frac{i}{i^e} - 1 \dots (8)$$

Now, with an expected return on bonds given by  $e$ , and with a zero return on money, the asset-holder can be expected to put his liquid wealth into bonds, if he expects the return  $e$  to be positive. If the return on bonds is expected to be negative, he will put all his liquid wealth into money.

In Keynes' regressive expectations model, each person is assumed to have an expected interest rate  $i^e$  corresponding to some normal long-run average rate that is likely to prevail in the market. If actual rate rises above his long-run expectation, he expects them to fall, and vice versa.

Thus, his expectations are regressive. Here we assume that his expected long-run rate does not change much with changes in current market conditions.

The investor's expected interest rate  $i^e$ , together with the actual market interest rate  $i$ , determines his expected percentage return  $e$ . On the basis of this we can compute the critical level of the market rate  $i_c$ , which would give him a net zero return on bonds, that is, the value of  $i$  that makes  $e = 0$ .

When actual  $i > i_c$ , we would expect him to hold all his liquid wealth in bonds. When  $i < i_c$ , he moves 100%, into money. To find this critical value,  $i_c$ , we set the total return shown in equation (8) equal to zero:

$$0 = i + \frac{i}{i^e} - 1; \quad i(1 + i^e) = i^e;$$

and, thus,

$$i = \frac{i^e}{1 + i^e} = i_c.$$

Here  $i_c$ , the critical market rate of interest that makes  $e = 0$ , is expressed as  $i^e / (1 + i^e)$ . This relationship between the individual's demand for real balances and the interest rate is shown in Fig. 19.2. Here we show the demand for real balances on the horizontal axis.

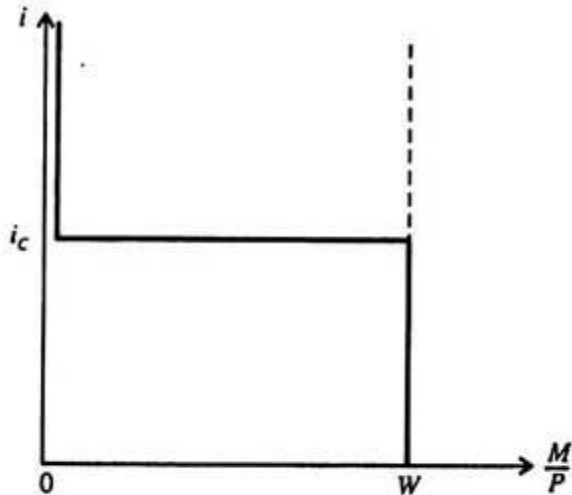


Fig. 19.2 An Individual's Demand for Money in a Situation of No-risk

It is the demand for real balances,  $M/P$ , that depends on the interest rate. Since we are implicitly holding the general price level constant, changes in real balances  $M/P$  correspond to changes in  $M$ .

In Fig. 19.2, if  $i$  exceeds  $i_c$ , the investor puts all his  $W$  into bonds, and his demand for money is zero. As  $i$  falls below  $i_c$  — so that expected capital losses on bonds exceed the interest yield and  $e$  becomes negative — the investor transfers his entire liquid wealth into money.

This gives us a demand-for-money curve — for an individual — that looks like a step function. When  $i$  exactly equals  $e = 0$  and the investor cannot choose between bonds and money. At any other value of  $i$ , the investor is either 100% in money or 100% in bonds.

The individual demand curves of Fig. 19.2 can now be added up to get the total demand for money. Let us locate the individual with the highest critical interest rate,  $i_c^{\max}$  in Fig. 19.3. As the interest rate falls below that  $i_c^{\max}$  he shifts all of his liquid wealth into money.

As the interest rate falls, more individual  $i_c$ s are passed and more people shift from bonds to money. Ultimately,  $i$  will fall so much that no one will want to put his liquid wealth into bonds, and the demand for money will equal total liquid wealth,  $\sum W$ .

Thus, according to the average regressive expectations model as interest rates fall, the demand for money increases, and the demand curve is likely to be convex. Thus if the rate of interest continues to fall by the same percentage the demand for money will increase by increasing amounts.

The main problem with this view is that it suggests that individuals should, at any given time, hold all their liquid assets either in money or in bonds, but not some of each. So this is an all-or-nothing choice! This is obviously not true in reality.

There are two problems with this analysis. In the first, if the money market remained in equilibrium for a very long period, investors should gradually adjust their expected interest rates to correspond to the actual prevailing interest rate.

They would all tend to adopt eventually the same critical interest rate with the passage of time. So the aggregate demand curve for money would look more and more like the flat curve of Fig. 19.2, instead of the negatively sloped demand curve with a variety of critical rates as shown in Fig. 19.3.

This prediction of the regressive expectations model — that the elasticity of demand for money with respect to changes in the interest rate is increasing over time — is not supported by facts.

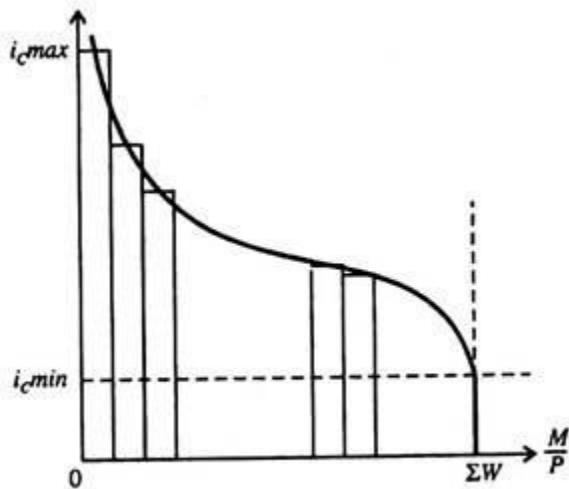


Fig. 19.3 Aggregate Demand for Money in a Situation of No-risk

Secondly, if we assume that people actually do have a critical interest rate as shown in Fig. 19.3, then the model clearly implies that, in this two-asset world, investors hold either all bonds or all money, but not a mix of the two. The negative slope of the aggregate demand curve is due to the fact that investors differ in their opinion about the value of  $i^e$ , and, thus, in their critical rates  $i_c$ .

In fact, however, investors do not hold portfolios consisting of only one asset. As a general rule, portfolios contain a mixture of assets; they are diversified. This result — that people hold both money and bonds at the same time — has been explained by James Tobin.

### Criticisms of Keynes' Theory:

**James Tobin found two main weaknesses of the Keynesian theory of the speculative demand for money:**

#### (i) All-or-nothing choice:

In Keynes' theory investors are assumed to hold all their wealth in bonds (other than the amount of money held for transaction purposes) as long as the rate of interest exceeded the 'critical rate' — a rate below which the expected capital loss on bonds outweighed the interest earnings on bonds.

If, on the contrary, the interest rate fell below the critical level, investors would hold no bonds, i.e., they would hold their entire wealth in money. So Keynes' theory cannot explain why and how an individual investor diversifies his portfolio by holding both money and bonds as stores of wealth.

#### (ii) Changes in the normal rate of interest:

Keynes assumed that investors hold money as an asset so long as the interest rate is low. The reason is that they expect the interest rate to rise and return to 'normal' level. According to Keynes there exists a fixed or a slowly changing normal level for the interest rate, around which the actual rate of interest gravitates.

So the normal rate is taken as a benchmark against which to judge the possibility of interest rate changes which determine the amount of money held for speculative purposes.

According to Tobin the normal level itself keeps on changing over time — as has been shown by the experience of the 1950s. This explains why portfolio diversification takes place. An individual's portfolio choice, i.e., his

decision to diversify does not depend on Keynes' restrictive assumption about investor expectations of a return of the interest rate to a normal level.

It is against this backdrop that we study Tobin's portfolio theory of demand for money.

In short, Keynes' followers such as James Tobin have not been satisfied with his theory of speculative demand for money which seeks to explain the inverse relationship between the interest rate and money demand. They have identified other reasons for the dependence of demand for money on the interest rate.

W. J. Baumol and Tobin have also extended Keynes' analysis of the transactions demand for money. We may now discuss these two extensions of Keynes' theory one by one.

On the other hand non-Keynesians — called monetarists — have refined and modified the classical quantity theory of money. This is another notable development in the area of monetary economics. Friedman's analysis treats the demand for money in the same way as the demand for an ordinary commodity.

It can be viewed as a producer's good; businesses hold cash balances to improve efficiency in their financial transactions and are willing to pay, in terms of forgone interest income, for this efficiency. Money can also be viewed as a consumer's good; it yields utility to the consumer in terms of smoothing out timing differences between the expenditure and income streams and also in terms of reducing risk.

### **Friedman's Theory of the Demand for Money**

In his reformulation of the quantity theory, Friedman asserts that "the quantity theory is in the first instance a theory of the demand for money. It is not a theory of output, or of money income, or of the price level." The demand for money on the part of ultimate wealth holders is formally identical with that of the demand for a consumption service. He regards the amount of real cash balances ( $M/P$ ) as a commodity which is demanded because it yields services to the person who holds it. Thus money is an asset or capital good. Hence the demand for money forms part of capital or wealth theory.

For ultimate wealth holders, the demand for money, in real terms, may be expected to be a function primarily of the following variables:

#### ***1. Total Wealth:***

The total wealth is the analogue of the budget constraint. It is the total that must be divided among various forms of assets. In practice, estimates of total wealth are seldom available. Instead, income may serve as an index of wealth. Thus, according to Friedman, income is a surrogate of wealth.

#### ***2. The Division of Wealth between Human and Non-Human Forms:***

The major source of wealth is the productive capacity of human beings which is human wealth. But the conversion of human wealth into non-human wealth or the reverse is subject to institutional constraints. This can be done by using current earnings to purchase non-human wealth or by using non-human wealth to finance the acquisition of skills. Thus the fraction of total wealth in the form of non-human wealth is an additional important variable. Friedman calls the ratio of non-human to human wealth or the ratio of wealth to income as  $w$ .

#### ***3. The Expected Rates of Return on Money and Other Assets:***

These rates of return are the counterparts of the prices of a commodity and its substitutes and complements in the theory of consumer demand. The nominal rate of return may be zero as it generally is on currency, or negative as it sometimes is on demand deposits, subject to net service charges, or positive as it is on demand deposits on which interest is paid, and generally on time deposits. The nominal rate of return on other assets consists of two parts: first, any currently paid yield or cost, such as interest on bonds, dividends on equities, and costs of storage

on physical assets, and second, changes in the prices of these assets which become especially important under conditions of inflation or deflation.

#### **4. Other Variables:**

Variables other than income may affect the utility attached to the services of money which determine liquidity proper. Besides liquidity, variables are the tastes and preferences of wealth holders. Another variable is trading in existing capital goods by ultimate wealth holders. These variables also determine the demand function for money along-with other forms of wealth. Such variables are noted as  $u$  by Friedman.

Broadly, total wealth includes all sources of income or consumable services. It is capitalised income. By income, Friedman means “permanent income” which is the average expected yield on wealth during its life time.

Wealth can be held in five different forms: money, bonds, equities, physical goods, and human capital. Each form of wealth has a unique characteristic of its own and a different yield.

1. Money is taken in the broadest sense to include currency, demand deposits and time deposits which yield interest on deposits. Thus money is luxury good. It also yields real return in the form of convenience, security, etc. to the holder which is measured in terms of the general price level ( $P$ ).

2. Bonds are defined as claim to a time stream of payments that are fixed in nominal units.

3. Equities are defined as a claim to a time stream of payments that are fixed in real units.

4. Physical goods or non-human goods are inventories of producer and consumer durable.

5. Human capital is the productive capacity of human beings. Thus each form of wealth has a unique characteristic of its own and a different yield either explicitly in the form of interest, dividends, labour income, etc., or implicitly in the form of services of money measured in terms of  $P$ , and inventories. The present discounted value of these expected income flows from these five forms of wealth constitutes the current value of wealth which can be expressed as:

$$W = y/r$$

Where  $W$  is the current value of total wealth,  $Y$  is the total flow of expected income from the five forms of wealth, and  $r$  is the interest rate. This equation shows that wealth is capitalised income. Friedman in his latest empirical study *Monetary Trends in the United States and the United Kingdom* (1982) gives the following demand function for money for an individual wealth holder with slightly different notations from his original study of 1956 as:

$$M/P = f(y, w; R_m, R_b, R_e, g_p, u)$$

Where  $M$  is the total stock of money demanded;  $P$  is the price level;  $y$  is the real income;  $w$  is the fraction of wealth in non-human form;  $R_m$  is the expected nominal rate of return on money;  $R_b$  is the expected rate of return on bonds, including expected changes in their prices;  $R_e$  is the expected nominal rate of return on equities, including expected changes in their prices;  $g_p = (1/P) (dP/dt)$  is the expected rate of change of prices of goods and hence the expected nominal rate of return on physical assets; and  $u$  stands for variables other than income that may affect the utility attached to the services of money.

The demand function for business is roughly similar, although the division of total wealth and human wealth is not very useful since a firm can buy and sell in the market place and hire its human wealth at will. But the other factors are important.

The aggregate demand function for money is the summation of individual demand functions with  $M$  and  $y$  referring to per capita money holdings and per capita real income respectively, and  $w$  to the fraction of aggregate wealth in nonhuman form.

The demand function for money leads to the conclusion that a rise in expected yields on different assets ( $R_b$ ,  $R_e$  and  $g_p$ ) reduces the amount of money demanded by a wealth holder, and that an increase in wealth raises the demand for money. The income to which cash balances ( $M/P$ ) are adjusted is the expected long term level of income rather than current income being received.

Empirical evidence suggests that the income elasticity of demand for money is greater than unity which means that income velocity is falling over the long run. This means that the long run demand for money function is stable and is relatively interest inelastic, as shown in fig. 68.1. where  $M_D$  is the demand for money curve. If there is change in the interest rate, the long-run demand for money is negligible.

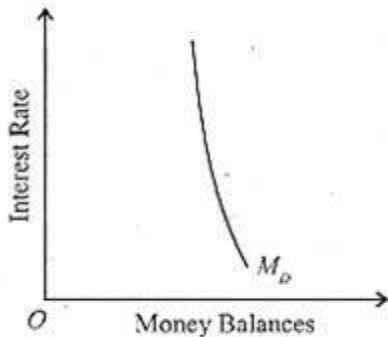


Fig. 68. 1

In Friedman's restatement of the quantity theory of money, the supply of money is independent of the demand for money. The supply of money is unstable due to the actions of monetary authorities. On the other hand, the demand for money is stable. It means that money which people want to hold in cash or bank deposits is related in a fixed way to their permanent income.

If the central bank increases the supply of money by purchasing securities, people who sell securities will find their holdings of money have increased in relation to their permanent income. They will, therefore, spend their excess holdings of money partly on assets and partly on consumer goods and services.

This spending will reduce their money balances and at the same time raise the nominal income. On the contrary, a reduction in the money supply by selling securities on the part of the central bank will reduce the holdings of money of the buyers of securities in relation to their permanent income.

They will, therefore, raise their money holdings partly by selling their assets and partly by reducing their consumption expenditure on goods and services. This will tend to reduce nominal income. Thus, on both counts, the demand for money remains stable. According to Friedman, a change in the supply of money causes a proportionate change in the price level or income or in both. Given the demand for money, it is possible to predict the effects of changes in the supply of money on total expenditure and income.

If the economy is operating at less than full employment level, an increase in the supply of money will raise output and employment with a rise in total expenditure. But this is only possible in the short run. Friedman's quantity theory of money is explained in terms of Figure 68.2. Where income ( $Y$ ) is measured on the vertical axis and the demand for the supply of money are measured on the horizontal axis.  $M_D$  is the demand for money curve which varies with income.  $MS$  is the money supply curve which is perfectly inelastic to changes in income. The two curves intersect at  $E$  and determine the equilibrium income  $OY$ . If the money supply rises, the  $MS$  curve shifts to the right to  $M_1S_1$ . As a result, the money supply is greater than the demand for money which raises total expenditure until new equilibrium is established at  $E_1$  between  $M_D$  and  $M_1S_1$ , curves. The income rises to  $OY_1$ .

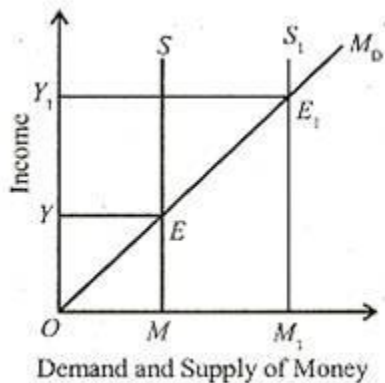


Fig. 68.2

Thus Friedman presents the quantity theory as the theory of the demand for money and the demand for money is assumed to depend on asset prices or relative returns and wealth or income. He shows how a theory of the stable demand for money becomes a theory of prices and output. A discrepancy between the nominal quantity of money demanded and the nominal quantity of money supplied will be evident primarily in attempted spending. As the demand for money changes in response to changes in its determinants, it follows that substantial changes in prices or nominal income are almost invariably the result of changes in the nominal supply of money.

### **Its Criticisms:**

Friedman's reformulation of the quantity theory of money has evoked much controversy and has led to empirical verification on the part of the Keynesians and the Monetarists. Some of the criticisms levelled against the theory are discussed as under.

#### **1. Very Broad Definition of Money:**

Friedman has been criticised for using the broad definition of money which not only includes currency and demand deposits ( $M_1$ ) but also time deposits with commercial banks ( $M_2$ ). This broad definition leads to the obvious conclusion that the interest elasticity of the demand for money is negligible. If the rate of interest increases on time deposits, the demand for them ( $M_2$ ) rises. But the demand for currency and demand deposits ( $M_1$ ) falls.

So the overall effect of the rate of interest will be negligible on the demand for money. But Friedman's analysis is weak in that he does not make a choice between long-term and short-term interest rates. In fact, if demand deposits ( $M_1$ ) are used a short-term rate is preferable, while a long-term rate is better with time deposits ( $M_2$ ). Such an interest rate structure is bound to influence the demand for money.

#### **2. Money not a Luxury Good:**

Friedman regards money as a luxury good because of the inclusion of time deposits in money. This is based on his finding that there is higher trend rate of the money supply than income in the United States. But no such 'luxury effect' has been found in the case of England.

#### **3. More Importance to Wealth Variables:**

In Friedman's demand for money function, wealth variables are preferable to income and the operation of wealth and income variables simultaneously does not seem to be justified. As pointed out by Johnson, income is the return on wealth, and wealth is the present value of income. The presence of the rate of interest and one of these variables in the demand for money function would appear to make the other superfluous.

#### **4. Money Supply not Exogenous:**

Friedman takes the supply of money to be unstable. The supply of money is varied by the monetary authorities in an exogenous manner in Friedman's system. But the fact is that in the United States the money supply consists of bank deposits created by changes in bank lending. Bank lending, in turn, is based upon bank reserves which expand and contract with (a) deposits and withdrawals of currency by non-bank financial intermediaries; (b) borrowings by commercial banks from the Federal Reserve System; (c) inflows and outflows of money from and to abroad; and (d) purchase and sale of securities by the Federal Reserve System. The first three items definitely



impart an endogenous element to the money supply. Thus the money supply is not exclusively exogenous, as assumed by Friedman. It is mostly endogenous.

**5. Ignores the Effect of Other Variables on Money Supply:**

Friedman also ignores the effect of prices, output or interest rates on the money supply. But there is considerable empirical evidence that the money supply can be expressed as a function of the above variables.

**6. Does not consider Time Factor:**

Friedman does not tell about the timing and speed of adjustment or the length of time to which his theory applies.

**7. No Positive Correlation between Money Supply and Money GNP:**

Money supply and money GNP have been found to be positively correlated in Friedman's findings. But, according to Kaldor, in Britain the best correlation is to be found between the quarterly variations in the amount of cash held in the form of notes and coins by the public and corresponding variations in personal consumption at market prices, and not between money supply and the GNP.

**8. Conclusion:**

Despite these criticisms, "Friedman's application to monetary theory of the basic principle of capital theory—that is the yield on capital, and capital the present value of income—is probably the most important development in monetary theory since Keynes's General Theory. Its theoretical significance lies in the conceptual integration of wealth and income as influences on behaviour."

**Patinkin's monetary model of quantity theory of money.**

In 1956 there appeared a monumental work by Don Patinkin which, inter alia, demonstrated the rigid conditions required for the strict proportionality rule of the quantity theory whilst simultaneously launching a severe attack upon the Cambridge analysis.

Patinkin's main point of contention was that the advocates of the cash balance approach had failed to understand the true nature of the quantity theory.

Their failure was revealed in the dichotomy which they maintained between the goods market and the money market. Far from integrating the two, as had been claimed, Patinkin held that the neo-classical economists had kept the two rigidly apart.

An increase in the stock of money was assumed to generate an increase in the absolute price level but to exercise no real influence upon the market for commodities. One purpose of Patinkin's analysis was that only by exerting an influence upon the market for commodities, via the real balance effect, could the strict quantity theory be maintained.

Part of Patinkin's attack revolved round the nature of the demand curve for money, which according to Patinkin, Cambridge School had generally assumed to be a rectangular hyperbola with constant unit elasticity of the demand for money. As a matter of fact, such a demand curve was implicit in the argument that a doubling of the money stock would induce a doubling of the price level.

**Assumption**

Patinkin has been able to show the validity and the rehabilitation of the classical quantity theory of money through Keynesian tools with the help of and on the basis of certain basic assumptions: for example, it is assumed that an initial equilibrium exists in the economy, that the system is stable, that there are no destabilizing expectations and finally there are no other factors except those which are specially assumed during the analysis.

Again, consumption functions remains stable [the ratio of the flow of consumption expenditure on goods to the stock of money (income velocity) must also be stable.

Further, it is assumed that there are no distribution effects, that is, the level and composition of aggregate expenditures are not affected by the way in which the newly injected money is distributed amongst initial recipients and the reaction of creditors and debtors to a changing price level offset each other. It is also assumed that there is no money illusion. Thus, Patinkin has discussed the validity of the quantity theory only under conditions of full employment, as according to him Keynes questioned its validity even under conditions of full employment.

In Patinkin's approach we reach the same conclusion as in the old quantity theory of money but we employ modern analytical framework of income-expenditure approach or what is called the Keynesian approach. In other words, Patinkin has rehabilitated the truth contained in the old quantity theory of money with modern Keynesian tools.

### ***Real Balance Effect:***

The term 'real balance effect' was coined by Patinkin to denote the influence of changes in the real stock of money on consumption expenditure, that is, a change in consumption expenditure as a result of changes in the real value of the stock of money in circulation. This influence was taken into consideration by Pigou also under what we call 'Pigou Effect', which Patinkin described as a bad terminological choice. Pigou effect was used in a narrow sense to denote the influence on consumption only, but the term real balance effect, has been made more meaningful and useful by including in it all likely influences of changes in the stock of real balances.

In other words it considers the behavioural effects of changes in the real stock of money. The term has been used by Patinkin in a wider sense so as to include the net wealth, effect, portfolio effect, Cambridge effect, as well as any other effect one might think of. Patinkin used the term real balance effect to include all the aspects of real balances in the first edition of his book. It is in the second edition of his book that Patinkin emphasises the net wealth aspect of real balances though he does not completely exclude other aspects as detailed above.

### ***Critical Evaluation:***

This is Patinkin's solution to the problem but it has not been accepted. The basic disagreements centre on whether or not it is necessary to retain this real balance effect in the real analysis. Patinkin's model may be considered as an elegant refinement of the traditional quantity theory and its value lies in specifying precisely the necessary conditions for the strict proportionality of the quantity theory to hold and in analysing in detail the mechanism by which the change in the stock of money takes effect—the real balance effect.

Although Patinkin's analysis is said to be the formally incomplete because it fails to provide an explanation of full long run equilibrium, yet the integration of product and monetary markets through the real balance effect represented a significant improvement over earlier treatments. For the first time, the nature of the wealth effect is made explicit. What, however, is not analysed is the manner in which the increase in monetary wealth comes about. A doubling of money balances is simply assumed and the analysis rests entirely on the resultant effects.

The Patinkin effect fails to take into account the long-run equilibrium effect as has been pointed out by Archibald and Lipsey and conceded by Patinkin in the second edition of his work. They show that Patinkin's analysis of the real balance effect is inadequate inasmuch as he confines himself to the impact effect of a change in a price and does not work the analysis through to the long-run equilibrium. The result of the debate is that the real balance effect must be considered not as a necessary part of the general equilibrium theory but as a part of the analysis of monetary stability, in that context it performs the functions of ensuring stability of the price level.

What one needs the real balance effect for is to ensure the stability of the price level; one does not need it to determine the real equilibrium of the system; so long as one confines oneself to equilibrium positions. The equilibrium obtained is no doubt a short-term equilibrium only because further changes will be induced for

income recipients in future time periods. Moreover, it is very interesting to point out that if the analysis is extended to an infinite number of periods, general long-run equilibrium is found to be perfectly consistent with – a unit elastic demand curve for money—the real balance effect disappears. Therefore, this again raises a thorny question of whether the quantity theory is a theory of short-run or long-run equilibrium or indeed whether it should be considered a theory of equilibrium at all?

Even otherwise, it has been pointed out that if some kind of monetary effect has got to be present, it need not necessarily be a real balance effect as the presence of real balance effect implies that people do not suffer from money illusion—they hold money for what it will buy.

### **Tobin's Portfolio Balance Approach**

The main problem with Keynesian approach to the demand for money is that it suggests that individuals should, at any given time, hold all their liquid assets either in money or in bonds, but not some of each.

This is obviously not true in reality.

The second approach — Tobin's model of liquidity preference — deals with this problem by showing that if the return on bonds is uncertain, that is, bonds are risky, then the investor worrying about both risk and return is likely to do best by holding both bonds and money.

Portfolio theories like the one presented by Tobin emphasises the role of money as a store of value. According to these theories, people hold money as part of their portfolio of assets. The reason for this is that money offers a different combination of risk and return than other assets which are less liquid than money — such as bonds.

#### **For instance, the money demand function may be expressed as:**

$$(M/P)_d = f(r_s, r_b, \pi^e, W)$$

where  $r_s$  = the expected real return on stock,  $r_b$  = the expected real return on bonds,  $\pi^e$  = the expected inflation rate and  $W$  = real wealth. An increase in  $r_s$  or  $r_b$  reduces money demand, because other assets become more attractive. An increase in  $\pi^e$  also reduces money demand, because money becomes less attractive. An increase in  $W$  raises money demand, because higher wealth means a larger portfolio.

It is against this backdrop that we study the portfolio theory of money demand.

#### **Speculative Demand for Money as Behaviour toward Risk:**

Tobin ignored the determination of the transactions demand for money and considered only the demand for money as a store of wealth. The focus is on an individual's portfolio allocation between money-holding and bondholding, subject to the wealth constraint, i.e.,  $W = M + B$ , where  $W$  is the total fixed wealth,  $M$  is money and  $B$  is bond.

In Tobin's theory there is no such thing as fixed normal level to which interest rates are always expected to return as has been postulated by Keynes. Following Tobin we can assume that the expected capital gain is zero. This is because the individual investor expects capital gains and losses to be equally likely.

Tobin's theory is explained in Fig. 19.4. On the vertical axis of the upper quadrant we measure the expected return to the portfolio; on the horizontal axis we measure the riskiness of the portfolio. The expected return on the portfolio is the interest that can be earned on bonds.

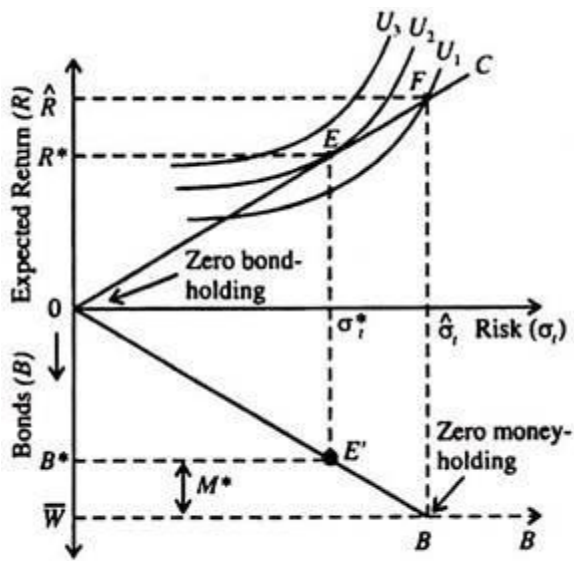


Fig. 19.4 Determination of the Optimal Portfolio

This depends on two things: (i) the interest rate and (ii) the proportion of the portfolio held in bonds. The total risk to which an individual is exposed depends on (i) the uncertainty concerning bond prices — that is, the uncertainty concerning future movements in market rate of interest, and (ii) the proportion of the portfolio held in bonds.

### Optimal Portfolio Allocation:

A risk-averse investor will move to that point along the line C which enables him to reach the highest attainable indifference curve. At that point he ends up choosing that portfolio which he intends to choose and, thus, maximises his utility. The reason is obvious. At the

tangency point E, with  $R = R^*$  and  $\sigma_t = \sigma_t^*$ , the terms on which the investor is able to increase expected return on the portfolio by taking more risk, shown by the slope of the line C, is equated to the terms on which he (she) is willing to make the trade-off, as is measured by the slope of the indifference curve.

From the lower part we see that this risk-return combination is achieved by holding an amount of bonds equal to  $B^*$ , and by holding the remainder of wealth ( $\bar{W} - B^* = M^*$ ) in the form of money.

The demand for money thus shows the investor's 'behaviour towards risk', i.e., the result of seeking to reduce risk below what it would be if  $\bar{W} = B$  and  $M = 0$ . In Fig. 19.4 such an all-bonds-portfolio would be associated with risk of  $\sigma_t$  and the expected return of  $R$ , as shown by point F in the upper part of the diagram.

## MODULE III: BANKING

### Commercial and Central Banking

A central bank is a banker's bank. It is normally part of or connected to the government of a country and manages the country's financial system. A commercial bank provides banking services to businesses, institutions and some individuals. The money it takes in from its customers is deposited at its local central bank. Nearly all the country's banks have accounts at the central bank to keep their money and for borrowing to offset any temporary shortages of cash.

## **Where Deposits Come From**

Both commercial banks and central banks take in deposits of money. A difference between a central bank and a commercial bank is that commercial banks receive their deposits, in the form of checking, savings and certificates of deposit, from their corporate or individual customers and deposit some of that money at their country's central bank. Central banks receive their deposit from other banks.

Commercial banks serve individuals and businesses, while central banks serve the country's banking system. They provide money transfers back and forth between banks and governmental institutions both domestically and in cases of transactions with foreign entities.

Commercial banks normally have branches in different parts of their region. Central banks maintain regional branch banks throughout the country.

## **Lending Out Money**

One of the core functions of both a central bank and a commercial bank is lending money. The difference is in what people and organizations the two types of banks will lend to.

Commercial banks lend out the money they take in deposits. They make personal loans, auto loans, business loans and mortgages. Occasionally, they will take in less money than they need to cover the loans they make, so their books will show a negative balance. To cover the cash shortfall, commercial banks borrow from their central banks.

Central banks generally lend only to other banks. The Federal Reserve identifies itself as a lender of last resort, to be turned to when banks are having trouble raising money from other sources. It generally charges a higher interest rate than other sources of bank lending and demands collateral, such as securities, from borrowing banks.

## **Services Provided By the Banks**

Central banks manage the monetary policy of their respective countries through their operations, which set interest rates and regulate commercial banking activities. Commercial banks set their prime lending rates off a spread tied to the rates set by their central banks. Commercial banks use the central bank's money transfer wire system to move money throughout their branch system and between the bank and customers.

The central bank monitors money movement in and out of commercial banks, always watching to maintain the financial strength of the commercial banks and step in to protect depositors' money if a commercial bank becomes insolvent.

## **Central Banks Around the World**

Most countries around the world have a central bank and many purposely give the bank a degree of autonomy from the rest of the government. This is designed to prevent politicians from using the central banks to manipulate the economy before elections.

Different countries name their central banks in different ways. The U.S. central bank is the Federal Reserve, the United Kingdom's central bank is the Bank of England, and the central bank serving countries that use the euro as their currency is the European Central Bank.

You can't always tell from the name of an institution whether it's a central bank or a commercial bank. The meaning of Central Bank of Nigeria is exactly what it sounds like, meaning that country's central bank, but there are also institutions in the United States called Central Bank that are actually commercial banks.

## Functions of Commercial and Central Banking

A central bank plays an important role in monetary and banking system of a country.

It is responsible for maintaining financial sovereignty and economic stability of a country, especially in underdeveloped countries.

*“A Central Bank is the bank in any country to which has been entrusted the duty of regulating the volume of currency and credit in that country”-Bank of International Settlement.*

It issues currency, regulates money supply, and controls different interest rates in a country. Apart from this, the central bank controls and regulates the activities of all commercial banks in a country.

### **Some of the management experts have defined central bank in different ways, which are as follows:**

According to Samuelson, “Every Central Bank has one function. It operates to control economy, supply of money and credit.”

According to Vera Smith, “The primary definition of Central Bank is the banking system in which a single bank has either a complete or residuary monopoly of note issue.”

According to Kent, “Central Bank may be defined as an institution which is charged with the responsibility of managing the expansion and contraction of the volume of money in the interest of general public welfare.”

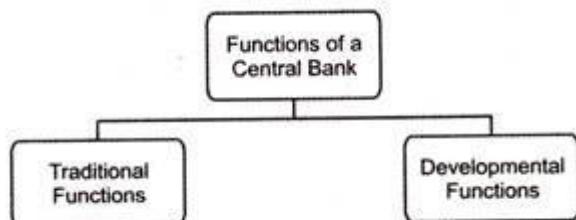
### **Functions of Central Bank:**

The central bank does not deal with the general public directly. It performs its functions with the help of commercial banks. The central bank is accountable for protecting the financial stability and economic development of a country.

Apart from this, the central bank also plays a significant part in avoiding the cyclical fluctuations by controlling money supply in the market. As per the view of Hawtrey, a central bank should primarily be the “lender of last resort.”

On the other hand, Kisch and Elkins believed that “the maintenance of the stability of the monetary standard” as the essential function of central bank. The functions of central bank are broadly divided into two parts, namely, traditional functions and developmental functions.

**These functions are shown in Figure-4:**



**Figure-3: Different Functions of a Central Bank**

## **The traditional functions of the central bank include the following:**

### **(i) Bank of issue:**

Possesses an exclusive right to issue notes (currency) in every country of the world. In the initial years of banking, every bank enjoyed the right of issuing notes. However, this led to a number of problems, such as notes were over-issued and the currency system became disorganized. Therefore, the governments of different countries authorized central banks to issue notes. The issue of notes by one bank has led to uniformity in note circulation and balance in money supply.

### **(ii) Government's banker, agent, and advisor:**

Implies that a central bank performs different functions for the government. As a banker, the central bank performs banking functions for the government as commercial banks perform for the public by accepting the government deposits and granting loans to the government. As an agent, the central bank manages the public debt, undertakes the payment of interest on this debt, and provides all other services related to the debt.

As an advisor, the central bank gives advice to the government regarding economic policy matters, money market, capital market, and government loans. Apart from this, the central bank formulates and implements fiscal and monetary policies to regulate the supply of money in the market and control inflation.

### **(iii) Custodian of cash reserves of commercial banks:**

Implies that the central bank takes care of the cash reserves of commercial banks. Commercial banks are required to keep certain amount of public deposits as cash reserve, with the central bank, and other part is kept with commercial banks themselves.

The percentage of cash reserves is decided by the central bank! A certain part of these reserves is kept with the central bank for the purpose of granting loans to commercial banks. Therefore, the central bank is also called banker's bank.

### **(iv) Custodian of international currency:**

Implies that the central bank maintains a minimum reserve of international currency. The main aim of this reserve is to meet emergency requirements of foreign exchange and overcome adverse requirements of deficit in balance of payments.

### **(v) Bank of rediscount:**

Serve the cash requirements of individuals and businesses by rediscounting the bills of exchange through commercial banks. This is an indirect way of lending money to commercial banks by the central bank. Discounting a bill of exchange implies acquiring the bill by purchasing it for the sum less than its face value.

Rediscounting implies discounting a bill of exchange that was previously discounted. When owners of bill of exchange are in need of cash they approach the commercial bank to discount these bills. If commercial banks are themselves in need of cash they approach the central bank to rediscount the bills.

### **(vi) Lender of last resort:**

Refer to the most crucial function of the central bank. The central bank also lends money to commercial banks. Instead of rediscounting of bills, the central bank provides loans against treasury bills, government securities, and bills of exchange.

### **(vii) Bank of central clearance, settlement, and transfer:**

Implies that the central bank helps in settling mutual indebtedness between commercial banks. Depositors of banks give checks and demand drafts drawn on other banks. In such a case, it is not possible for banks to approach each other for clearance, settlement, or transfer of deposits.

The central bank makes this process easy by setting a clearing house under it. The clearing house acts as an institution where mutual indebtedness between banks is settled. The representatives of different banks meet in the clearing house to settle inter-bank payments. This helps the central bank to know the liquidity state of the commercial banks.

**(viii) Controller of Credit:**

Implies that the central bank has power to regulate the credit creation by commercial banks. The credit creation depends upon the amount of deposits, cash reserves, and rate of interest given by commercial banks. All these are directly or indirectly controlled by the central bank. For instance, the central bank can influence the deposits of commercial banks by performing open market operations and making changes in CRR to control various economic conditions.

**(b) Developmental Functions:**

Refer to the functions that are related to the promotion of banking system and economic development of the country. These are not compulsory functions of the central bank.

**These are discussed as follows:**

**(i) Developing specialized financial institutions:**

Refer to the primary functions of the central bank for the economic development of a country. The central bank establishes institutions that serve credit requirements of the agriculture sector and other rural businesses.

Some of these financial institutions include Industrial Development Bank of India (IDBI) and National Bank for Agriculture and Rural Development (NABARD). These are called specialized institutions as they serve the specific sectors of the economy.

**(ii) Influencing money market and capital market:**

Implies that central bank helps in controlling the financial markets Money market deals in short term credit and capital market deals in long term credit. The central bank maintains the country's economic growth by controlling the activities of these markets.

**(iii) Collecting statistical data:**

Gathers and analyzes data related to banking, currency, and foreign exchange position of a country. The data is quite helpful for researchers, policymakers, and economists. For instance, the Reserve Bank of India publishes a magazine called Reserve Bank of India Bulletin, whose data is useful for formulating different policies and making macro-level decisions.

**Balance Sheet**

Traditionally, money was created by either minting coins or printing currency. Nowadays, most money is stored electronically as **account information**, so money can be created or destroyed simply by changing the information in the accounts. Before 1900, sovereign governments were in charge of minting coins or printing currency — sometimes with disastrous results.

Today, the supply of money is managed by central banks, not to satisfy the whims of politicians, but to achieve specific well-established objectives, such as low inflation, maximum growth, or high employment. Money is usually created — or destroyed — electronically as information in accounts held by central banks. The creation or destruction of money is recorded in the central bank's balance sheet. Therefore, to understand the supply of money, one must understand how it is recorded in the bank's balance sheet.

A central bank's balance sheet, like most balance sheets, is divided into assets and liabilities. The central bank's balance sheet can also be divided further into assets and liabilities as the bankers' bank and assets and liabilities as the government's bank, as shown in the following table:



Central Bank Balance Sheet		
	Assets	Liabilities
<b>Bankers' Bank</b>	Loans	Bank Accounts
<b>Government's Bank</b>	Securities Foreign Exchange Reserves	Currency Government's Account

To simplify this discussion, we will focus on the supply of money by the **Federal Reserve (Fed)** of the United States and its balance sheet. Although the Fed's balance sheet is rather complicated, only the main components are necessary to understand the money supply process. **Central bank assets** include:

- **securities**, mainly in the form of Treasuries;
- **foreign exchange reserves**, which are mainly held in the form of foreign bonds issued by foreign governments; and
- **loans** to commercial banks.

Of these, the most important asset is securities, which the Fed uses to directly control the supply of money in the United States. In other countries, where exports are important, such as China, federal exchange reserves may be the dominant asset.

**central bank liabilities** include:

- **currency**, which is held by the public,
- **federal government's bank account**, which the federal bank uses just as anyone would use their own checking account, depositing its revenues, mostly in the form of tax revenues, into its account, and paying its bills, mostly in electronic format;
- **commercial bank accounts**, otherwise known as **reserves**, where commercial banks keep their deposits with the Fed. **Vault cash**, which is cash held in the banks' vaults, is also part of the commercial banks' reserves, because the cash is used to service its customers.

Reserves can be further classified as either required reserves or excess reserves. **Required reserves** are reserves banks must hold as a legal minimum to ensure their financial soundness while **excess reserves** is the amount exceeding the required reserves, which banks keep to conduct their daily business or because they failed to lend it.

Because changes in the supply of money are revealed in the central bank's balance sheet, the balance sheet is the most important item that the central bank discloses. The Federal Reserve and most other central banks publish their balance sheets weekly as a way to maintain transparency. When a central bank fails to publish its balance sheet, it often indicates trouble, usually in the form of increasing the supply of money at the behest of politicians.

## Money base

The quantity of money in any economy is determined by the **monetary base**, which are the banking reserves and currency held by the public. In other words, the monetary base consists of the actual quantity of money. However, because money also has velocity, in that the same dollar is used in multiple transactions over time, the monetary base is often called **high-powered money** because the total value of all financial transactions is a multiple of the monetary base.

The Federal Reserve usually creates money by purchasing Treasuries from one of its 18 primary dealers. For instance, recently the Fed decided to purchase \$600 billion worth of Treasuries to lower the interest rate by increasing the supply of money. Let's see how a purchase of a \$1 million Treasury differs from a consumer purchase.

You go to the grocery store and buy \$100 worth of groceries for which you pay by debit card. The grocer's network credits his bank account by \$100, then sends information to your bank to debit your account by the same amount. Hence, money — or rather, information — is transferred from you to your grocer by changing the information, which is the amount in the account, in both of your accounts.

## Credit Creation

Credit creation separates a bank from other financial institutions. In simple terms, credit creation is the expansion of deposits. And, banks can expand their demand deposits as a multiple of their cash reserves because demand deposits serve as the principal medium of exchange. In this article, we will talk about credit creation.

Demand deposits are an important constituent of money supply and the expansion of demand deposits means the expansion of money supply. The entire structure of banking is based on credit. Credit basically means getting the purchasing power now and promising to pay at some time in the future. Bank credit means bank loans and advances.

A bank keeps a certain part of its deposits as a minimum reserve to meet the demands of its depositors and lends out the remaining to earn income. The loan is credited to the account of the borrower. Every bank loan creates an equivalent deposit in the bank. Therefore, credit creation means expansion of bank deposits.

The two most important aspects of credit creation are:

1. **Liquidity** – The bank must pay cash to its depositors when they exercise their right to demand cash against their deposits.
2. **Profitability** – Banks are profit-driven enterprises. Therefore, a bank must grant loans in a manner which earns higher interest than what it pays on its deposits.

The bank's credit creation process is based on the assumption that during any time interval, only a fraction of its customers genuinely need cash. Also, the bank assumes that all its customers would not turn up demanding cash against their deposits at one point in time.

## Basic Concepts of Credit Creation

- **Bank as a business institution** – Bank is a business institution which tries to maximize profits through loans and advances from the deposits.
- **Bank Deposits** – Bank deposits form the basis for credit creation and are of two types:

- **Primary Deposits** – A bank accepts cash from the customer and opens a deposit in his name. This is a primary deposit. This does not mean credit creation. These deposits simply convert currency money into deposit money. However, these deposits form the basis for the creation of credit.
- **Secondary or Derivative Deposits** – A bank grants loans and advances and instead of giving cash to the borrower, opens a deposit account in his name. This is the secondary or derivative deposit. Every loan creates a deposit. The creation of a derivative deposit means the creation of credit.
- **Cash Reserve Ratio (CRR)** – Banks know that all depositors will not withdraw all deposits at the same time. Therefore, they keep a fraction of the total deposits for meeting the cash demand of the depositors and lend the remaining excess deposits. CRR is the percentage of total deposits which the banks must hold in cash reserves for meeting the depositors' demand for cash.
- **Excess Reserves** – The reserves over and above the cash reserves are the excess reserves. These reserves are used for loans and credit creation.
- **Credit Multiplier** – Given a certain amount of cash, a bank can create multiple times credit. In the process of multiple credit creation, the total amount of derivative deposits that a bank creates is a multiple of the initial cash reserves.

Credit creation by a single bank

There are two ways of analyzing the credit creation process:

- a. Credit creation by a single bank
- b. Credit creation by the banking system as a whole

In a single bank system, one bank operates all the cash deposits and cheques. The process of creating credit is explained with the hypothetical example below:

**Table 1: Credit Creation by Single Bank**

Rounds	Primary Deposits	Cash Reserves ( $r = 20\%$ )	Credit Creation or Derivative Deposits ( $\Delta D$ )
1. (Person A)	Rs. 1000 (Initial primary deposits)	Rs. 200	Rs. 800 (Initial excess reserves $\Delta R$ )
2. (Person B)	800	160	640
3. (Person C)	640	128	512
4. (Person D)	512	102	410
-	-	-	-
-	-	-	-
Total	5000	1000	4000

Let's assume that the bank requires to maintain a CRR of 20 percent.

- If a person (person A) deposits 1,000 rupees with the bank, then the bank keeps only 200 rupees in the cash reserve and lends the remaining 800 to another person (person B). They open a credit account in the borrower's name for the same.
- Similarly, the bank keeps 20 percent of Rs. 800 (i.e. Rs. 160) and advances the remaining Rs. 640 to person C.
- Further, the bank keeps 20 percent of Rs. 640 (i.e. Rs. 128) and advances the remaining Rs. 512 to person D.

This process continues until the initial primary deposit of Rs. 1,000 and the initial additional reserves of Rs. 800 lead to additional or derivative deposits of Rs. 4,000 (800+640+512+....).

Adding the initial deposits, we get total deposits of Rs. 5,000. In this case, the credit multiplier is 5 (reciprocal of the CRR) and the credit creation is five times the initial excess reserves of Rs. 800.

### Multiple Credit Creation by the Banking System

The banking system has many banks in it and it cannot grant loans in excess of the cash it creates. When a bank creates a derivative deposit, it loses cash to other banks.

The loss of deposit of one bank is the gain of deposit for some other bank. This transfer of cash within the banking system creates primary deposits and increases the possibility for further creation of derivative deposits. Here is an illustration to explain this process better:

**Table 2 : Multiple Credit Creation by Banking System**

Banks	Primary Deposits	Cash Reserves (r = 20%)	Credit Creation or Derivative Deposits ( $\Delta D$ )
A	Rs. 1000 (Initial primary deposits)	Rs. 200	Rs. 800 (Initial excess reserves $\Delta R$ )
B	800	160	640
C	640	128	512
D	512	102	410
-	-	-	-
-	-	-	-
Total	5000	1000	4000

As explained above, the initial deposit of Rs. 1,000 with bank A leads to a creation of total deposits of Rs. 5,000.

### Limitations of Credit Creation

While banks would prefer an unlimited capacity for creating credit to increase profits, there are many limitations. These limitations make the process of creating credit non-profitable. Therefore, a bank continues to create additional credit as long as:

- There is a negligible chance of the loans turning into bad debts
- The interest rate that banks charge on loans and advances is greater than the interest that the bank gives to depositors for the money deposited in the bank.

Hence, we can say that the limitations of credit creation operate through shifts in the balance between liquidity and profitability. The factors that affect the creation of credit are:

- The capacity of banks to create credit.
- The willingness of the banks to create credit
- Also, the demand for credit in the market.

Capacity to create credit is a matter of:

- The availability of cash deposits with banks
- The factors which determine their cash deposit ratio

As regards the demand for credit:

- The demand must exist in the market
- Creditworthy borrowers (to avoid bad debts)
- The amount of loan granted should not exceed the paying capacity of the borrower

Leakages

- If the banks are unwilling to utilize their surplus funds for granting loans, then the economy is headed towards recession
- If the public withdraws cash and holds it with themselves, then it reduces the bank's power to create credit

## **Nationalization of Banks**

Currently, the Indian banking system is divided into commercial banks, cooperative banks, regional banks, etc. In commercial banks, there are two types of banks, public banks, and private banks. The important event in the history of Indian banks is the nationalization of banks. This made the way for India to become the leading economies of the world. In this article, we will give you a brief on the nationalization of banks in India.

## **Performance of Public Sector Banks in India**

Having discussed the development of Indian banks and the rationale for banking sector reforms and various reform measures undertaken to improve productivity, efficiency and profitability of banks by freeing them from a number of regulations and review of literature, it is felt desirable to evaluate the performance of public and private sector banks separately and as a next step attempt made for comparison between the relative performances of these two groups.

## **EVOLUTION**

Public sector in the banking industry emerged with the nationalization of Imperial Bank of India (1921) and creating the State Bank of India (1955) as a part of integrated scheme of rural credit proposed by the All India Rural Credit Survey Committee (1951). The Bank is unique in several respects and it enjoys a position of preeminence as the agent of RBI wherever RBI has no branches. It is the single largest bank in the country with large international presence, with a network of 48 overseas offices spread over 28 countries covering all the time zones. One of the objectives of establishing the SBI was to provide extensive banking facilities in rural areas by opening as a first step 400 branches within a period of 5 years from July 1, 1955. In 1959, eight banking companies functioning in formerly princely states were acquired by the SBI, which later came to be known as Associate Banks. Later, two of the subsidiary banks, viz., the State Bank of Bikaner and Jaipur were merged to form the State Bank of Bikaner and Jaipur, thus form eight banks in the SBI group then making banks in the state bank group.

The Public sector in the Indian banking got widened with two rounds of nationalization-first in July 1969 of 14 major private sector banks each with deposits of Rs. 50 crore or more, and thereafter in April 1980, 6 more banks with deposits of not less than Rs. 2 Crore each. It resulted in the creation of public sector banking with a market share of 76.87 per cent in deposits and 72.92 per cent of assets in the banking industry at the end of March 2003. With the merger of 'New Bank of India' with 'Punjab National Bank' in 1993, the number of nationalized banks became 19 and the number of public sector banks 27. The number of branches of public sector banks, which was 6,669 in June 1969, increased to 41874 by March 1990 and again to 46,752 by March 30, 2003. The public sector banks thus came to occupy a predominant position in the Indian banking scene. It is however, important to note that there has been a steady decline in the share of PSB's in the total assets of SCB's during the latter - half of 1990s. While their share was 84.5 per cent at the end of March 1996, it declined to 81.7 per cent in 1998 and further to 81 per cent in 1999.

## **RBI Functions**

Major functions of the RBI are as follows:

### **1. Issue of Bank Notes:**

The Reserve Bank of India has the sole right to issue currency notes except one rupee notes which are issued by the Ministry of Finance. Currency notes issued by the Reserve Bank are declared unlimited legal tender throughout the country.

This concentration of notes issue function with the Reserve Bank has a number of advantages: (i) it brings uniformity in notes issue; (ii) it makes possible effective state supervision; (iii) it is easier to control and regulate credit in accordance with the requirements in the economy; and (iv) it keeps faith of the public in the paper currency.

### **2. Banker to Government:**

As banker to the government the Reserve Bank manages the banking needs of the government. It has to maintain and operate the government's deposit accounts. It collects receipts of funds and makes payments on behalf of the government. It represents the Government of India as the member of the IMF and the World Bank.

### **3. Custodian of Cash Reserves of Commercial Banks:**

The commercial banks hold deposits in the Reserve Bank and the latter has the custody of the cash reserves of the commercial banks.

### **4. Custodian of Country's Foreign Currency Reserves:**

The Reserve Bank has the custody of the country's reserves of international currency, and this enables the Reserve Bank to deal with crisis connected with adverse balance of payments position.

### **5. Lender of Last Resort:**

The commercial banks approach the Reserve Bank in times of emergency to tide over financial difficulties, and the Reserve bank comes to their rescue though it might charge a higher rate of interest.

### **6. Central Clearance and Accounts Settlement:**

Since commercial banks have their surplus cash reserves deposited in the Reserve Bank, it is easier to deal with each other and settle the claim of each on the other through book keeping entries in the books of the Reserve Bank. The clearing of accounts has now become an essential function of the Reserve Bank.

### **7. Controller of Credit:**

Since credit money forms the most important part of supply of money, and since the supply of money has important implications for economic stability, the importance of control of credit becomes obvious. Credit is controlled by the Reserve Bank in accordance with the economic priorities of the government.

## **MODULE IV: TRADE CYCLE**

### **Trade Cycle**

#### **Meaning of Trade Cycle:**

A trade cycle refers to fluctuations in economic activities specially in employment, output and income, prices, profits etc. It has been defined differently by different economists. According to Mitchell, “Business cycles are of fluctuations in the economic activities of organized communities. The adjective ‘business’ restricts the concept of fluctuations in activities which are systematically conducted on commercial basis.

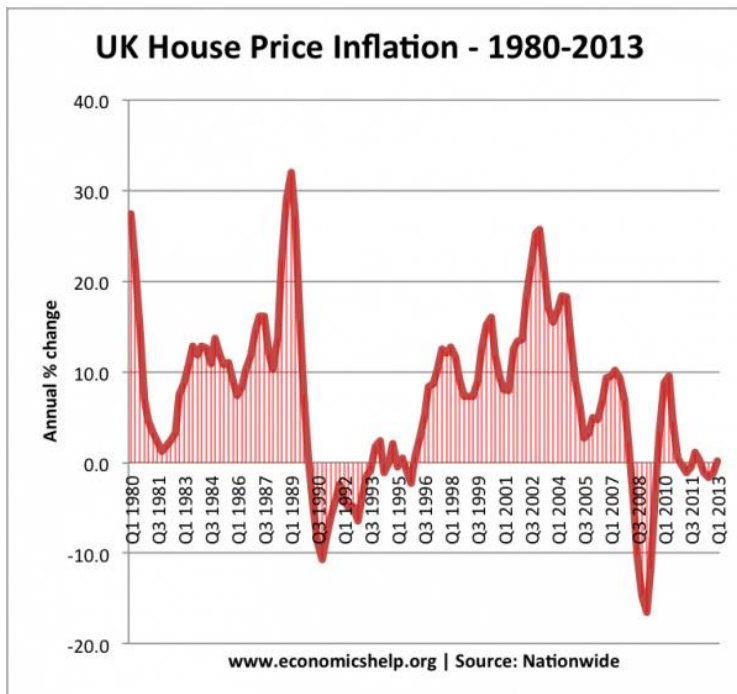
The noun ‘cycle’ bars out fluctuations which do not occur with a measure of regularity”. According to Keynes, “A trade cycle is composed of periods of good trade characterised by rising prices and low unemployment percentages altering with periods of bad trade characterised by falling prices and high unemployment percentages”.

#### **Causes of Trade Cycle**

The business or trade cycle relates to the volatility of economic growth, and the different periods the economy goes through (e.g. boom and bust). There are many different factors that cause the economic cycle – such as interest rates, confidence, the credit cycle and the multiplier effect. Some economists also point to supply side explanations, such as technological shocks.

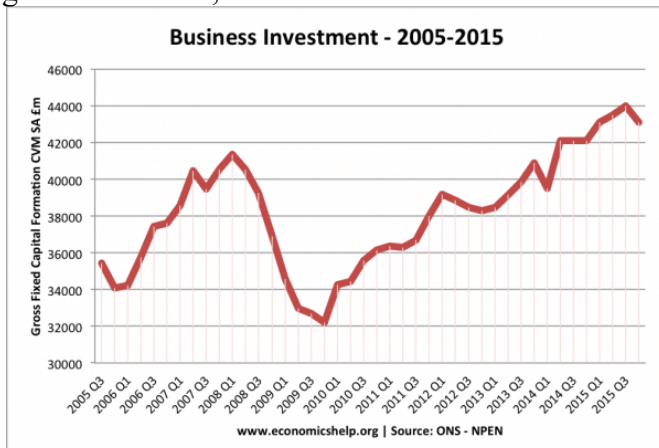
Causes of the business cycle

1. Interest rates. Changes in the interest rate affect consumer spending and economic growth. For example, if interest rates are cut, this reduces borrowing costs and therefore increases disposable income for consumers; this leads to higher spending and economic growth. However, if the Central Bank increase interest rates to reduce inflation, this will tend to reduce consumer spending and investment, leading to an economic downturn and recession. See: Interest rate cycle.
  - High-interest rates in 1991-92 were a major factor in the recession of that year. The cut in interest rates post 1992, helped the economy to recover.
2. Changes in house prices



A rise in house prices creates a positive wealth effect and leads to higher consumer spending. A fall in house prices causes lower consumer spending and bank losses. (house prices and consumer spending) In the late 1980s, the boom in house prices caused an economic boom. The drop in house prices in the early 1990s was a significant factor in causing the recession of 1991-92.

3. Consumer and business confidence. Fall in confidence in May 2008, contributed to the deepest recession for a considerable time. People are easily influenced by external events. If there is a succession of bad economic news, this tends to discourage people from spending and investing, making a small downturn into a bigger recession. But, when the economy recovers this can cause a positive bandwagon effect. Economic growth encourages consumers to borrow and banks to lend. This causes higher economic growth. Confidence is an important factor in causing the business cycle.
4. Multiplier effect. The multiplier effect states that a fall in injections may cause a bigger final fall in real GDP. For example, if the government cut public investment, there would be a fall in aggregate demand and a rise in unemployment. However, those who lost their jobs would also spend less, leading to even lower demand in the economy. Alternatively, an injection of investment could have a positive multiplier effect.
5. Accelerator effect. This states that investment depends on the rate of change of economic growth. If the growth rate falls, firms reduce investment because they don't expect output to rise as quickly.



- 6.
7. Drop in business investment caused by lower growth and credit crunch made the recession deeper. This theory suggests investment is quite volatile and small changes in the rate of growth have a big effect on investment levels. This contributes to a more volatile business cycle.



8. Lending/finance cycle. Up until the 2008 recession, less emphasis had been placed on the state of the financial system. However, the credit crunch of 2008 was the primary cause of the 2008/09 recession. A boom in credit and lending (especially sub-prime mortgages in US) was a factor in promoting economic growth during the 2000s. But, when banks became over-stretched and needed to call in loans, the financial system was short of liquidity. After the credit crunch, more attention has been given to theories of financial instability. For example, H. Minsky 'Financial instability hypothesis' as a cause of business cycles.
9. Inventory cycle. Some argue that there is a natural inventory cycle. For example, there are some 'luxury' goods we buy every five years or so. When the economy is doing well, people buy these luxury items causing faster economic growth. But, in a downturn, people delay buying luxury goods, and so we get a bigger economic downturn.
10. Real business cycle theories. Real business cycle theories – e.g. Kydland and Prescott (1982) – emphasise supply-side causes of the business cycle. For example, periods of technological change can go in cycles, leading to variations in rates of growth. Real business cycle theories tend to assume rates of unemployment reflects changes in people's willingness to work. See more at Real Business Cycle models

### **Causes of recessions**

The business cycle can go into recession for a variety of reasons, such as:

- Falling house prices causing negative wealth effect and lower consumer spending
- Credit crunch causing an increase in the cost of borrowing and shortage of funds
- Volatile stock markets and money markets undermining business and investment confidence.
- Higher interest rates – causing lower spending and investment.
- Tight fiscal policy – higher taxes and lower spending.
- Appreciation in the exchange rate.
- See: causes of recessions

### **Features of a Trade Cycle:**

1. A business cycle is synchronic. When cyclical fluctuations start in one sector it spreads to other sectors.
2. In a trade cycle, a period of prosperity is followed by a period of depression. Hence trade cycle is a wave like movement.
3. Business cycle is recurrent and rhythmic; prosperity is followed by depression and vice versa.
4. A trade cycle is cumulative and self-reinforcing. Each phase feeds on itself and creates further movement in the same direction.
5. A trade cycle is asymmetrical. The prosperity phase is slow and gradual and the phase of depression is rapid.
6. The business cycle is not periodical. Some trade cycles last for three or four years, while others last for six or eight or even more years.
7. The impact of a trade cycle is differential. It affects different industries in different ways.
8. A trade cycle is international in character. Through international trade, booms and depressions in one country are passed to other countries.

### **Phases of a Trade Cycle:**

Generally, a trade cycle is composed of four phases – depression, recovery, prosperity and recession.

***Depression:***

During depression, the level of economic activity is extremely low. Real income production, employment, prices, profit etc. are falling. There are idle resources. Price is low leading to a fall in profit, interest and wages. All the sections of the people suffer. During this phase, there will be pessimism leading to closing down of business firms.

***Recovery:***

Recovery denotes the turning point of business cycle from depression to prosperity. In this phase, there is a slow rise in output, employment, income and price. Demand for commodities go up. There is increase in investment, bank loans and advances. Pessimism gives way to optimism. The process of revival and recovery becomes cumulative and leads to prosperity.

Prosperity: It is a state of affairs in which real income and employment are high. There are no idle resources. There is no wastage of materials. There is rise in wages, prices, profits and interest. Demand for bank loans increases. There is optimism everywhere. There is a general uptrend in business community.

However, these boom conditions cannot last long because the forces of expansion are very weak. There are bottlenecks and shortages. There may be scarcity of labour, raw material and other factors of production. Banks may stop their loans. These conditions lead to recession.

Recession: When the entrepreneurs realize their mistakes, they reduce investment, employment and production. Then fall in employment leads to fall in income, expenditure, prices and profits. Optimism gives way to pessimism. Banks reduce their loans and advances. Business expansion stops. This state of recession ends in depression.

**Theories of Trade Cycle:**

Many theories have been put forward from time to time to explain the phenomenon of trade cycles. These theories can be classified into non-monetary and monetary theories.

***Non-Monetary Theories of Trade Cycle:*****1. Sunspot Theory or Climatic Theory:**

It is the oldest theory of trade cycle. It is associated with W.S.Jevons and later on developed by H.C.Moore. According to this theory, the spot that appears on the sun influences the climatic conditions. When the spot appears, it will affect rainfall and hence agricultural crops.

When there is crop failure, that will result in depression. On the other hand, if the spot did not appear on the sun, rainfall is good leading to prosperity. Thus, the variations in climate are so regular that depression is followed by prosperity.

However, this theory is not accepted today. Trade cycle is a complex phenomenon and it cannot be associated with climatic conditions. If this theory is correct, then industrialised countries should be free from cyclical fluctuations. But it is the advanced, industrialised countries which are affected by trade cycles.

**2. Psychological Theory:**

This theory was developed by A.C. Pigou. He emphasized the role of psychological factor in the generation of trade cycles. According to Pigou, the main cause for trade cycle is optimism and pessimism among business people and bankers. During the period of good trade, entrepreneurs become optimistic which would lead to increase in production.

The feeling of optimism is spread to other. Hence investments are increased beyond limits and there is over production, which results in losses. Entrepreneurs become pessimistic and reduce their investment and production. Thus, fluctuations are due to optimism leading to prosperity and pessimism resulting depression.

Though there is an element of truth in this theory, this theory is unable to explain the occurrence of boom and starting of revival. Further this theory fails to explain the periodicity of trade cycle.

### **3. Overinvestment Theory:**

Arthur Spiethoff and D.H. Robertson have developed the over investment theory. It is based on Say's law of markets. It believes that over production in one sector leads to over production in other sectors. Suppose, there is over production and excess supply in one sector, that will result in fall in price and income of the people employed in that sector. Fall in income will lead to a decline in demand for goods and services produced by other sectors. This will create over production in other sectors.

Spiethoff has pointed out that over investment is the cause for trade cycle. Over investment is due to indivisibility of investment and excess supply of bank credit. He gives the example of a railway company which lays down one more track to avoid traffic congestion. But this may result in excess capacity because the additional traffic may not be sufficient to utilise the second track fully.

Over investment and overproduction are encouraged by monetary factors. If the banking system places more money in the hands of entrepreneurs, prices will increase. The rise in prices may induce the entrepreneurs to increase their investments leading to over-investment. Thus Prof. Robertson has successfully combined real and monetary factors to explain business cycle.

This theory is realistic in the sense that it considers over investment as the cause of trade cycle. But it has failed to explain revival.

### **4. Over-Saving or Under Consumption Theory:**

This theory is the oldest explanation of the cyclical fluctuations. This theory has been formulated by Malthus, Marx and Hobson. According to this theory, depression is due to over-saving. In the modern society, there is great inequalities of income. Rich people have large income but their marginal propensity to consume is less.

Hence they save and invest which results in an increase in the volume of goods. This causes a general glut in the market. At the same time, as majority of the people are poor, they have low propensity to consume. Therefore, consumption will not increase. Increase in the supply of goods and decline in the demand create under consumption and hence over production.

This theory is not free from criticism. This theory explains only the turning point from prosperity to depression. It does not say anything about recovery. This theory assumes that the amount saved would be automatically invested. But this is not true. It pays too much attention on saving and too little on others.

### **5. Keynes' Theory of Trade Cycles:**

Keynes doesn't develop a complete and pure theory of trade cycles. According to Keynes, effective demand is composed of consumption and investment expenditure. It is effective demand which determines the level of income and employment.

Therefore, changes in total expenditure i.e., consumption and investment expenditures, affect effective demand and this will bring about fluctuation in economic activity. Keynes believes that consumption expenditure is stable and it is the fluctuation in investment expenditure which is responsible for changes in output, income and employment.

Investment depends on rate of interest and marginal efficiency of capital. Since rate of interest is more or less stable, marginal efficiency of capital determines investment. Marginal efficiency of capital depends on two factors – prospective yield and supply price of the capital asset. An increase in MEC will create more employment, output and income leading to prosperity. On the other hand, a decline in MEC leads to unemployment and fall in income and output. It results in depression.

During the period of expansion businessmen are optimistic. MEC is rapidly increasing and rate of interest is sticky. So entrepreneurs undertake new investment. The process of expansion goes on till the boom is reached. As the process of expansion continues, cost of production increases, due to scarcity of factors of production. This will lead to a fall in MEC. Further, price of the product falls due to abundant supply leading to a decline in profits.

This leads to depression. As time passes, existing machinery becomes worn out and has to be replaced. Surplus stocks of goods are exhausted. As there is a fall in price of raw-materials and equipment, costs fall. Wages also go down. MEC increases leading to recovery. Keynes states that, "Trade cycle can be described and analyzed in terms of the fluctuations of the marginal efficiency of capital relatively to the rate of interest".

The merit of Keynes' theory lies in explaining the turning points-the lower and upper turning points of a trade cycle. The earlier economists considered the changes in the amount of credit given by banking system to be responsible for cyclical fluctuations. But for Keynes, the change in consumption function with its effect on MEC is responsible for trade cycle. Keynes, thus, has given a satisfactory explanation of the turning points of the trade cycle, "Keynes consumption function filled a serious gap and corrected a serious error in the previous theory of the business cycle". (Metzler).

Critics have pointed out the weakness of Keynes' theory. Firstly, according to Keynes the main cause for trade cycle is the fluctuations in MEC. But the term marginal efficiency of capital is vague. MEC depends on the expectations of the entrepreneur about future. In this sense, it is similar to that of Pigou's psychological theory. He has ignored real factors.

Secondly, Keynes assumes that rate of interest is stable. But rate of interest does play an important role in decision making process of entrepreneurs.

Thirdly, Keynes does not explain periodicity of trade cycle. In a period of recession and depression, according to Keynes, rate of interest should be high due to strong liquidity preference. But, during this period, rate of interest is very low. Similarly during boom, rate of interest should be low because of weak liquidity preference; but actually the rate of interest is high.

### **6. Schumpeter's Innovation Theory:**

Joseph A. Schumpeter has developed innovation theory of trade cycles. An innovation includes the discovery of a new product, opening of a new market, reorganization of an industry and development of a new method of production. These innovations may reduce the cost of production and may shift the demand curve. Thus innovations may bring about changes in economic conditions.

Suppose, at the full employment level, an innovation in the form of a new product has been introduced. Innovation is financed by bank loans. As there is full employment already, factors of production have to be withdrawn from others to manufacture the new product. Hence, due to competition for factors of production costs may go up, leading to an increase in price.

When the new product becomes successful, other entrepreneurs will also produce similar products. This will result in cumulative expansion and prosperity. When the innovation is adopted by many, supernormal profits will be competed away. Firms incurring losses will go out of business. Employment, output and income fall resulting in depression.

Schumpeter's theory has been criticised on the following grounds.

Firstly, Schumpeter's theory is based on two assumptions viz., full employment and that innovation is being financed by banks. But full employment is an unrealistic assumption, as no country in the world has achieved full employment. Further innovation is usually financed by the promoters and not by banks. Secondly, innovation is not the only cause of business cycle. There are many other causes which have not been analysed by Schumpeter.

## ***Monetary Theories of Trade Cycles:***

### **1. Over-Investment Theory:**

Prof. Von Hayek in his books on “Monetary Theory and Trade Cycle” and “Prices and Production” has developed a theory of trade cycle. He has distinguished between equilibrium or natural rate of interest and market rate of interest. Market rate of interest is one at which demand for and supply of money are equal.

Equilibrium rate of interest is one at which savings are equal to investment. If both equilibrium rate of interest and market rate of interest are equal, there will be stability in the economy. If equilibrium rate of interest is higher than market rate of interest there will be prosperity and vice versa.

For instance, if the market rate of interest is lower than equilibrium rate of interest due to increase in money supply, investment will go up. The demand for capital goods will increase leading to a rise in price of these goods. As a result, there will be a diversion of resources from consumption goods industries to capital goods industries. Employment and income of the factors of production in capital goods industries will increase.

This will increase the demand for consumption goods. There will be competition for factors of production between capital goods and consumption good industries. Factor prices go up. Cost of production increases. At this time, banks will decide to reduce credit expansion. This will lead to rise in market rate of interest above the equilibrium rate of interest. Investment will fall; production declines leading to depression.

### **Hayek’s theory has certain weaknesses:**

1. It is not easy to transfer resources from capital goods industries to consumer goods industries and vice versa.
2. This theory does not explain all the phases of trade cycle.
3. It gives too much importance to rate of interest in determining investment. It has neglected other factors determining investment.
4. Hayek has suggested that the volume of money supply should be kept neutral to solve the problem of cyclical fluctuations. But this concept of neutrality of money is based on old quantity theory of money which has lost its validity.

### **2. Hawtrey’s Monetary Theory:**

Prof. Hawtrey considers trade cycle to be a purely monetary phenomenon. According to him non-monetary factors like wars, strike, floods, drought may cause only temporary depression. Hawtrey believes that expansion and contraction of money are the basic causes of trade cycle. Money supply changes due to changes in rates of interest.

When rate of interest is reduced by banks, entrepreneurs will borrow more and invest. This causes an increase in money supply and rise in price leading to expansion. On the other hand, an increase in the rate of interest will lead to reduction in borrowing, investment, prices and business activity and hence depression.

Hawtrey believes that trade cycle is nothing but small scale replica of inflation and deflation. An increase in money supply will lead to boom and vice versa, a decrease in money supply will result in depression.

Banks will give more loans to traders and merchants by lowering the rate of interest. Merchants place more orders which induce the entrepreneurs to increase production by employing more labourers. This results in increase in employment and income leading to an increase in demand for goods. Thus the phase of expansion starts.

Business expands; factors of production are fully employed; price increases further, resulting in boom conditions. At this time, the banks call off loans from the borrowers. In order to repay the loans, the borrowers sell their

stocks. This sudden disposal of goods leads to fall in prices and liquidation of marginal firms. Banks will further contract credit.

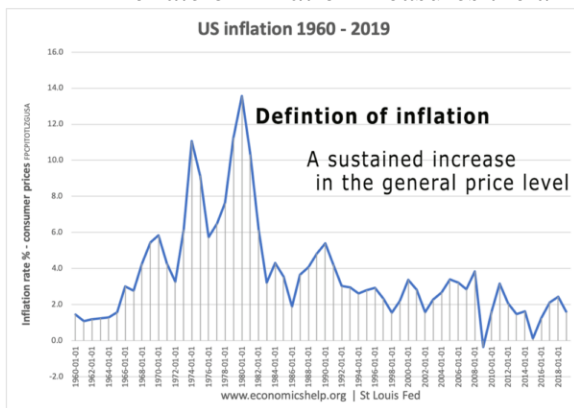
Thus the period of contraction starts making the producers reduce their output. The process of contraction becomes cumulative leading to depression. When the economy is at the level of depression, banks have excess reserves. Therefore, banks will lend at a low rate of interest which makes the entrepreneurs to borrow more. Thus revival starts, becomes cumulative and leads to boom.

### **Hawtrey's theory has been criticised on many grounds:**

1. Hawtrey's theory is considered to be an incomplete theory as it does not take into account the non-monetary factors which cause trade cycles.
2. It is wrong to say that banks alone cause business cycle. Credit expansion and contraction do not lead to boom and depression. But they are accentuated by bank credit.
3. The theory exaggerates the importance of bank credit as a means of financing development. In recent years, all firms resort to plough back of profits for expansion.
4. Mere contraction of bank credit will not lead to depression if marginal efficiency of capital is high. Businessmen will undertake investment in-spite of high rate of interest if they feel that the future prospects are bright.
5. Rate of interest does not determine the level of borrowing and investment. A high rate of interest will not prevent the people to borrow. Therefore, it may be stated that banking system cannot originate a trade cycle. Expansion and contraction of credit may be a supplementary cause but not the main and sole cause of trade cycle.

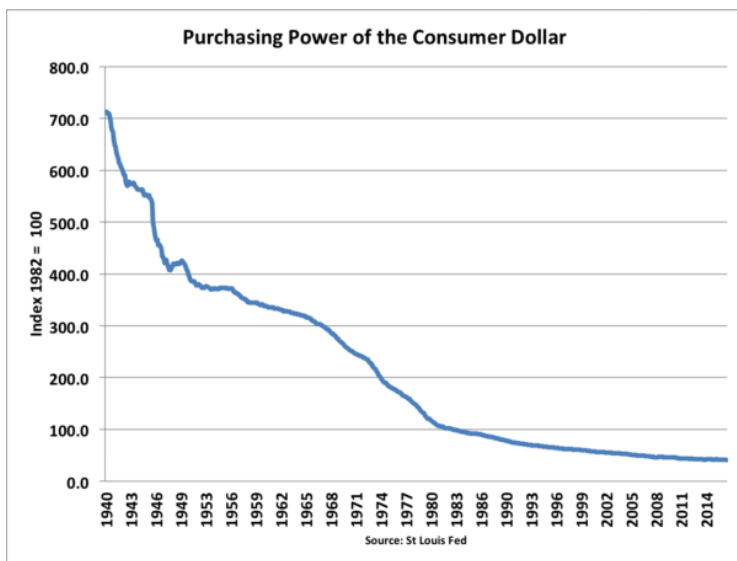
## **MODULE V : INFLATION**

- Inflation is a situation of rising prices in the economy.
- A more exact definition of inflation is a sustained increase in the general price level in an economy. Inflation means an increase in the cost of living as the price of goods and services rise.
- The rate of inflation measures the annual percentage change in the general price level.



### **Inflation and value of money**

- Inflation leads to a decline in the value of money. *“Inflation means that your money won't buy as much today as you could yesterday.”*
- If the prices of goods rise, the same amount of money will purchase a smaller quantity of goods.



This diagram shows how inflation in the US has eroded the purchasing power of the dollar. The biggest decline in the purchasing power of the dollar occurred in the 1970s when inflation was highest.

### Purchasing power of the Pound Sterling (1920=100)

1920	1930	1940	1950	1960	1970	1980	1990	1998
100	125	129	98	66	46	133	6.8	5.33

This table shows us that £100 buys fewer goods in 1998 than 1920, (approx 78% of its value)

### Types of inflation

- Cost-push inflation – when a rise in prices is caused by a rise in the cost of production, such as higher oil prices
- Demand-pull inflation – when a rise in prices is caused by rising aggregate demand and firms pushing up prices due to the shortage of goods

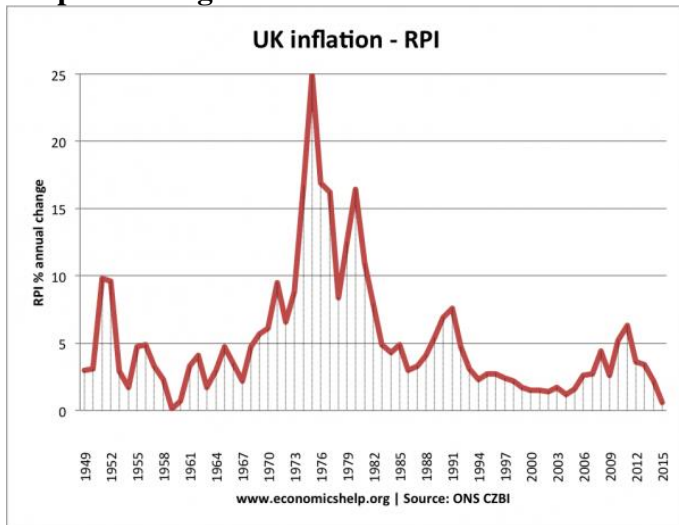
### Definition Hyper-Inflation

*Hyperinflation is generally considered to occur when inflation is greater than 1000%. With hyperinflation, money loses its value so rapidly that nobody wants to use it as a medium of exchange.*

In 1920s Germany had inflation of 100 billion %  
 In 1946 Hungary had inflation of 42,000 billion per cent

See: Hyperinflation

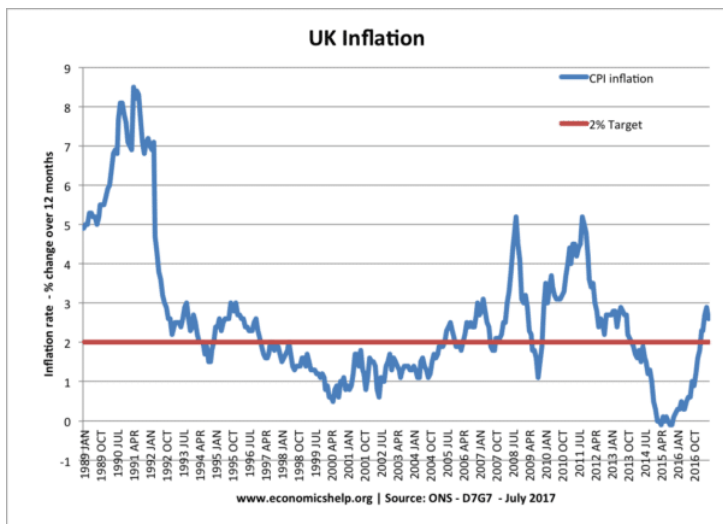
## Graph showing UK inflation rate



UK inflation in the post-war period.

- In 1974, the inflation rate peaked at 25%. This was due to rising oil prices and rising wages.
- In the late 1990s and early 2000s, the inflation rate fell to less than 2% in 2004.
- This fall in the inflation rate means prices were increasing at a slower rate.

### *UK Inflation since 2000*



- Inflation was close to the governments target of 2% between 2000-2007
- In 2008, inflation peaked at 5%, primarily because of a surge in the price of oil.
- Inflation fell in 2009, because of the recession and fall in demand.
- In mid-2015, there was a short period of deflation (negative inflation rate – falling prices)

### *Definition of Deflation*

Deflation is a fall in the price level of the economy. It means there will be a negative inflation rate.

See more on deflation

### **Measuring inflation**

To calculate inflation, the statistics authority (ONS)

- Measure the price of 1,000 goods every month
- Gives a weighting to different goods depending on how important they are in a typical basket of goods.



- An index is created with calculates the weighting of good \* price change.

See more on Measuring inflation

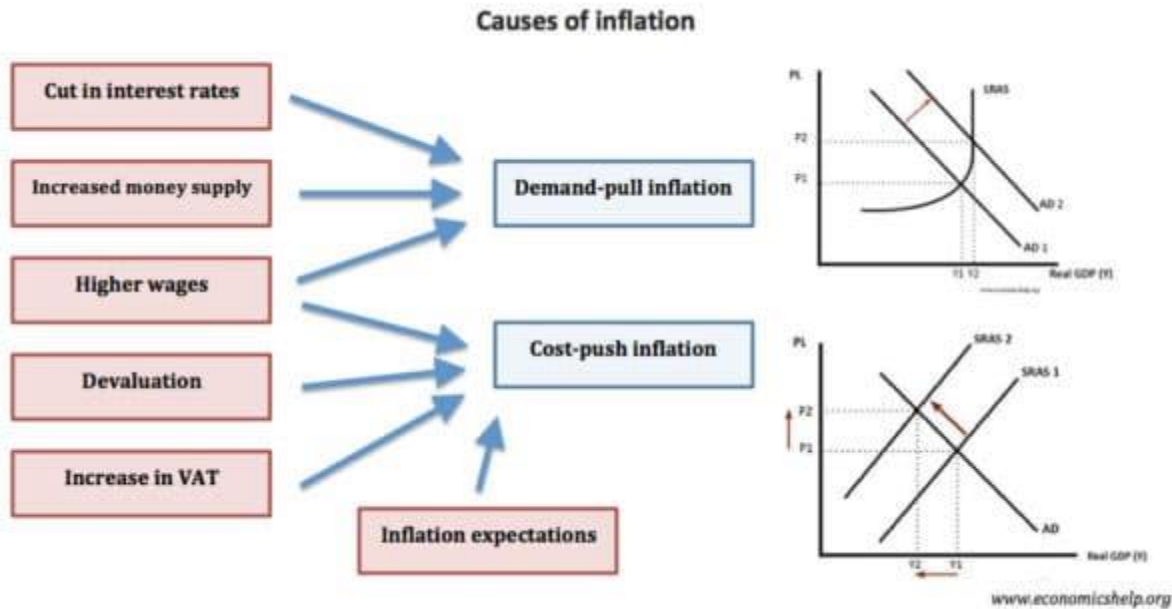
## Costs of inflation

Inflation is seen to have economic costs. These include:

1. A decline in value of savings
2. Uncertainty for business leading to less investment.
3. A decline in the competitiveness of exports (if inflation higher than in other countries.)

See also: Costs of inflation

## Causes of inflation



Inflation can be caused by:

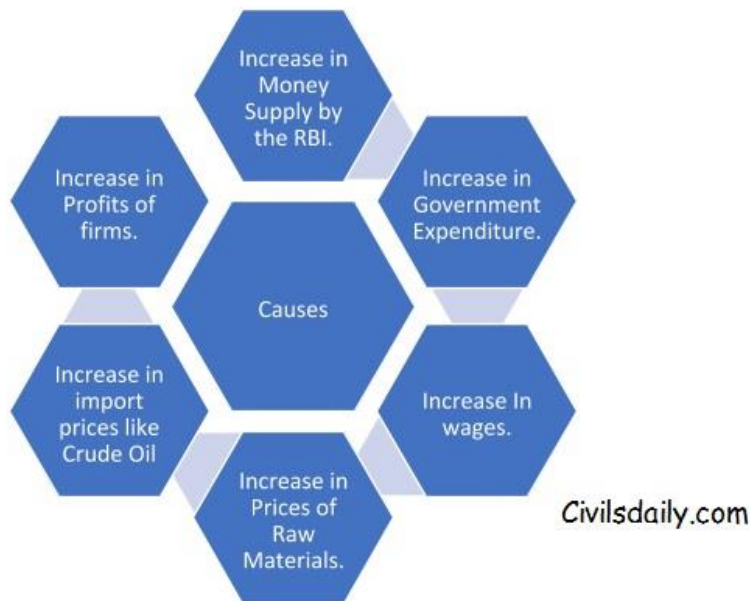
1. Excess demand. Rapid economic growth causes firms to put up prices
2. Rising costs. For example, rising price of oil/commodities causes rise in price of goods.

## Causes of Inflation

Inflation is mainly caused either by demand Pull factors or Cost Push factors. Apart from demand and supply factors, Inflation sometimes is also caused by structural bottlenecks and policies of the government and the central banks. Therefore, the major causes of Inflation are:

- Demand Pull Factors (when Aggregate Demand exceeds Aggregate Supply at Full employment level).
- Cost Push Factors (when Aggregate supply increases due to increase in the cost of production while Aggregate demand remains the same).
- Structural Bottlenecks (Agriculture Prices fluctuations, Weak Infrastructure etc.)
- Monetary Policy Intervention by the Central Banks.
- Expansionary Fiscal Policy by the Government.

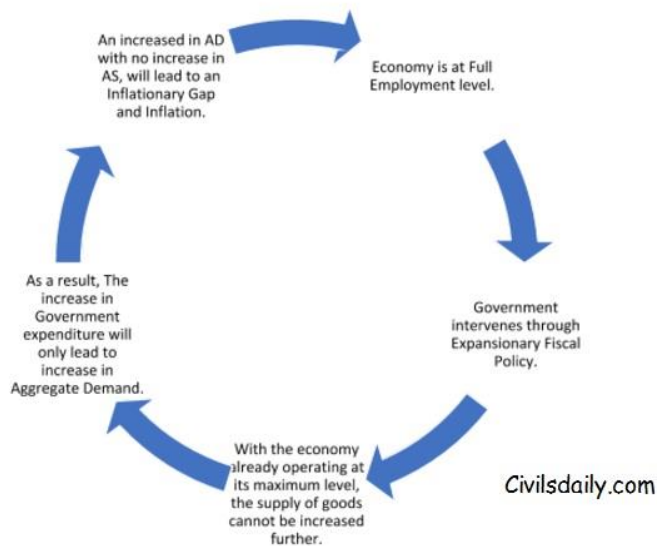
**Demand and Supply factors can be further sub divided into the following:**



## Demand Pull Inflation

- Demand Pull Inflation is mainly due to increase in Aggregate demand. The increase in Aggregate demand mainly comes from either increase in Government Expenditure (Expansionary Fiscal Policy) or by an increase in expenditure from Households and Firms.
- The root cause of demand pull inflations is-  $\text{Aggregate demand} > \text{Aggregate Supply}$ . This simply means that the firms in the economy are not capable of producing the goods and services demanded by the households in the present time period. The shortages of goods and services due to increase in demand fuels inflation.
- Imagine what happened when there was an outbreak of swine flu in India. Due to the outbreak of swine flu epidemic in India, the government notified a warning that people should wear Breathing Masks to protect them from the infection. As a result, the demand for mask had risen to a very high level, but the supply being limited as the producers of the mask had no anticipation of the swine flu epidemic. Due to the high demand and limited supply of masks, the prices had risen manifold. The case above captures the mechanism of demand pull inflation.
- The above example only captures the mechanism of Demand led inflation and that too for a particular product. What happens at Macro level? What fuels inflation in the entire economy? Before answering the question. Let's understand some basic concept related to the economy:
- **Full Employment Level:** Full employment is an economic situation in which all the available resources of the economy are fully utilised, and there exists no further scope of improvement in the economy. The Full employment level represents that economy is operating at its maximum potential. The level of unemployment is minimum, the prices in the economy are stable, resources are fully utilised, whatever firms are producing is getting sold, and there exist no shortages in the economy.

**Inflationary Gap:** the Inflationary gap is a situation which arises when Aggregate demand in an economy exceeds the Aggregate supply at the full employment level.



Inflation in a Demand-Pull scenario is basically caused by a situation whereby the Aggregate demand for goods and services in the economy rises and exceeds the available supply of the goods and services. In such a situation, the excessive pressure on demand will fuel the inflation in the economy.

**Deflationary Gap:** Deflationary Gap is a situation which arises when Aggregate demand in the economy falls short of Aggregate Supply at the full employment level.

### Cost Push Inflation

- There exists a situation in an economy where inflation is fuelled up, not because of increase in Aggregate Demand but mainly due to increase in the cost of producing goods and services.
- The cost can be increased mainly due to three factors:



Wage Push Inflation	Profit Push Inflation	Raw Material Push Inflation
When the employees push for an increase in wages which are not justifiable either on the grounds of employee productivity or increase in the cost of living. In such scenarios, an unwarranted wage increase leads to increase in the cost of production and hence cost push inflation.	The firms sometimes decide to increase their profit margins and starts charging higher prices for their product. This phenomenon pushes the price upward and results in Profit Push Inflation.	The raw material push inflation also known as supply shock inflation is the main and the most important reason for cost push inflation. If for any reason the economy under goes a supply shock in the form of a rise in the price of essential raw materials like crude oil, it will fuel inflation due to rise in the cost of production.
Wage Push Inflation generally happens during high growth periods. During which workers anticipate a hike in their wages due to rising cost of living. The employer responds to their demand by increasing wages in the hope that he will pass them on to the consumers in the form of higher prices.	The Profit Push Inflation generally happens when there are few of single producer producing the goods for the entire market.	For Example, during the 1970s, the OPEC countries decided to increase the price of crude oil, this acted as a supply shock for the entire World economy and price of petroleum products (an essential raw material) went up, fuelling inflation.

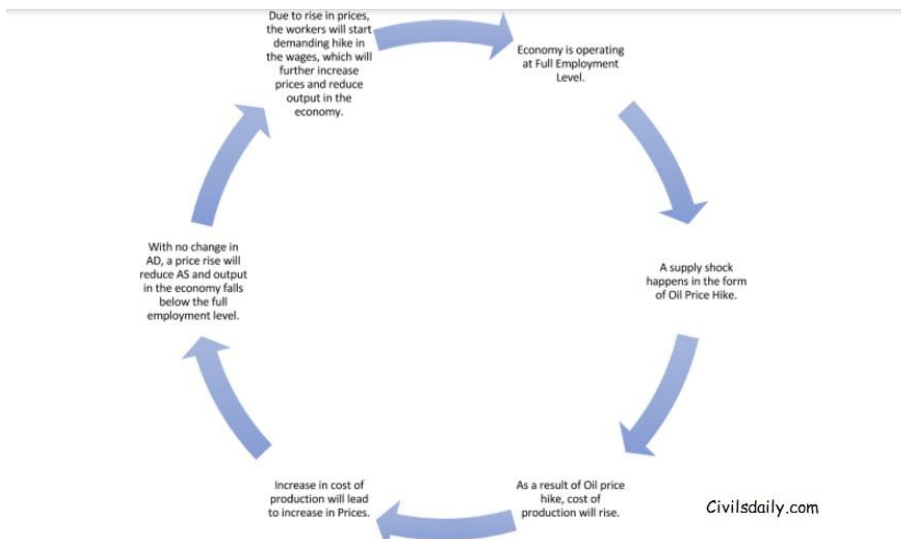
**Let's understand Cost Push Inflation with an Example.**

Suppose, Indian economy is operating at its maximum potential. Prices are stable, resources are fully utilised, everyone who is willing to work is getting the work (unemployment is at its minimum). In such a scenario people will form the expectation that the future of the economy is good and they planned their saving and investment decision accordingly.

However, one day the USA decides to attack Iran in order to dismantle their nuclear weapons. As a repercussion of the attack, the crude oil prices around the world start moving up. India who imports 90 percent of its oil imports suddenly find itself in trouble. The rise in crude oil price puts a break on booming Indian economy and cost of essential products start rising (crude oil is a key input for many industries and is a lifeline of transport economy). As a result of increase in cost of production, the manufacturers decide to increase the price of their product. Hence fuelling first round of cost push inflation (Raw material).

After a lag of sometime, the final consumer gets to know that the prices of the product have increased. The consumer expectations about the future movement of prices will change as he expects prices to rise further in future. To compensate himself against the future price rise, he starts demanding more wages from his/her employer. This will fuel the second round of cost push inflation (wage push).

## Cost Push Inflation/Supply Shock



**Stagflation:** The most important difference between the Demand Pull and Cost Push Inflation is that while in the case of Demand Pull Inflation the overall output in the economy does not fall. Whereas, in case of Cost Push Inflation, along with an increase in prices the output level of the economy also falls.

The fall in output will cause employment to fall in the economy along with fall in growth. The falling growth along with rising prices makes cost push inflation more dangerous than the demand-pull inflation. The situation of rising prices along with falling growth and employment is called as stagflation.

**Hyperinflation:** Hyperinflation is a situation when inflation rises at an extremely faster rate. The rate of inflation can increase from 50 times to 300 times.

The effects of hyperinflation can be devastating for the economy. The situation can lead to total collapse of the value of the currency of the economy along with economic crisis and rising external debt and fall in purchasing power of money.

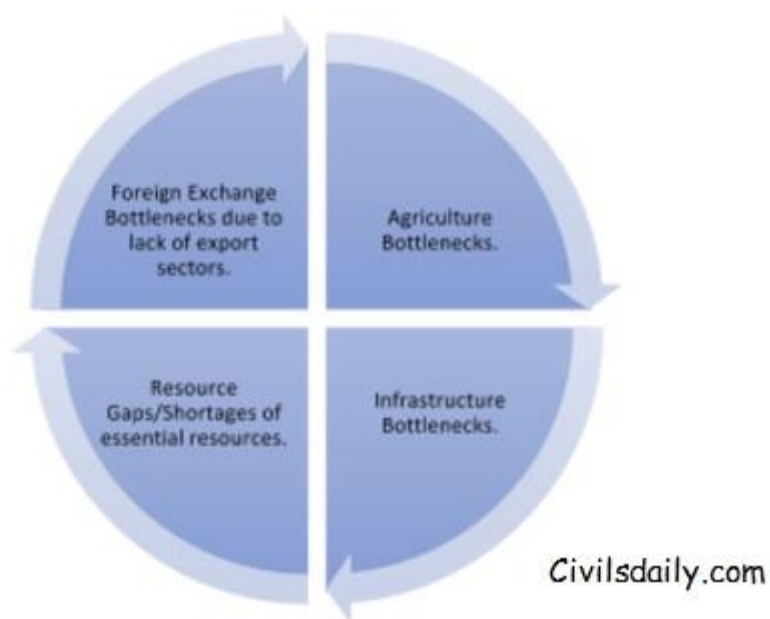
The major causes of the hyperinflation are; government issuing too much currency to finance its deficits; wars and political instabilities and unexpected increase in people's anticipation of future inflation.

When people anticipate that future inflation will rise at a very fast pace, they start consuming more goods and services due to the fear that higher inflation in the future will destroy the purchasing power of money. As a result of this, the demand for goods and services rises and fuels further inflation. The cycle continues and results in a hyperinflation scenario.

## Structural Inflation

- Structuralist Inflation is another form of Inflation mostly prevalent in the Developing and Low-Income Countries.
- The Structural school argues that inflation in the developing countries are mainly due to the weak structure of their economies.
- They further argue that increase in money supply and government expenditure could explain the inflationary scenario only partially.
- The Structuralist argues that the economies of developing countries like, Latin America and India are structurally underdeveloped as well as highly volatile due to the existence of weak institutions and imperfect working of markets.

- As a result of these imperfections, some sectors of the economy like agriculture will witness shortages of supply, whereas some sectors like consumer goods will witness excessive demand. Such economies face the problem of both shortages of supply, under utilisation of resources as well as excessive demand in some sectors.
- Example: In India, let's assume that the farmer produces fruits and vegetables at 10000 per quintal. But the final consumer gets the same at 20000 per quintal. The huge disparity between what farmer receives and consumer pays is due to infrastructure and agriculture bottlenecks. The bottleneck arises mainly due to lack of roads, highways, cold chains and underdeveloped agriculture markets. All these increases the cost of transporting goods from farmers to consumers leading to inflation.
- The major bottlenecks/road blocks of developing economies that fuels Structuralist form of inflation are:



## Deflation versus Disinflation

**Deflation:** Deflation is when the overall price level in the economy falls for a period of time.

**Disinflation:** Disinflation is a situation in which the rate of inflation falls over a period of time. Remember the difference; disinflation is when the inflation rate is falling from say 5% to 3%.

Deflation is when, for instance, the price of a basket of goods has fallen from Rs 100 to Rs 80. It's the reduction in overall prices of goods.

## Reaganomics

Reaganomics is a popular term used to refer to the economic policies of Ronald Reagan, the 40th U.S. president (1981–1989), which called for widespread tax cuts, decreased social spending, increased military spending and the deregulation of domestic markets. These economic policies were introduced in response to a prolonged period of economic stagflation that began under President Gerald Ford in 1976.

## Back to Basics:

## Headline versus Core Inflation

The headline inflation measure demonstrates overall inflation in the economy. Conversely, the core inflation measures exclude the prices of highly volatile food and fuel components from the inflation index.

The inflation process in India is dominated to a great extent by supply shocks. The supply shocks (e.g., rainfall, oil price shocks, etc.) are temporary in nature and hence produce only temporary movements in relative prices. The headline CPI inflation in India tends to increase whenever there is a surge in food and fuel prices. Since monetary policy is a tool to manage aggregate demand pressures, the response of the policy to such temporary shocks is least warranted according to traditional wisdom.

Core inflation excludes the highly volatile food and fuel components and therefore represents the underlying trend inflation. The trend inflation drives the future path of overall inflation. Hence, even when food and fuel inflation moderates over time, persistently high inflation in non-food, non-fuel components pose an upward risk to overall future inflation, creating challenges to monetary policy.

## **How to Control Inflation**

**Let's understand some basic relationship before proceeding further.**

### **Money Supply and Interest Rate**

The Money supply in an economy is controlled by the Central Banks. Whenever there is a threat of Inflation, the central bank intervenes to control the money supply to control the inflation.

The mechanism through which the central banks controls inflation depends on interest rate. Interest Rate and Money supply moves in opposite directions. As money supply is increased the interest has the tendency to fall and vice versa.

But why does it happen?

Suppose at any given point in time, the economy is suffering from low growth. The central bank intervenes by using its monetary policy tools (Bank Rate, Repo Rate, Statutory Liquidity Rate). The result of such loose monetary policy is increase in money supply in the economy.

The increased money supply means at any given point in time, there will be excess money in the economy than what the people are willing to hold. What will happen to this excess money? People will not want the excess money to be kept idle in their wallets. So they will try to invest it in alternative financial instruments like Bonds.

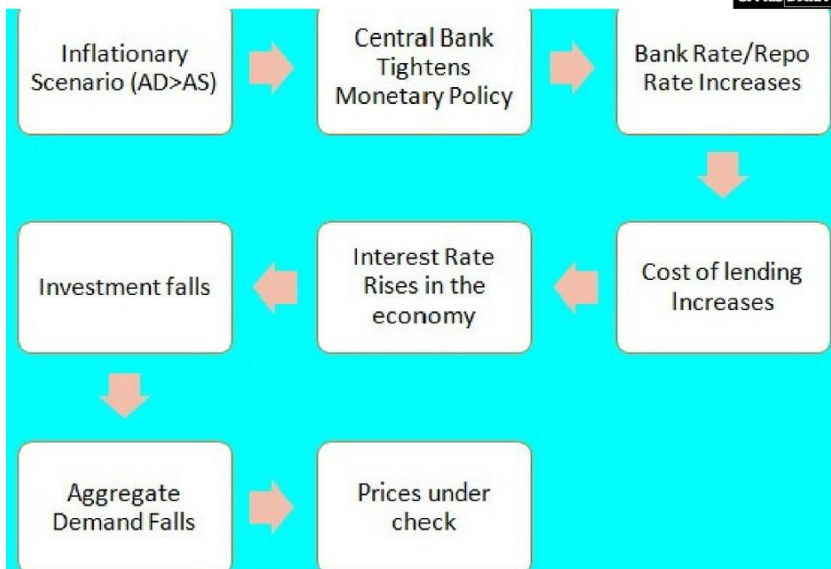
As a result of this, the demand for financial assets (Bonds) will increase which will lead to increase in the price of the bonds. **An established relation in financial economics is, as bond price rises, Interest will fall.**

**A Fall in interest rate>>> Increase in Investment>>> Increase in output/production>>> increase in employment and national income. Hence end of slowdown.**

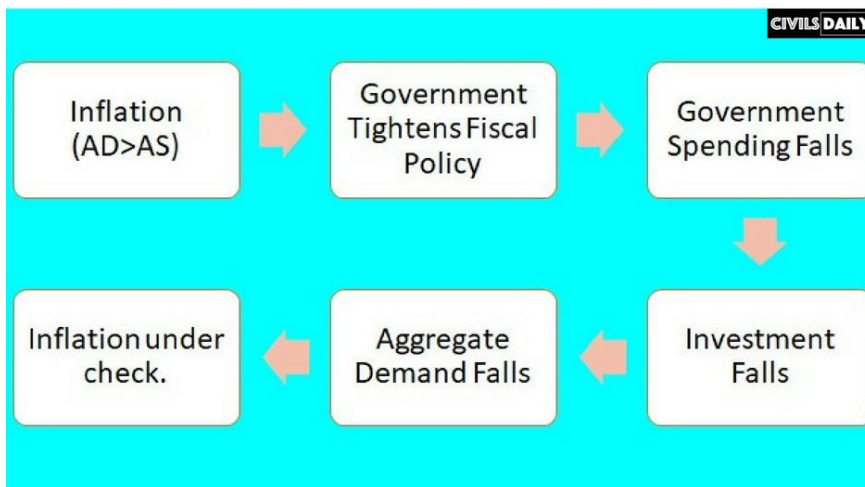
#### 1. Government Spending and Interest Rate.

Fiscal policy affects equilibrium income and the interest rate. An increase in government spending (expansionary fiscal policy) to boost economic activity will lead to increase in interest rate. This happens because, at any given point in time, the economy will have limited saving capacity. When the government increase its spending, it competes with the private sector for these limited saving. In the process, this tend to put upward pressure on the interest rate.

## **Monetary Policy and Inflation**



### Fiscal Policy and Inflation



### The Relationship Between Inflation and Interest Rate.

In order to understand the relationship between Inflation and Interest Rate, it is necessary to understand the distinction between Real interest rate and nominal Interest rate.

**Back to Basics:** Example, if you decide to deposit all your money (Rs 1 Lakh) in a Bank as Fixed Deposit, Banks will pay you Interest rate @ say 10%. The rate of interest that banks pay you is Nominal Interest Rate. Going by this logic, you will be expected to earn Rs 10,000 as interest on your Fixed deposit in a year. In the second year, you will be having Rs 1,10,000 in your bank account.

But what about the value or purchasing power of your deposit? Is the money worth Rs 1,10,000 is sufficient for you to buy the same basket of goods that you were purchasing last year? Will Rs 1,10,000 will buy you the same amount of goods, less amount of goods or more amount of goods will all depend on the rate of inflation in the economy.

Let's say, the inflation rate in the economy during the period is 20%. What will be the value of your deposit at 20% inflation rate?



The real value in terms of goods that can be purchased from Rs 1,10,000 is actually much less than what it used to be a year ago. The basket of goods that had cost Rs 10,0000 in the previous year is now costing Rs 1,20,000. But the bank has paid you only Rs 1,10,000 in return. The interest rate of the bank has failed to beat the inflation in the economy. Therefore, the real interest adjusted after inflation that the banks have paid you on your deposit is actually negative 10%.

Real Interest Rate= Nominal Interest Rate – Inflation Rate.  $-10 = 10 - 20$