UNIT V

AGGREGATE SUPPLY AND THE ROLE OF MONEY

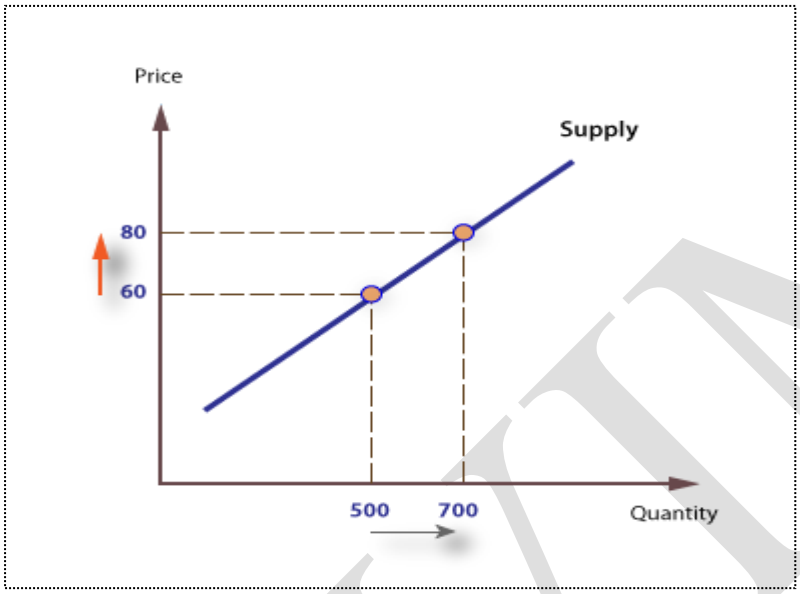
Short-run and Long-run supply curve – Unemployment and its impact – Okun‟s law – Inflation and the impact – reasons for inflation – Demand Vs Supply factors –Inflation Vs Unemployment tradeoff – Phillips curve –short- run and long-run –Supply side Policy and management- Money market- Demand and supply of money – money-market equilibrium and national income – the role of monetary policy.

Table of Contents

5.1 Short-run and Long-run Supply Curves

Short-run and Long-run Supply Curves, In the Fig. 24.1, we have given the supply curve of an individual seller or a firm. But the market price is not determined by the supply of an individual seller.

Rather, it is determined by the aggregate supply, i.e., the supply offered by all the sellers (or firms) put together. This is the supply of the whole industry. Thus, the supply curve of an industry depicts the various quantities of the product offered for sale by the industry at various prices at a given time.



Supply Curve

The quantities that the industry may offer to sell will depend on the price of its product in relation to the cost conditions of the firms. The cost conditions, in turn, depend on the prices of the factors of production or inputs used by the firms.

Short-run Supply Curve:

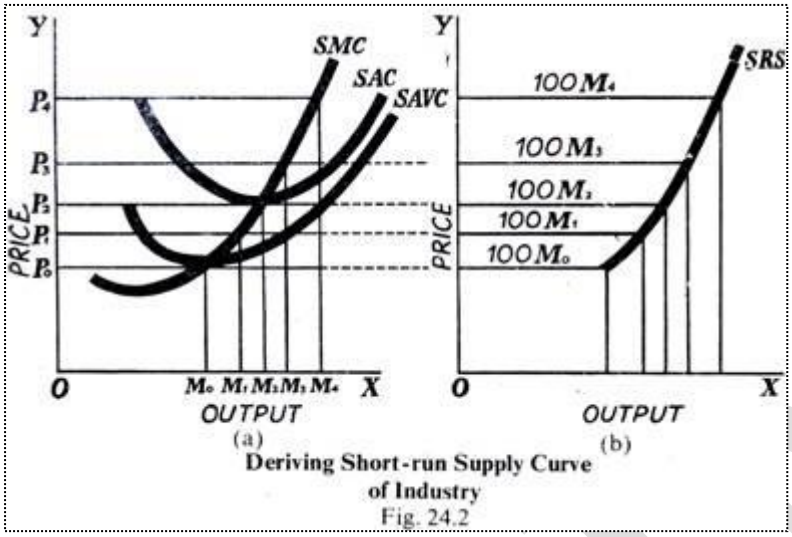
By 'short-run' is meant a period of time in which the size of the plant and machinery is fixed, and the increased demand for the commodity is met only by an intensive use of the given plant, i.e., by increasing the amount of the variable factors.

Under perfect competition, a firm produces an output at which marginal cost equals! Price. If the price is higher than the marginal cost, it will pay the firm to expand its output so as to equal its price. If, on the other hand, the price is less than the marginal cost, it is incurring a loss, and it will reduce its output till the marginal cost and the price are made equal. Hence, the marginal cost curve of the firm is the supply curve of the perfectly competitive firm in the short-run.

But, even in the short-run, a firm will not supply at a price below its minimum average variable cost. That is, in the short-run, a firm must try to cover its' Variable cost at

least. Hence, the short-run supply curve of a firm coincides with that portion of the short-run marginal cost curve which lies above the minimum point of the short-run average variable cost (SAVC) curve.

The following diagram [Fig. 24.2(a)) will make it clear:



Deriving Short-run Supply Curve of Industry
Fig. 24.2

Deriving Short-run Supply Curve of Industry

In this diagram, Fig. 24.2(a) relates to a firm and 24.2(b) gives the supply curve of the industry. First look at the Fig. 24.2(a), which relates to a single firm. Along the axis OX are represented the output supplied and along OY the prices. SMC curve is the short-run marginal cost curve, and, as mentioned above, it is the short-run supply curve of the firm. But only that portion of SMC curve which lies above the short-run average variable cost (SAVC), which means the thick portion above the dotted portion.

Thus, at the price OP0, OM0 output will be supplied, at OP1 price, OM1, quantity will be supplied at OP2 price, OM2 will be supplied, and so on. Nothing will be supplied below the price OP", because prices below OP0 correspond to the dotted portion of the SMC which is below the minimum point of the SAVC (short-run average variable cost) curve.

Now from the supply curve of a firm, let us derive the supply curve of the "entire" industry of which all the firms are a constituent par) The supply curve SRS of the industry "'is derived by the lateral summation (i.e., adding up sideways) of that part of all the firms' marginal cost curves which lies above the minimum point on their average friable cost curves. This industry is supposed to consist of 100 identical firms like the firm represented by the Fig. 24.2(a).

It can be seen that at OP,, price, 100 OM1 are supplied, at OP, price 100 OM , are supplied, at OP, price 100 OM, are supplied, and so on. We see that the short-run supply

curve SRC of the industry rises upwards, because the short-run marginal curve SMC rises upwards.

Long-run Supply Curve:

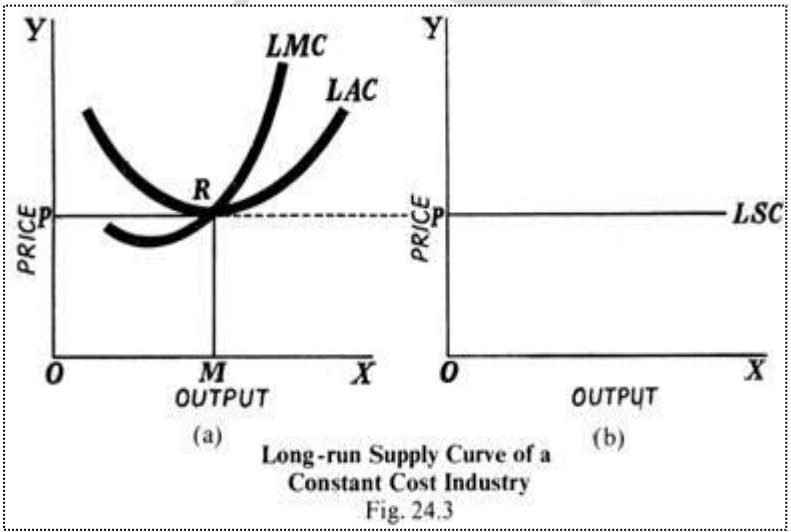
The long-run is supposed to be a period sufficiently long to allow changes to be made both in the size of the plant and in the number of firms in the industry. Whereas in the short period, an increase in demand is met by over-using the existing plant, in the long-run, it will be met not only by the expansion of the plants of the existing firms but also by the entry into the industry of new firms.

Moreover, we have seen that, in the short-run, a firm produces that output at which its marginal cost is equal to the price. But, in the long-run, the price must be equal to both the-marginal cost and the average cost. The reason is that an industry will be in equilibrium when all firms in the industry are making normal profits, and they will be making normal profits only if the price, i.e., average revenue (AR) is equal to average cost AC.

The shape of supply curve, in the long run, will depend on whether the industry is subject to the law of constant return (i.e., constant costs), or to diminishing returns (i.e., increasing costs) or to increasing returns (i.e., dimin-ishing costs). We show these curves below.

Supply Curve of Constant Cost Industry:

The supply curve of the constant cost industry is shown in the following diagram (Fig. 24.3).



Long-run Supply Curve of a Constant Cost Industry
Fig. 24.3

Long-run Supply curve of a Constant Cost Industry

In the Fig. 24.3(a) which relates to a firm, LMC is the long-run marginal cost curve, and LAC is the long-run average cost curve. They intersect at R which means that at the point R, the marginal cost is equal to the average cost. Here they are also equal to price OP. The output at this point is OM. Thus, at the output OM, MC = AC = Price.

Now look at the Fig. 24.3(b). Corresponding to OP price, the long-run supply curve is LSC, which is a horizontal straight line parallel to the X-axis. This means that whatever the output along the X-axis, price is the same OP where the marginal cost and average cost are equal. The cost remains the same, because it is a constant cost industry.

It is an industry in which, even if the output is increased (or decreased), the economies and diseconomies cancel out so that the cost of production does not change. Also, when new firms enter the industry to meet the increased demand, they do not raise or lower the cost per unit.

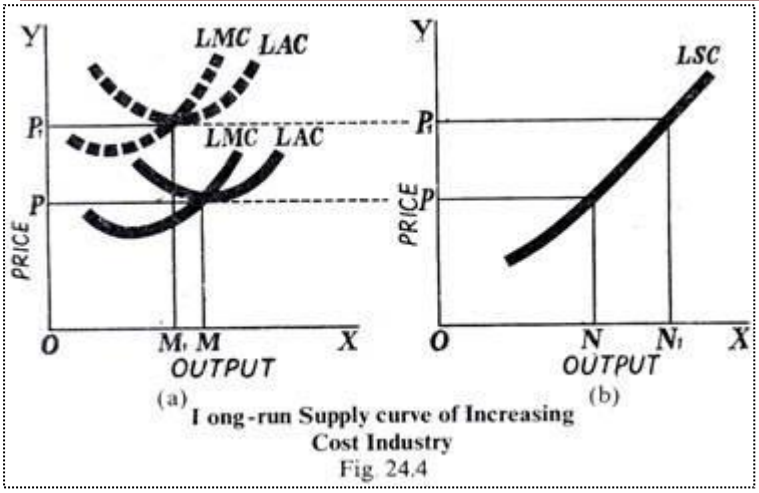
Thus, the industry is able to supply any amount of the commodity at the price OP which is equal to the minimum long-run average cost which ensures normal profit to all the firms engaged in the industry. That is, every firm will be in the long-run equilibrium where Price = MC = AC. All firms have identical cost conditions.

Hence, in the case of a constant cost industry, the long-run supply curve LSC is a horizontal straight line (i.e., perfectly elastic) at the price OP, which is equal to the minimum average cost. This means that whatever the output supplied, the price would remain the same.

Supply Curve of an Increasing Cost Industry:

In the case of an increasing cost industry, the cost of production increases as the existing firms expand or the new firms enter into the industry to meet an increase in demand. The external diseconomies outweigh the external economies. The increased demand for the productive resources required to produce larger output to meet increased demand for the product raises their prices resulting in higher cost of production.

The rise in costs will shift both the average and marginal cost curves upward and the minimum average cost will rise. This means that the additional supplies of the product will be forthcoming at higher prices, whether the additional supplies come from the expansion of the existing firms or from the new firms which may have entered the industry. All this is shown in the following diagram (Fig. 24.4).



Long-run Supply curve of Increasing Cost Industry
Fig. 24.4

Long-run Supply Cure of Increasing Cost Industry

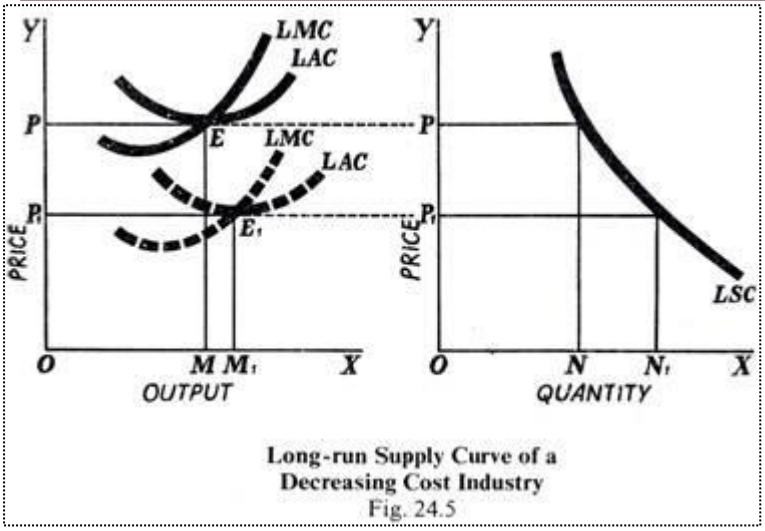
The Fig. 24.4(a) shows the position of individual firms. The position of the dotted LMC and LAC curves shows that they have been shifted upwards where each firm achieves a long-run equilibrium so that the price OP, =MC = AC. But, in the Fig. 24.4(b) which relates to the industry, we find that at the price OP i larger amount ON1 is supplied than at the price OP (i.e., ON).

This means that the long-run supply curve LSC slopes upwards to the right as the output supplied increases. That is, more will be supplied at higher prices. This is probably typical of the actual competitive world, because higher prices have to be paid for the scarce productive resources to attract them from other uses so that production in this particular industry may be increased. Thus, we see that in the case of an increasing cost industry, the long-run supply curve slopes upward to the right.

Supply Curve of a Decreasing Cost Industry:

In a decreasing cost industry, costs decrease as output is increased either by the expansion of the existing firms or by the entry of new firms. In this case, the economies of scale out-weight the diseconomies, if any. This happens when a young industry grows in a new territory where the supply of productive resources is plentiful. The net external economies will push the cost curves down so that the additional supplies of the output are forthcoming at lower prices.

The following diagram (Fig. 24.5) makes the whole thing clear:



Long-run Supply Curve of a Decreasing Cost Industry
Fig. 24.5

Long-run Supply Curve of a Decreasing Cost Industry

The Fig. 24.5(a) shows how the new, i.e., dotted LMC and LAC curves have been shifted downwards from their original position, when the LMC and LAC curves intersect at E where every firm was the equilibrium and was producing OM. The new curves intersect at E1 which means that, at this point, the firms in the industry have achieved the- long-run equilibrium, each producing OM, output, so-that the price OP =MC = AC. But looking at the Fig. 24.5(b), we find that, at OP1 price, ON is supplied which is more than ON supplied at the original price OP.

The LSC slopes downwards to the right which means that the additional supplies of the output are forthcoming at lower prices, since both the marginal cost and average cost have fallen owing to cheaper supplies of the productive resources.

……

5.2 Unemployment

Unemployment takes place when people have no jobs and they are willing and seeking for work. Some People give importance to the number of unemployed individuals but Economists focus on rate of unemployment which can be measure as dividing unemployed workers divided by all individuals in the labor force.

Unemployment Rates = Unemployed Workers / Total Labour Force

5.2.1 Types of unemployment

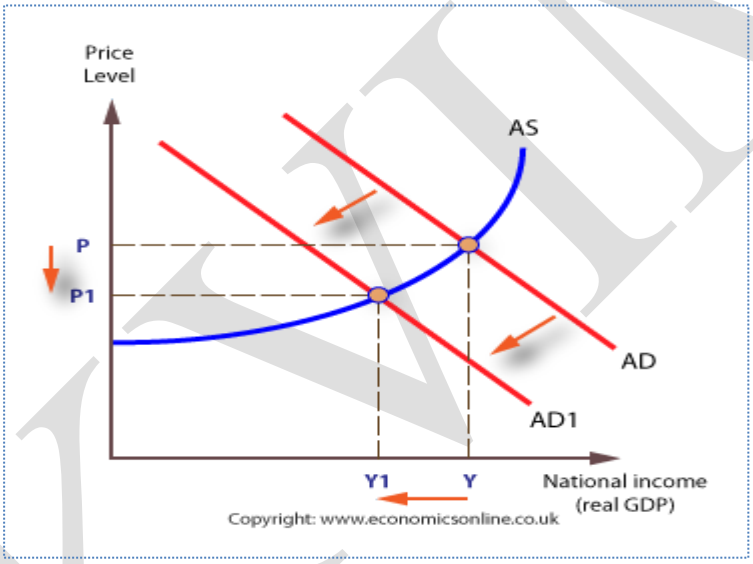
There are several types of unemployment, each one defined in terms of cause and severity.

1. Cyclical unemployment

Cyclical unemployment exists when individuals lose their jobs as a result of a downturn in aggregate demand (AD). If the decline in aggregate demand is persistent, and the unemployment long-term, it is called either *demand deficient*,*general*, or *Keynesian* unemployment. For example, unemployment levels of 3 million were reached in the UK in the last two recessions, between 1980 and 1982, and between 1990 and 1992. In the most recent recession of 2008-2010.

2. Demand deficient unemployment

This is caused by a lack of aggregate demand, with insufficient demand to generate full employment.



3. Structural unemployment

Structural unemployment occurs when certain industries decline because of long term changes in market conditions. For example, over the last 20 years UK motor vehicle production has declined while car production in the Far East has increased, creating structurally unemployed car workers. Globalisation is an increasingly significant cause of structural unemployment in many countries.

4. Regional unemployment

When structural unemployment affects local areas of an economy, it is called 'regional' unemployment. For example, unemployed coal miners in South Wales and ship workers in the North East add to regional unemployment in these areas.

5. Classical unemployment

Classical unemployment is caused when wages are 'too' high. This explanation of unemployment dominated economic theory before the 1930s, when workers themselves were blamed for not accepting lower wages, or for asking for too high wages. Classical unemployment is also called *real wage* unemployment.

6. Seasonal unemployment

Seasonal unemployment exists because certain industries only produce or distribute their products at certain times of the year. Industries where seasonal unemployment is common include farming, tourism, and construction.

7. Frictional unemployment

Frictional unemployment, also called *search unemployment*, occurs when workers lose their current job and are in the process of finding another one. There may be little that can be done to reduce this type of unemployment, other than provide better information to reduce the search time. This suggests that *full employment* is impossible at any one time because some workers will always be in the process of changing jobs.

8. Voluntary unemployment

Voluntary unemployment is defined as a situation when workers choose not to work at the current equilibrium wage rate. For one reason or another, workers may elect not to participate in the labour market. There are several reasons for the existence of voluntary unemployment including excessively generous welfare benefits and high rates of income tax. Voluntary unemployment is likely to occur when the equilibrium wage rate is below the wage necessary to encourage individuals to supply their labour.

5.2.2 Main Causes of Unemployment in India

The following are the main causes of unemployment:

(i) Caste System:

In India caste system is prevalent. The work is prohibited for specific castes in some areas. In many cases, the work is not given to the deserving candidates but given to the person belonging to a particular community. So this gives rise to unemployment.

(ii) Slow Economic Growth:

Indian economy is underdeveloped and role of economic growth is very slow. This slow growth fails to provide enough unemployment opportunities to the increasing population.

(iii) Increase in Population:

Constant increase in population has been a big problem in India. It is one of the main causes of unemployment. The rate of unemployment is 11.1% in 10th Plan.

(iv) Agriculture is a Seasonal Occupation:

Agriculture is underdeveloped in India. It provides seasonal employment. Large part of population is dependent on agriculture. But agriculture being seasonal provides work for a few months. So this gives rise to unemployment.

(v) Joint Family System:

In big families having big business, many such persons will be available who do not do any work and depend on the joint income of the family. Many of them seem to be working but they do not add anything to production. So they encourage disguised unemployment.

(vi) Fall of Cottage and Small industries:

The industrial development had adverse effect on cottage and small industries. The production of cottage industries began to fall and many artisans became unemployed.

(vii) Slow Growth of Industrialisation:

The rate of industrial growth is slow. Though emphasis is laid on industrialisation yet the avenues of employment created by industrialisation are very few.

(viii) Less Savings and Investment:

There is inadequate capital in India. Above all, this capital has been judiciously invested. Investment depends on savings. Savings are inadequate. Due to shortage of savings and investment, opportunities of employment have not been created.

(ix) Causes of Under Employment:

Inadequate availability of means of production is the main cause of under employment. People do not get employment for the whole year due to shortage of electricity, coal and raw materials.

(x) Defective Planning:

Defective planning is the one of the cause of unemployment. There is wide gap between supply and demand for labour. No Plan had formulated any long term scheme for removal of unemployment.

(xi) Expansion of Universities:

The number of universities has increased manifold. There are 385 universities. As a result of this educated unemployment or white collar unemployment has increased.

(xii) Inadequate Irrigation Facilities:

Even after the completion of 9th five plans, 39% of total cultivable area could get irrigation facilities.

Due to lack of irrigation, large area of land can grow only one crop in a year. Farmers remain unemployed for most time of the year.

(xiii) Immobility of labour:

Mobility of labour in India is low. Due to attachment to the family, people do not go to far off areas for jobs. Factors like language, religion, and climate are also responsible for low mobility. Immobility of labour adds to unemployment.

5.2.3 Impact of unemployment in economy

Some of the well-known effects of unemployment on the economy are:

Unemployment financial costs

The government and the nation suffer. In many countries the government has to pay the unemployed some benefits. The greater the number of the unemployed or the longer they are without work the more money the government has to shell out. Therefore, the nation not only has to deal with the lost income and decreased production but also with additional cost.

Spending power

The spending power of an unemployed person and his/her family decreases drastically and they would rather save than spend their money, which in turn affects the economy adversely.

Reduced spending power of the employed

Increased taxes and the insecurity about their own work may affect the spending power of the working people as well and they too may start to spend less than before thus affecting the economy and also the society in a negative manner.

Recession

With the increase rates of unemployment other economy factors are significantly affected, such as: the income per person, health costs, quality of health-care, standard of leaving and poverty.

All these affect not just the economy but the entire systems and the society in general. Here are some aspects of the impact of unemployment on our society:

The effect of unemployment on our society

Unemployment affects not just the person himself but also his/her family and in the long run the society where he lives.

Unemployment brings with it despair, unhappiness and anguish. It forces people to live their lives in a way they do not wish to – The life expectancy is negatively affected. Life expectancy is the ease by which people living in a time/place are able to satisfy their needs/wants. Here are the main aspects:

1. **Mental health:** Mental health problems like: Law self-confidence, feeling unworthy, depression and hopelessness. With the lost income and the frustration involved in it, the recently unemployed may develop negative attitudes toward common things in life and may feel that all sense of purpose is lost. Frequent emotions could be – low self-esteem, inadequateness and feeling dejected and hopeless.
2. **Health diseases:** The unemployment overall tension can increase dramatically general health issues of individuals.
3. **Tension at home:** Quarrels and arguments at home front which may lead to tension and increased numbers of divorces etc.
4. **Political issues**: Loss of trust in administration and the government which may lead to political instability
5. **Tension over taxes rise:** Unemployment also brings up discontent and frustration amongst the tax paying citizens. In order to meet the demands of the unemployment fund the government many a times may have to increase the taxes thus giving way to restlessness amongst the tax paying citizens.
6. **Insecurity amongst employees:** The prevailing unemployment and the plight of the unemployed people and their families may create fear and insecurity even in the currently employed people.
7. **Crime and violence:** Increase in the rate of crime.
8. **Suicide cases:** Increase in the rate of suicide attempts and actual suicides as well.

9. **Social outing:** Unemployment may bring a decrease in social outings and interactions with other people, including friends.
10. **Stigma:** Unemployment brings with more than just 'no work'. It also brings with it the disgrace that the person has to bear. Nobody likes to be termed as unemployed.
11. **Standard of leaving:** In times of unemployment the competition for jobs and the negotiation power of the individual decreases and thus also the living standard of people with the salaries packages and income reduced.
12. **Employment gaps:** To further complicate the situation the longer the individual is out of job the more difficult it becomes to find one. Employers find employment gasps as a negative aspect. No one wants to hire a person who has been out of work for some time even when there's no fault of the individual per say.
13. **Lose of skills' usage:** The unemployed is not able to put his/her skills to use. And in a situation where it goes on for too long the person may have to lose some of his/her skills.

5.2.4 Strategies to Reduce Unemployment

Here we detail about the six employment strategies used to reduce employment.

Use of Labour-intensive Technology:

Both the organised and un-organised sectors must adopt labour-intensive technology if sufficient employment opportunities are to be generated in both the rural and urban sectors of the economy.

The decline in employment elasticity of output growth is primarily due to the increasing trend in capital intensity in the organised industrial sector as well as in agriculture.

Increasing mechanization of agriculture in various states has lowered the employment elasticity of growth of agricultural output. Therefore, for raising labour intensity, suitable monetary and fiscal measures need to be adopted to discourage the use of capital-intensive techniques.

Of course, the use of labour-intensive techniques with lower productivity of workers in the industry and agriculture may lower the growth of output. Thus, there might be same trade off between employment and growth of output. In our view due to the seriousness of unemployment problem some output growth should be sacrificed for the sake of more employment.

Accelerating Investment in Agriculture:

Second, an important reason for slow growth of employment in agriculture and rural sector has also been a shortfall in investment or capital formation in agriculture. Both the public and private sector investment in agriculture has declined since the early nineties. Of special importance from the viewpoint of employment generation is investment in irrigation, rural roads, flood control projects, power generation and other infrastructure.

The announcement by the government to furnish more credit to farmers at lower than market rates of interest from commercial banks will also ensure that the small and medium farmers will be able to buy fertilizers, other high-yielding inputs, and arrange for their irrigation.

This will raise their productivity and tend to reduce under-employment and disguised unemployment. Despite more than five decades of planned industrial development, agriculture continues to be principal source of employment in the Indian economy. Though the share of GDP from agriculture has come down to around 22 per cent, still about 58 per cent of labour force continues to be employed in agriculture. In fact, agriculture continues to be the parking lot of the unemployed in the country.

Diversification of Agriculture:

Besides there is urgent need for diversification of agriculture. For example, there is an urgent need for a relative shift from growing of crops to horticulture, vegetable production, floriculture, animal husbandry, fisheries etc. which are more labour absorbing and higher income-yielding. In addition to this, promotion of agro-processing industries for export purposes has a large employment potential.

For the rapid growth of employment opportunities in agriculture and related sectors and agro-processing industries, investment in infrastructure including irrigation, rural reads, power supply, and development of agricultural markets are required.

Labour-Intensive Industrial Growth:

For solving unemployment problem in the urban areas, the organised industrial sector must also absorb a sufficient number of workers. The failure of the organised industrial sector to generate enough employment opportunities is due to the use of capital-intensive technologies imported from abroad.

The tendency to use the higher capital-intensive technology by the Indian industries in the post reform period has been intensified because they are trying to improve competitiveness to face competition from imported commodities.

The other factor responsible for the use of higher capital intensive technologies is the factor-price distortions such as cheap capital and relatively higher wages of workers who have strong labour unions. Capital has become relatively cheap due to various fiscal concessions such as liberal depreciation and investment allowance and low interest rates on borrowed funds for investment. Consequent to the use of high capital-intensive technologies in our industries the labour productivity has been increasing while employment has been growing at a snail pace.

Therefore, to encourage the use of relatively more labour-intensive technologies and thereby to generate more employment opportunities, fiscal and monetary concessions mentioned above on use of capital must be withdrawn. In this case there is bound to be some loss of workers' productivity. Therefore, this will involve some trade-off between employment and output. In our view, because unemployment problem is very serious and greatly hurts people's welfare, some growth of output is worth sacrificing for more employment opportunities.

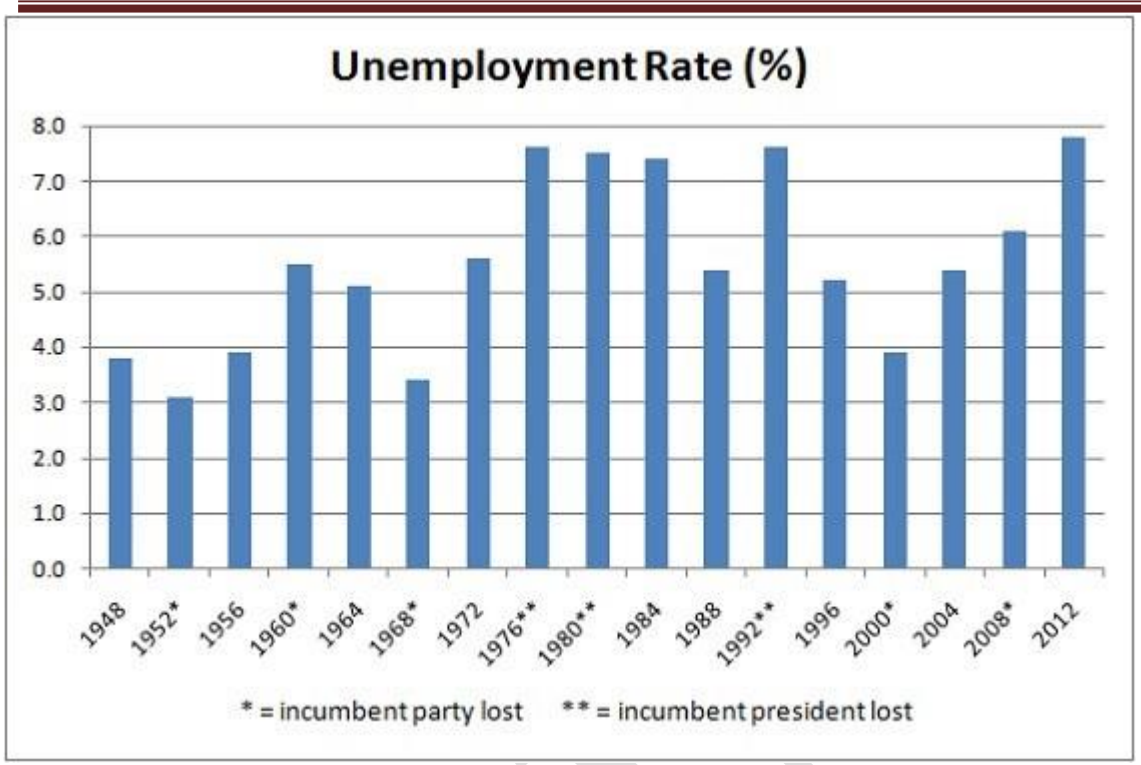
Services and Employment Growth:

The growth of services in India has a large employment potential. In 1993-94 to 1999-2000, next to the construction sector the employment elasticity of output growth in services was higher and was estimated at about 0.50. Of special mention are software services and BPO (Business Processing Outsourcing) which have a lot of employment potential, especially for the educated youth of the country.

The other services such as finance, insurance, trade, hotels, and restaurants have also a lot of employment potential. But an important thing to note is that growth of these services is dependent on industrial and agricultural growth in the economy.

Education, Health and Employment Generation:

Lastly, the expansion of education and health care not only promotes accumulation of human capital and thereby contributes to growth of output, it will also generate a good deal of employment opportunities. More schools, hospitals, health care clinics in the rural and urban areas will not only create employment during their construction but also, and more important, when they start working to provide education and health services. Their working provides employment to both the educated and unskilled persons. Therefore, a higher allocation of resources is required to be made for them in government budgets and in our future plans.



5.3 Okun's Law: The Basics

In its most basic form, Okun's law investigates the statistical relationship between a country's unemployment rate and the growth rate of its economy. The economics research arm of the Federal Reserve Bank of St. Louis explains that Okun's law "is intended to tell us how much of a country's gross domestic product (GDP) may be lost when the unemployment rate is above its natural rate." It goes on to explain that "the logic behind Okun's law is simple. Output depends on the amount of labor used in the production process, so there is a positive relationship between output and employment.

Total employment equals the labor force minus the unemployed, so there is a negative relationship between output and unemployment (conditional on the labor force)."

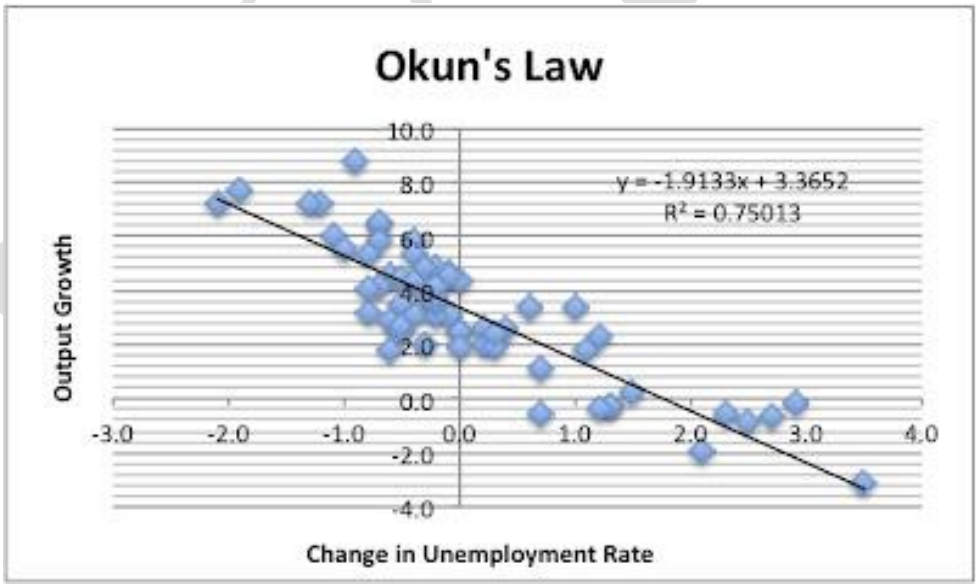
Yale professor and economist, Arthur Okun, was born in November 1928 and passed away in March 1980 at the age of 51. He first published his findings on the subject in the early 1960s, which have since come to be known as his "law." Okun's Law is, in essence, a rule of thumb to explain and analyze the relationship between jobs and growth. A talk from former Federal Reserve Chairman, Ben Bernanke, perhaps most succinctly summarizes Okun's law basic concepts:

"That rule of thumb describes the observed relationship between changes in the unemployment rate and the growth rate of real gross domestic product (GDP). Okun noted that, because of ongoing increases in the size of the labor force and in the level of productivity, real GDP growth close to the rate of growth of its potential is normally required, just to hold the unemployment rate steady. To reduce the unemployment rate, therefore, the economy must grow at a pace above its potential.

More specifically, according to [the] currently accepted versions of Okun's law, to achieve a 1 percentage point decline in the unemployment rate in the course of a year, real GDP must grow approximately 2 percentage points faster than the rate of growth of potential GDP over that period. So, for illustration, if the potential rate of GDP growth is 2%, Okun's law says that GDP must grow at about a 4% rate for one year to achieve a 1 percentage point reduction in the rate of unemployment."

A More Detailed Look at Okun's Law

It is most important to note that Okun's law is a statistical relationship that relies on a regression of unemployment and economic growth. As such, running the regression can result in differing coefficients that are used to solve for the change in unemployment, based on how the economy grew. It all depends on the time periods used and inputs, which are historical GDP and employment data. Below is an example of an Okun's law regression:



The law has indeed "evolved," or changed over time to fit the current economic climate and employment trends at the time. One version of Okun's law has stated very simply that when unemployment falls by 1%, GNP rises by 3%. Another version of Okun's Law focuses on a relationship between unemployment and GDP, whereby a percentage increase in unemployment causes a 2% fall in GDP.

A *Bloomberg* article integrating data from the highly volatile Great Recession period noted that "the rule of thumb holds that for every percentage point that year-over-year growth exceeds the trend rate - which Federal Reserve policy makers peg at between 2.3 and 2.6% - unemployment drops by half a percentage point." Notice the varying uses of economic growth, such as GNP and GDP, as well as what qualifies as potential economic growth measures.

When it comes to studying the economy, growth and jobs are two primary factors economists must consider. There is a clear relationship between the two, and many economists have framed the discussion by trying to study the relationship between economic growth and unemployment levels. Economist Arthur Okun first started tackling the discussion in the 1960s, and his research on the subject has since become known as Okun's law. Below is a more detailed overview of Okun's Law, why it is important and how it stood the test of time since first being published.

How Useful Is Okun's Law?

At this point, it is important to make a determination on the overall usefulness of Okun's law. Despite the fact that there are in reality many moving parts to the relationship between unemployment and economic growth, there does appear to be empirical support for the law. The Kansas City Fed study concluded that "Okun's law is not a tight relationship," but that "Okun's law predicts that growth slowdowns typically coincide with rising unemployment." Regarding the fact it did not hold up that well during the financial crisis, Bernanke speculated that "the apparent failure of Okun's law could reflect, in part, statistical noise."

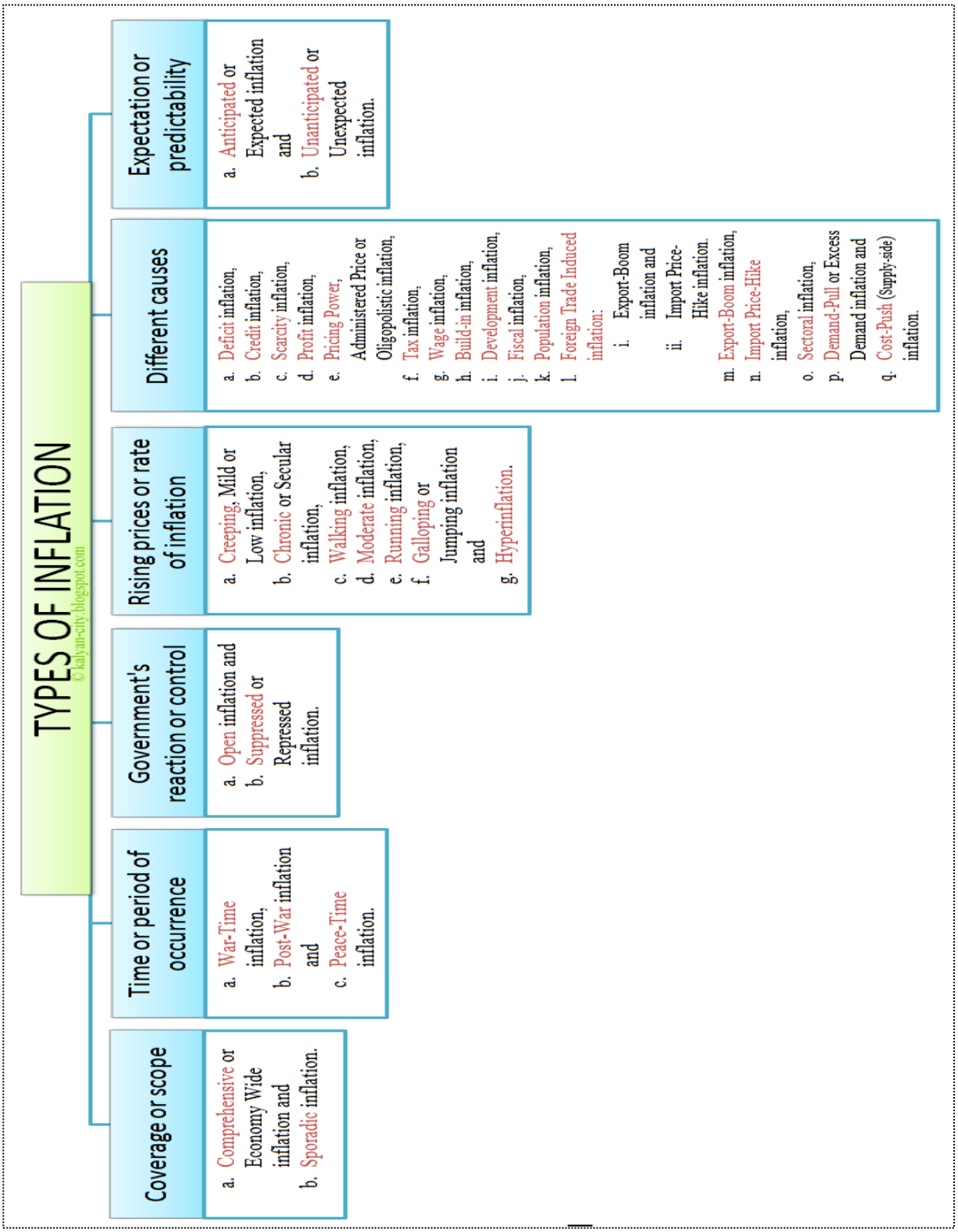
Overall, there is little debate that Okun's law represents one of the most straightforward and convenient methods to investigate the relationship between economic growth and employment. One of the key benefits of Okun's law is its simplicity, a benefit shared by portfolio management, and the ability to simply state that a 1% decrease in unemployment will occur when the economy grows about 2% faster than expected. Additionally, his law has been studied extensively since it was first published. Finally, there has been plenty of history over the past five decades, since Okun's first works were published, to put it to the test.

5.4 Inflation

A sustained, rapid increase in prices, as measured by some broad index (such as Consumer Price Index) over months or years, and mirrored in the correspondingly decreasing purchasing power of the currency.

A more exact definition of inflation is a situation of 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 Thus, one may observe different types of inflation in the contemporary society: Inflation is basically a rise in prices.

5.4.1 Types of inflation



The list is as follows:

Coverage or scope:

1. Comprehensive or Economy-Wide Inflation, and
2. Sporadic Inflation.

Time of occurrence:

1. War-Time Inflation,
2. Post-War Inflation, and
3. Peace-Time Inflation.

Government's reaction or control:

1. Open Inflation, and
2. Suppressed or Repressed Inflation.

Rising prices:

1. Creeping, Mild or Low Inflation,
2. Chronic or Secular Inflation,
3. Walking or Trotting Inflation,
4. Moderate Inflation,
5. Running Inflation,
6. Galloping or Jumping Inflation, and
7. Hyperinflation.

Different causes:

1. Deficit Inflation,
2. Credit Inflation,
3. Scarcity Inflation,
4. Profit Inflation,
5. Pricing Power, Administered Price or Oligopolistic Inflation,
6. Tax Inflation,
7. Wage Inflation,
8. Build-In Inflation,
9. Development Inflation,
10. Fiscal Inflation,
11. Population Inflation,
12. Foreign Trade Induced Inflation:
13. Export-Boom Inflation, and
14. Import Price-Hike Inflation.
15. Sectoral Inflation,
16. Demand-Pull or Excess Demand Inflation, and
17. Cost-Push (Supply-side) Inflation.

Expectation or predictability:

1. Anticipated or Expected Inflation, and
2. Unanticipated or Unexpected Inflation

Coverage:

1. **Comprehensive Inflation:**

When the prices of all commodities rise in the entire economy, it is known as Comprehensive Inflation. Economy-Wide Inflation is its another name.

2. **Sporadic Inflation:**

Time when prices of only a few commodities in some regions (areas) rise, it is called Sporadic Inflation. It is sectional in nature. For example, increase in food prices due to bad monsoon (winds that bring seasonal rains in India).

Time and period of occurrence

1. **War-Time Inflation:**

Inflation that takes place during the period of a warlike situation is Wartime Inflation. During war, scant productive resources are all diverted and prioritized to manufacture military goods and equipments. Overall it results in very limited supply and extreme shortage (low availability) of resources (raw materials) to produce essential commodities. Production and supply of needed goods slow down and can no longer meet the soaring demand from people. Consequently, prices of necessary goods keep on rising in the market, resulting in Wartime Inflation.

2. **Post-War Inflation:**

Inflation that takes place soon after a war is a Post-War Inflation. After the war, government controls are relaxed, resulting in a faster hike in prices than what experienced during the war.

3. **Peace-Time Inflation:**

When prices rise during the peace period, it is known as Peacetime Inflation. It is due to enormous government expenditure or spending on capital projects of a long gestation (development) time.

The types of inflation based on the government's reaction or its degree of control:

1. **Open Inflation:**

When government does not attempt to restrict inflation, it is known as an Open Inflation. In a free-market economy, where prices are allowed to take its course, Open Inflation occurs.

2. **Suppressed Inflation:**

When government prevents the price rise through price controls, rationing, etc., it is known as Suppressed Inflation. Repressed Inflation is its another name. However, when government removes its controls, it becomes Open Inflation. It then leads to corruption, black marketing, artificial scarcity, etc

The types of inflation based on the rising prices

1. **Creeping Inflation:**

When prices are gently rising, it is referred as Creeping Inflation. It is the mildest form of inflation and also known as a Mild Inflation or Low Inflation. According to R.P. Kent, when prices rise by not more than (i.e. Up to) 3% per annum (year), it is called Creeping Inflation.

2. **Chronic Inflation:**

If creeping inflation persists (continues to increase) for a longer period, then it is often called as Chronic or Secular Inflation. Chronic-Creeping Inflation can be either Continuous (which remains consistent without any downward movement) or Intermittent (which occurs at regular intervals). It is named chronic because if an inflation rate continues to grow for a longer period without any downturn, then it possibly leads to Hyperinflation.

3. **Walking Inflation:**

When the rate of rising prices is more than the Creeping Inflation, it is known as Walking Inflation. Trotting Inflation is its another name. When prices rise by more than 3%, but less than 10% per annum (i.e., between 3%, and 10% per annum), it is called as Walking Inflation. According to some economists, we must take Walking Inflation seriously as it gives a cautionary signal for the occurrence of Running inflation. Furthermore, if, not checked in due time, it can eventually result in Galloping Inflation.

4. **Moderate Inflation:**

Prof. Samuelson clubbed together concept of Creeping and Walking inflation into Moderate Inflation. It happens when prices rise by less than 10% per annum (single digit inflation rate). According to him, it is a stable inflation and not a serious economic problem.

5. **Running Inflation:**

A rapid acceleration in the rate of rising prices is called Running Inflation. It occurs when prices rise by more than 10% in a year. Though economists have not suggested a fixed range for measuring running inflation, we may consider a price increase between 10% to 20% per annum (double-digit inflation rate) as a Running Inflation.

6. Galloping Inflation:

According to Prof. Samuelson, if prices rise by dual or triple digit inflation rates like 30% or 400% or 999% yearly, then the situation can be termed as Galloping Inflation. When prices rise by more than 20%, but less than 1000% per annum (i.e. Between 20% to 1000% per annum), Galloping Inflation occurs. Jumping Inflation is its another name. India has been witnessing it from second five-year plan period.

It is a situation where the prices rise at an alarming high rate. The prices rise so fast that it becomes very difficult to measure its magnitude. However, in quantitative terms, when prices rise above 1000% per annum (quadruple or four-digit inflation rate), it is termed as Hyperinflation. During a worst-case scenario of hyperinflation, the value of the national currency (money) of an affected country reduces almost to zero. Paper money becomes worthless, and people start trading either in gold and silver or sometimes even use the old barter system of commerce. Two worst examples of hyperinflation recorded in the world history are of those experienced by Hungary in the year 1946 and Zimbabwe during 2004-2009 under Robert Mugabe's regime.

The types of inflation based on different or miscellaneous causes:

1. **Deficit Inflation** takes place due to deficit financing.
2. **Credit Inflation** occurs due to excessive bank credit or the money supply in the economy.
3. **Scarcity Inflation** occurs due to hoarding. Hoarding is an excess accumulation of necessary commodities by unscrupulous traders and black marketers. It is practiced to create an artificial shortage of essential goods like food grains, kerosene, etc. With an intention to sell them only at higher prices to make huge profits during Scarcity Inflation. Though hoarding is an unfair trade practice and a punishable criminal offense still, some crooked merchants often get themselves engaged in it.
4. **Profit Inflation:**

   When entrepreneurs are interested in boosting their profit margins, prices rise.

5. **Pricing Power Inflation:**

   Usually, it is referred as Administered Price Inflation. It occurs when industries and business houses increase the price of their goods and services with an objective to boost their profit margins. It does not occur during a financial crisis and economic depression, and not seen when there is a downturn in the economy. As Oligopolies have an ability to set prices of their goods and services, it is also called as an Oligopolistic Inflation.
6. **Tax Inflation:**

   Due to the rising indirect taxes, sellers charge high price to the consumers.

7. **Wage Inflation:**

   If the rise in wages in not accompanied by an increase in output, prices rise.

8. **Build-In Inflation:**

   Vicious cycle of Build-In Inflation gets induced by adaptive expectations of workers or employees who try to keep their wages or salaries high in anticipation of inflation. Employers and Organizations raise the prices of their respective goods and services in anticipation of the workers or employees' demands. This overall forms a vicious cycle of rising wages followed by an increase in general prices of commodities. If this cycle continues, then it keeps on accumulating inflation at each round turn and thereby results in a Build-In Inflation.

9. **Development Inflation:**

   During the process of the development of an economy, income increases, causing an increase in demand and rise in prices.

10. **Fiscal Inflation:**

    It occurs due to excess government expenditure or spending when there is a budget deficit.

11. **Population Inflation:**

    Prices rise due to a rapid increase in population.

12. **Foreign Trade Induced Inflation:** It has two categories, viz.,

    i. **Export-Boom Inflation:** Considerable increase in exports may cause a shortage at home (within exporting country) and results in price rise (within exporting country).

    ii. **Import Price-Hike Inflation:** If a country imports goods from a foreign country and the prices of these goods increases due to inflation abroad, then the prices of domestic products using imported goods also rise. If the oil prices in the international market fall, then the Import Price-Hike Inflation also slows down, and vice-versa.

13. **Sectoral Inflation:**

    It occurs when there is a rise in the prices of goods and services produced by certain sectors of the industries. For instance, if prices of the crude oil increase, then it will also affect all other sectors or areas (like aviation, road transportation, etc.) which are directly dependent on the oil industry. For example, if oil prices hike, air ticket fares and road transportation cost will increase.

14. **Demand-Pull Inflation:**

    Inflation, which arises due to various factors like rising income, exploding population, etc., leads to aggregate demand and exceeds aggregated supply, and tends to raise prices of goods and services. Excess Demand Inflation is its another name.

15. Cost-Push Inflation:

When prices rise due to the growing cost of production of goods and services, it is known as Cost-Push (Supply-side) Inflation. For example, if the wages of workers get raised, then the unit cost of production also increases. As a result, the prices of end products and services being manufactured and supplied are consequently, hiked.

The types of inflation based on the expectation or predictability:

1. **Anticipated Inflation:**

If the rate of inflation corresponds to what the majority of people are either expecting or predicting, then is called Anticipated Inflation. Expected Inflation is its another name.

2. **Unanticipated Inflation:**

If the rate of inflation corresponds to what the majority of people are neither anticipating nor predicting, then is called Unanticipated Inflation. Unexpected Inflation is its another name.

How is Inflation Measured in India

- In India, inflation is measured on two price indices, viz, wholesale price index (WPI) and consumer price index (CPI). WPI measures price rise or inflation at the level of seller or retailer who buy commodities in bulk or 'whole sale'. CPI is also called retail inflation since it measures inflation at the retail or consumer level. In India, WPI is the basis for determining the inflation of the economy.
- About Wholesale Price Index (WPI)
- WPI is measured on weekly basis. The first index of wholesale prices commenced in India for the week January 10, 1942. The base year of WPI is revised periodically. Till date, 5 revisions have take place. The current WPI base year is 2004-05 based on prices of 670 commodities.
- Recently, a Working Group was set up under chairmanship of Prof. Abhijit Sen to recommend new series of WPI. The committee recommendations have been accepted by the govt.
- For determining WPI, commodities are divided into three categories – Primary Articles (102 items), Fuel & Power (19 items), and Manufactured Products (555 items). As you can see, the weight assigned to manufacturing is highest at 82% followed by primary articles like fruits and vegetables.
- About Consumer Price Index (CPI)

- Unlike WPI, there is not a single measure of CPI. In India, four CPI indices are used to determine inflation at the consumer level. These are: CPI-IW (Industrial Worker), CPI-UNME (Urban Non-Manual Employees), CPI-AL (Agricultural Labourers), and CPI-RL (Rural Labourers).
- Unlike the WPI, the new series of CPI based on recommendations of Abhijit Sen committee assigns the highest weight to primary articles like food, beverages and tobacco (49%).

5.4.2 Effects of Inflation:

People's desires are inconsistent. When they act as buyers they want prices of goods and services to remain stable but as sellers they expect the prices of goods and services should go up. Such a happy outcome may arise for some individuals; "but, when this happens, others will be getting the worst of both worlds."

When price level goes up, there is both a gainer and a loser. To evaluate the consequence of inflation, one must identify the nature of inflation which may be anticipated and unanticipated. If inflation is anticipated, people can adjust with the new situation and costs of inflation to the society will be smaller.

In reality, people cannot predict accurately future events or people often make mistakes in predicting the course of inflation. In other words, inflation may be unanticipated when people fail to adjust completely. This creates various problems.

One can study the effects of unanticipated inflation under two broad headings:

(a) Effect on distribution of income and wealth; and

(b) Effect on economic growth.

(a) Effects of Inflation on Distribution of Income and Wealth:

During inflation, usually people experience rise in incomes. But some people gain during inflation at the expense of others. Some individuals gain because their money incomes rise more rapidly than the prices and some lose because prices rise more rapidly than their incomes during inflation. Thus, it redistributes income and wealth.

Though no conclusive evidence can be cited, it can be asserted that following categories of people are affected by inflation differently:

(i) Creditors and debtors:

Borrowers gain and lenders lose during inflation because debts are fixed in rupee terms. When debts are repaid their real value declines by the price level increase and, hence, creditors lose. An individual may be interested in buying a house by taking loan of Rs. 7 lakh from an institution for 7 years.

The borrower now welcomes inflation since he will have to pay less in real terms than when it was borrowed. Lender, in the process, loses since the rate of interest payable remains unaltered as per agreement. Because of inflation, the borrower is given 'dear' rupees, but pays back 'cheap' rupees. However, if in an inflation-ridden economy creditors chronically loose, it is wise not to advance loans or to shut down business.

Never does it happen. Rather, the loan-giving institution makes adequate safeguard against the erosion of real value. Above all, banks do not pay any interest on current account but charges interest on loans.

(ii) Bond and debenture-holders:

In an economy, there are some people who live on interest income—they suffer most. Bondholders earn fixed interest income: These people suffer a reduction in real income when prices rise. In other words, the value of one's savings decline if the interest rate falls short of inflation rate. Similarly, beneficiaries from life insurance programmes are also hit badly by inflation since real value of savings deteriorate.

(iii) Investors:

People who put their money in shares during inflation are expected to gain since the possibility of earning of business profit brightens. Higher profit induces owners of firm to distribute profit among investors or shareholders.

(iv) Salaried people and wage-earners:

Anyone earning a fixed income is damaged by inflation. Sometimes, unionised worker succeeds in raising wage rates of white-collar workers as a compensation against price rise. But wage rate changes with a long time lag. In other words, wage rate increases always lag behind price increases. Naturally, inflation results in a reduction in real purchasing power of fixed income-earners.

On the other hand, people earning flexible incomes may gain during inflation. The nominal incomes of such people outstrip the general price rise. As a result, real incomes of this income group increase.

(v) Profit-earners, speculators and black marketers:

It is argued that profit-earners gain from inflation. Profit tends to rise during inflation. Seeing inflation, businessmen raise the prices of their products. This results in a bigger profit. Profit margin, however, may not be high when the rate of inflation climbs to a high level.

However, speculators dealing in business in essential commodities usually stand to gain by inflation. Black marketers are also benefited by inflation.

Thus, there occurs a redistribution of income and wealth. It is said that rich becomes richer and poor becomes poorer during inflation. However, no such hard and fast generalisation can be made. It is clear that someone wins and someone loses during inflation.

These effects of inflation may persist if inflation is unanticipated. However, the redistributive burdens of inflation on income and wealth are most likely to be minimal if inflation is anticipated by the people. With anticipated inflation, people can build up their strategies to cope with inflation.

(b) Effect on Production and Economic Growth:

Inflation may or may not result in higher output. Below the full employment stage, inflation has a favourable effect on production. In general, profit is a rising function of the price level. An inflationary situation gives an incentive to businessmen to raise prices of their products so as to earn higher volume of profit. Rising price and rising profit encourage firms to make larger investments.

As a result, the multiplier effect of investment will come into operation resulting in a higher national output. However, such a favourable effect of inflation will be temporary if wages and production costs rise very rapidly.

5.4.2 Causes of inflation

Inflation means there is a sustained increase in the price level. The main causes of inflation are either excess aggregate demand (economic growth too fast) or cost push factors (supply-side factors).

1. Demand-pull inflation

If the economy is at or close to full employment, then an increase in AD leads to an increase in the price level. As firms reach full capacity, they respond by putting up prices leading to inflation. Also, near full employment with labour shortages, workers can get higher wages which increase their spending power.

We tend to get demand-pull inflation if economic growth is above the long-run trend rate of growth. The long run trend rate of economic growth is the average sustainable rate of growth and is determined by the growth in productivity.

In the 1980s, the UK experienced rapid economic growth. The government cut interest rates and also cut taxes. House prices rose by up to 30% -fuelling a positive wealth effect and a rise in consumer confidence. This increased confidence led to higher spending, lower saving and an increase in borrowing. However, the rate of economic growth reached 5% a year – well above the UK's long run trend rate of 2.5 %. The result was a rise in inflation as firms could not meet demand. It also led to a current account deficit. You can read more about demand-pull inflation at the Lawson Boom of the 1980s.

2. Cost-push inflation

If there is an increase in the costs of firms, then businesses will pass this on to consumers. There will be a shift to the left in the AS.

Cost-push inflation can be caused by many factors

1. Rising wages

If trades unions can present a united front then they can bargain for higher wages. Rising wages are a key cause of cost push inflation because wages are the most significant cost for many firms. (higher wages may also contribute to rising demand)

2. Import prices

One-third of all goods are imported in the UK. If there is a devaluation, then import prices will become more expensive leading to an increase in inflation. A devaluation / depreciation means the Pound is worth less. Therefore we have to pay more to buy the same imported goods.

3. Raw material prices

The best example is the price of oil. If the oil price increase by 20% then this will have a significant impact on most goods in the economy and this will lead to cost-push inflation. E.g., in 1974 there was a spike in the price of oil causing a period of high inflation around the world.

4. Profit push inflation

When firms push up prices to get higher rates of inflation. This is more likely to occur during strong economic growth.

5. Declining productivity

If firms become less productive and allow costs to rise, this invariably leads to higher prices.

6. Higher taxes

If the government put up taxes, such as VAT and Excise duty, this will lead to higher prices, and therefore CPI will increase. However, these tax rises are likely to be one-off increases. There is even a measure of inflation (CPI-CT) which ignores the effect of temporary tax rises/decreases.

What else could cause inflation?

1. Rising house prices

Rising house prices do not directly cause inflation, but they can cause a positive wealth effect and encourage consumer-led economic growth. This can indirectly cause demand-pull inflation.

2. Printing more money

If the Central Bank prints more money, you would expect to see a rise in inflation. This is because the money supply plays an important role in determining prices. If there is more money chasing the same amount of goods, then prices will rise. Hyperinflation is usually caused by an extreme increase in the money supply.

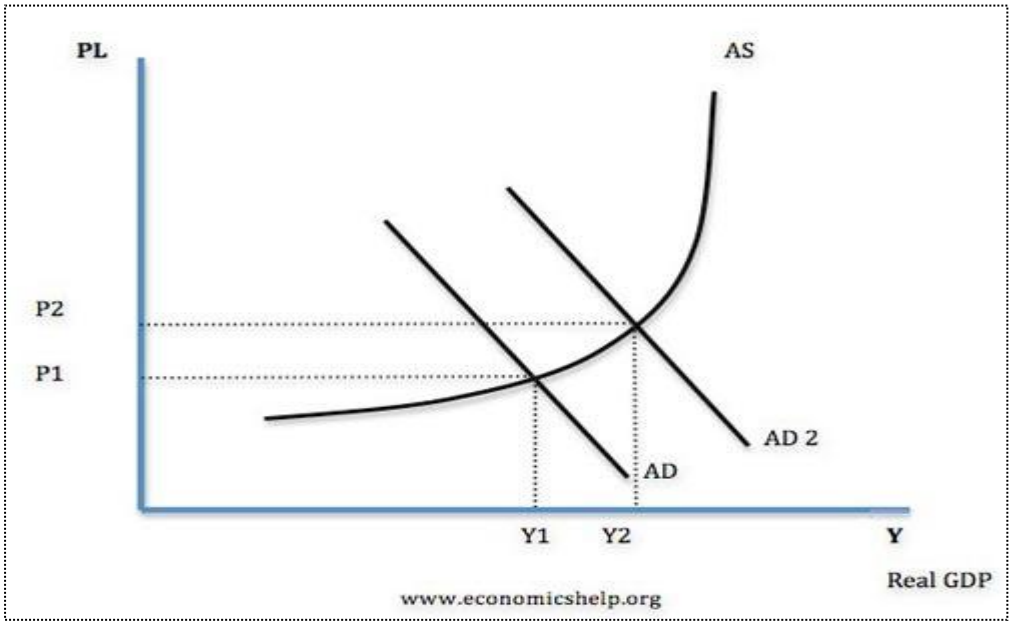
5.5 Trade off between unemployment and inflation

A look at the extent to which policy makers face a trade off between unemployment and inflation. The Phillips curve suggests there is a trade off between inflation and unemployment, at least in the short term. Other economists are more sceptical.

Theory behind Unemployment – Inflation Trade Off

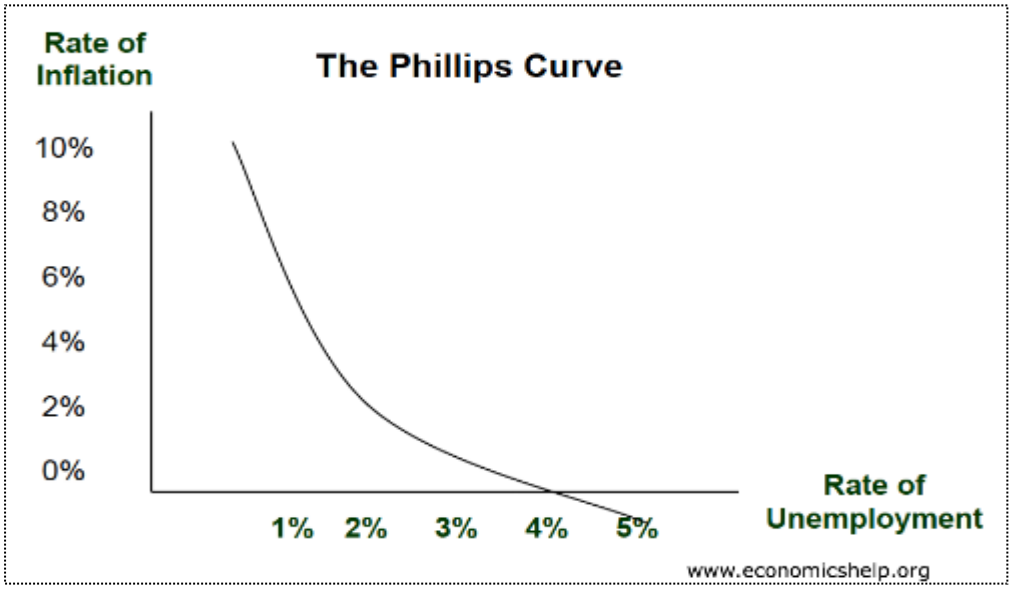
If the economy experienced a rise in AD, it will cause increased output; as the economy comes closer to full employment, we also experience a rise in inflation. However, with the increase in real GDP, firms take on more workers leading to a decline in unemployment (a fall in demand deficient unemployment).

Increase In AD causing Inflation Diagram



This Keynesian view of the AS curve suggests there can be a trade off between inflation and demand deficient unemployment.

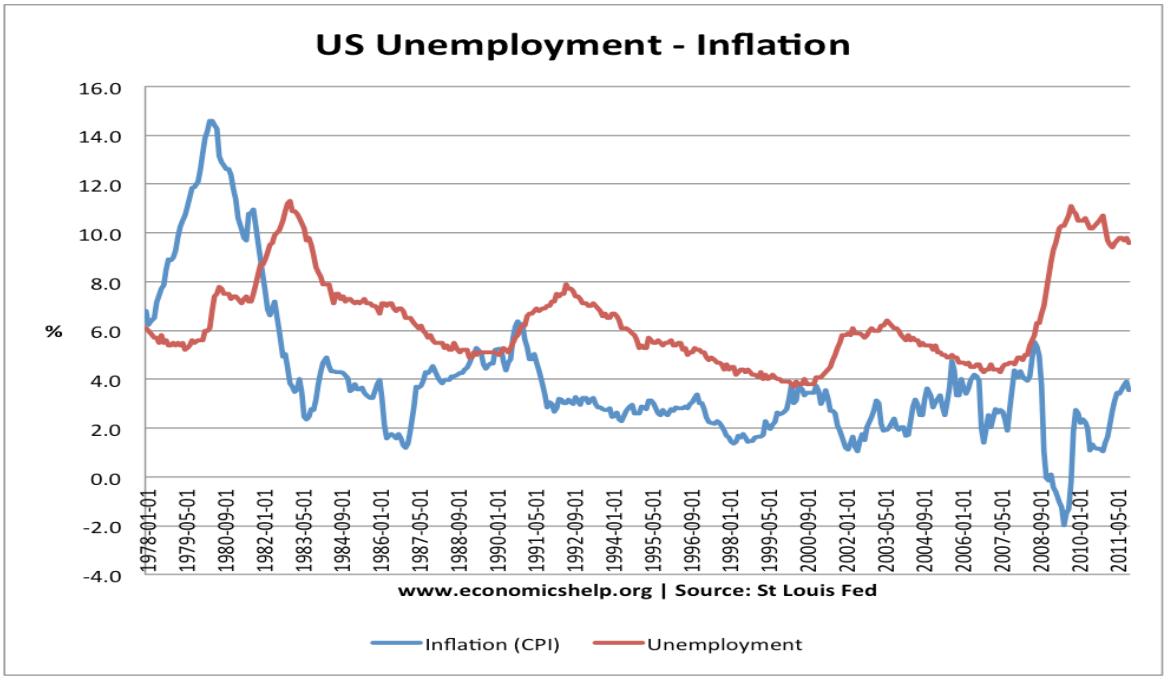
Phillips Curve Showing Trade off between unemployment and inflation



If an economy experienced inflation, then the Central Bank could raise interest rates. Higher interest rates will reduce consumer spending and investment leading to lower aggregate demand. This fall in aggregate demand will lead to lower inflation. However, if there is a decline in Real GDP, firms will employ fewer workers leading to a rise in unemployment.

Empirical Evidence Behind Trade Off

This graph shows unemployment and inflation rate for the US economy.

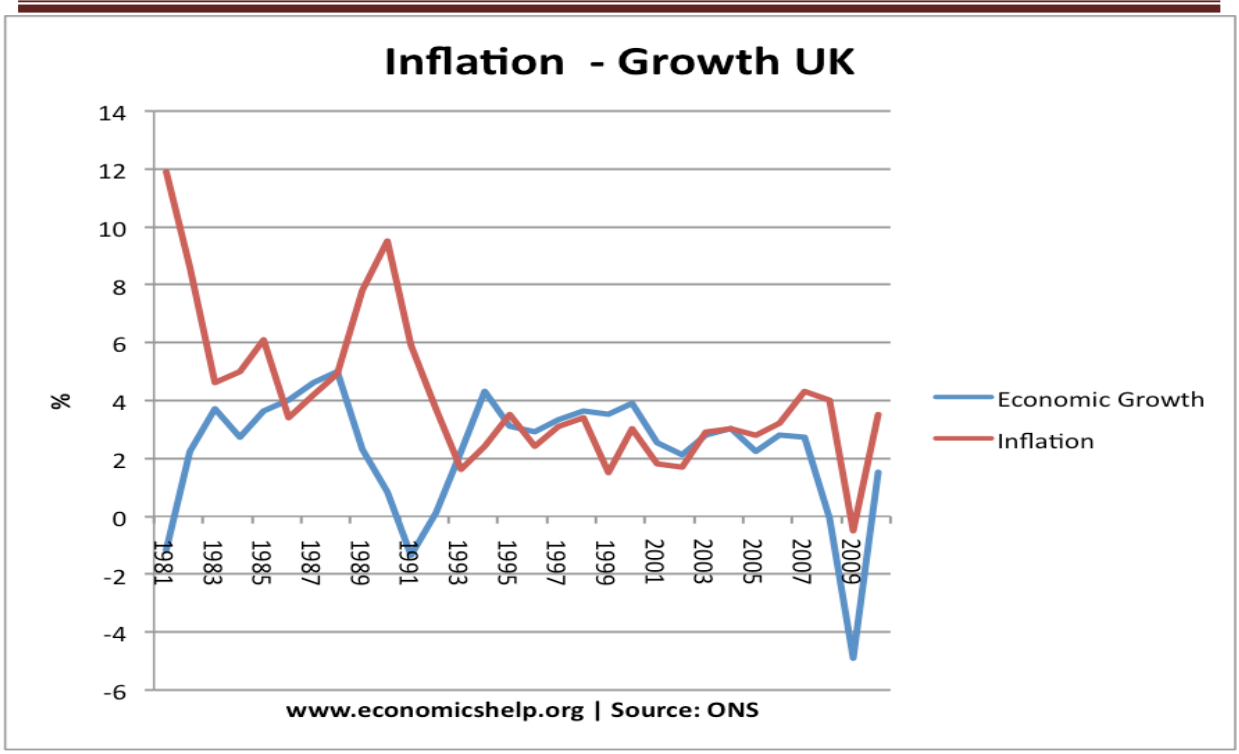


There are occasions when you can see a trade off. For example, between 1979 and 1983, we see inflation (CPI) fall from 15% to 2.5%. During this period, we see a rise in unemployment from 5% to 11%.

In 2008, we see inflation fall from 5% to -2%. During this time, we see a sharp rise in unemployment from 5% to over 10%.

This suggests there can be a trade off between unemployment and inflation.

UK Evidence – Unemployment v Inflation



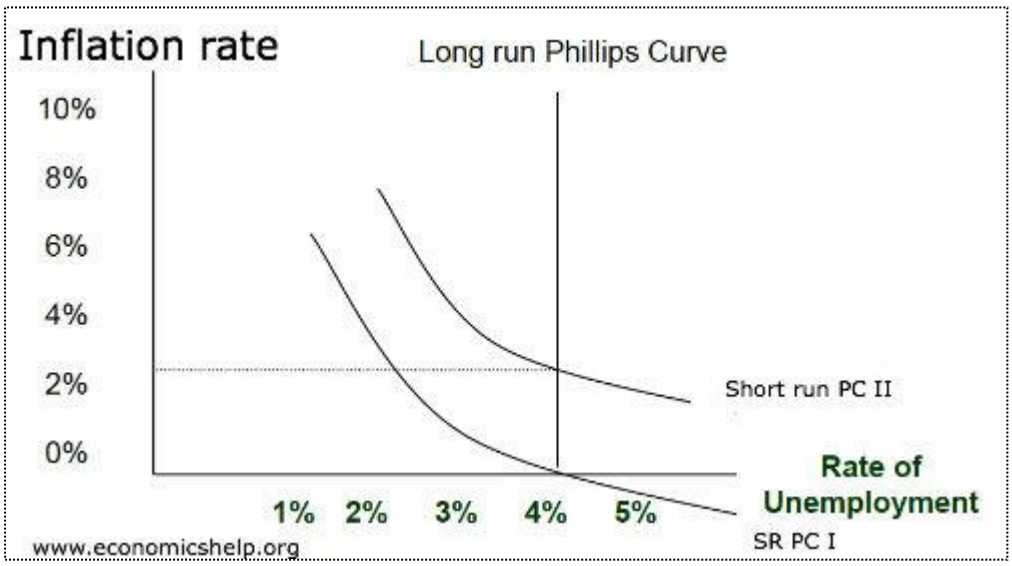
% annual change in inflation and unemployment.

Monetarist View

However, this is criticised by the Monetarist view. Monetarists argue that increasing aggregate demand may only cause a temporary fall in unemployment. In the long run, higher AD only causes inflation and no increase in Real GDP in the Long term.

Monetarists argue LRAS is inelastic and therefore Phillips Curve looks like this:

Monetarist Phillips Curve Diagram

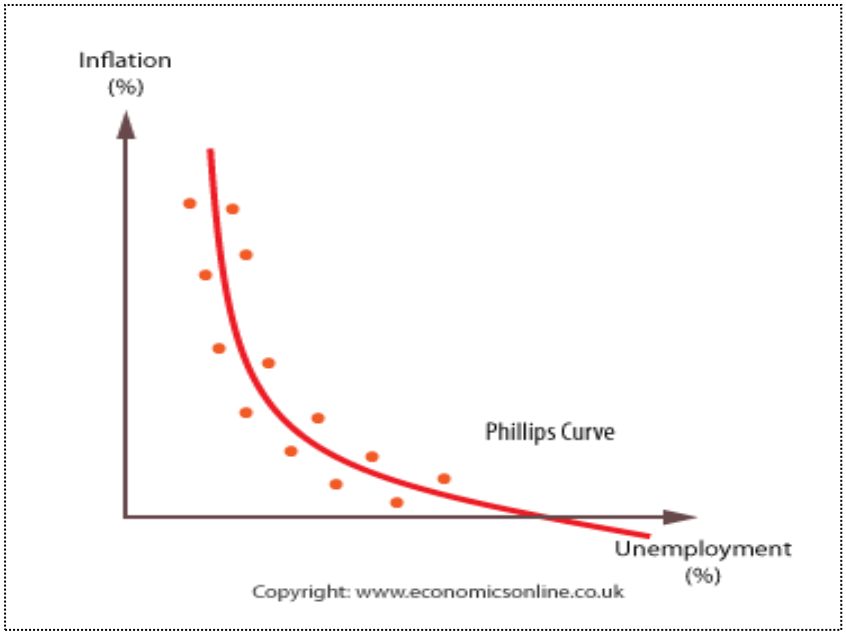


Rational expectation monetarists, believe there is no trade-off even in the short-term. They believe if government or Central Bank increased money supply, people would automatically expect inflation, so there would be no improvement in real GDP

5.6 Phillips's curve

Phillips analysed annual *wage inflation* and *unemployment* rates in the UK for the period 1860 – 1957, and then plotted them on a scatter diagram. The data appeared to demonstrate an *inverse* and *stable* relationship between wage inflation and unemployment. Later economists substituted *price inflation* for *wage inflation* and the Phillips curve was born. When economists from other countries undertook similar research, they also found very similar curves for their own economies.

Phillips analysed annual *wage inflation* and *unemployment* rates in the UK for the period 1860 – 1957, and then plotted them on a scatter diagram.



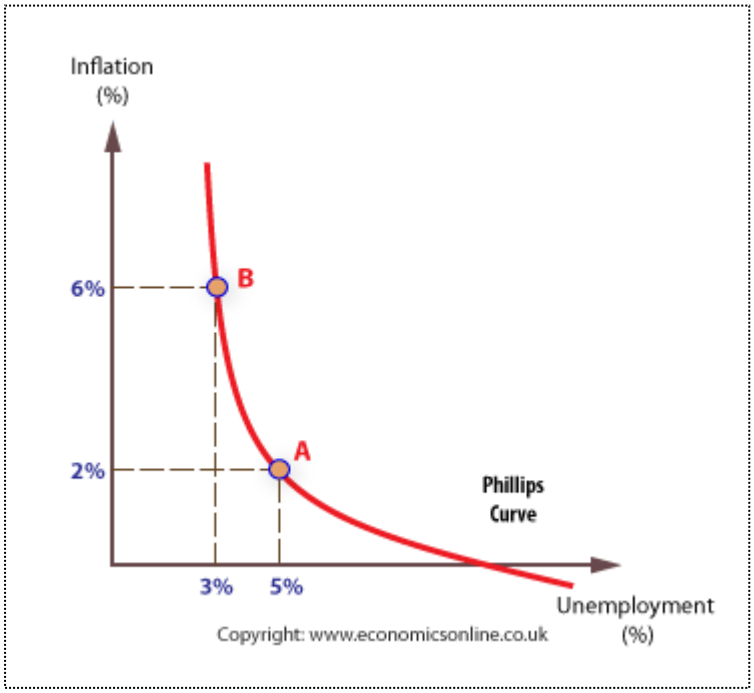
Explaining the Phillips curve

The curve suggested that changes in the level of unemployment have a direct and predictable effect on the level of price inflation. The accepted explanation during the 1960's was that a fiscal stimulus, and increase in AD, would trigger the following sequence of responses:

1. An increase in the demand for labour as government spending generates growth.
2. The pool of unemployed will fall.
3. Firms must compete for fewer workers by raising nominal wages.
4. Workers have greater bargaining power to seek out increases in nominal wages.
5. Wage costs will rise.
6. Faced with rising wage costs, firms pass on these cost increases in higher prices.

Exploiting the Phillips curve

It quickly became accepted that policy-makers could exploit the *trade off* between unemployment and inflation - a little more unemployment meant a little less inflation.



During the 1960s and 70s, it was common practice for governments around the world to select a rate of inflation they wished to achieve, and then expand or contract the economy to obtain this target rate. This policy became known as *stop-go*, and relied strongly on fiscal policy to create the expansions and contractions required.

The breakdown of the Phillips curve

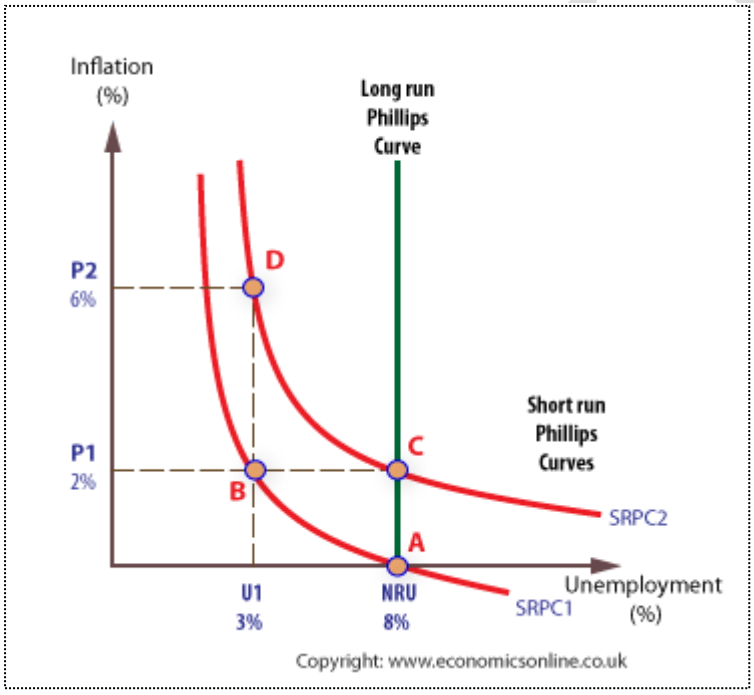
By the mid 1970s, it appeared that the Phillips Curve trade off no longer existed - there no longer seemed a stable pattern. The stable relationship between unemployment and inflation appeared to have broken down. It was possible to have a number of inflation rates for any given unemployment rate.

American economists Friedman and Phelps offered one explanation - namely that there is not one Phillips curve, but a series of *short run Phillips Curves* and a *long run Phillips Curve*, which exists at the *natural rate of unemployment* (NRU). Indeed, in the long-run, there is no trade-off between unemployment and inflation.

The new-Classical explanation – the importance of expectations

Although there are disagreements between *new-Classical economists* and*monetarists*, the general line of argument about the breakdown of the Phillips curve runs as follows.

Assume that the economy starts from an equilibrium position at point **A,** with inflation currently at zero, and unemployment at the *natural rate* of 10% (NRU = 10%). Secondly, given the public's concern with unemployment, assume the government attempts to expand the economy quickly by way of a fiscal (or monetary) stimulus, so that AD increases and unemployment falls.



Initially, the economy moves to **B**, and there is a fall in unemployment to 3% (at U^1) as jobs are created in the short term. Having more bargaining power, workers bid-up their nominal wages. As wage costs rise, prices are driven-up to 2% (at P^1). The effects of the stimulus to AD quickly wear out as inflation erodes any gains by households and firms. Real spending and output return to their previous levels, at the NRU.

According to the new-Classical view, what happens next depends upon whether the price inflation has been understood and expected – in which case there

is *no money illusion* – or whether it is not expected – in which case, *money illusion* exists. If workers have bid-up their wages in nominal terms only, they have suffered from money illusion, falsely believing they will be better off – in this case, the economy will move back to point **A** at the NRU, but with inflation only a temporary phenomenon. However, if they understand that price inflation will erode the value of their nominal wage increases, they will bargain for a wage rise that compensates them for the price rise. Again, the economy will move back to the NRU (with unemployment at 10%), but this time *carrying with it* the embedded inflation rate of 2% an move to point **C**. The economy will hop to $SRPC^2$ (which has a higher level of expected inflation – i.e. 2%, rather than 0%). Any further attempt to expand the economy by increasing AD will move the economy temporarily to **D.** However, in the long-run the economy will inevitably move back to the NRU.

The conclusion drawn was that any attempt to push unemployment below its natural rate would cause *accelerating inflation*, with no long-term job gains. The only way to reverse this process would be to raise unemployment above the NRU so that workers revised their expectations of inflation downwards, and the economy moved to a lower short-run Phillips curve

5.7 Supply Side Policy And Management

Introduction

The supply side refers to factors affecting the quantity or quality of goods and services produced by an economy such as the level of productivity or investment in research and development.

Supply-side policies are mainly micro-economic policies designed to make markets and industries operate more efficiently and contribute to a faster underlying-rate of growth of real national output. Successful policies have the effect of shifting the LRAS curve to the right leading to a rise in potential output most governments believe that improved supply-side performance is the key to achieving sustained growth without causing a rise in inflation.

The term 'supply-side economics' was first coined in 1976 to describe economic policies designed to influence output and employment through their impact on the supply-side, as opposed to the demand-side, of the economy. Supply-side policies cause a shift to the right of the aggregate supply curve leading to greater output at lower .,prices, so long as the economy is below the full employment level.

Although the term 'supply-side economics' is relatively new the basic concept is not. Ever since 1945, governments of both political persuasions have attempted to

strengthen the supply-side in their quest for more rapid economic growth. Until 1979, however, supply-side policy took second place to demand management policy. While successive governments recognized the potential benefits of directly promoting the supply-side of the economy, it was generally believed that the major contribution governments could make to economic prosperity was to keep - through the active use of demand-management policy the economy as close as possible to 'full-employment'. By ensuring that aggregate demand was always high enough to allow firms to work at full capacity, it was argued, governments could create a stable, supportive economic environment in which firms had the confidence and incentive to invest for growth.

Underpinning both demand-management and supply-side policies during the so-called 'Keynesian era' was a deep-seated distrust of the free market and a feeling that the 'invisible hand' was unable to coordinate economic activity and achieve growth. Without the active involvement of paternalistic government, it was concluded, it would be impossible to achieve economic success.

Implication of Supply Side Policy and Management

Supply-side economists emphasize the importance of effects of tax incentives on labour supply, saving and investment for promoting growth of output. They further lay stress on the favourable effects of tax cuts on Government revenue and thereby to achieve reduction in budget deficit. The following are the basic implication of supply-side economics:

1. **Factor Supply Determines Output Growth**:

The logical basis of proposition can be explained through Aggregate Supply (AS) and Aggregate Demand (AD) curves, as shown in figure 5.5:Supply-side economists argue that output is determined by factor supply (labour and capital) and technology. Both long- term and medium-term growth rates in output are determined by the growth in factor supply and change in technology. According to supply-side economists, given the factor supply and state of technology, the medium-term-aggregate- supply curve (AS) can be represented by a vertical line, as shown by ASo curve in figure 5.5. As a corollary of this, increase in factor supply and change in technology cause a rightward shift in the aggregate supply curve, say, from ASo to ASI. To carryon the analysis further, suppose that the initial AS and AD curves are given as ASo and ADo, respectively, intersecting at point A. Thus, the medium-term level of output is determined at Yo with general price level at *Pz.* Let factor supply now increase and technology improve so that ASo shifts to AS I, AD curve remaining the same.

As a result, equilibrium point shifts to point B. With this shift in the AS curve, real output increases to Y I and prices fall to PI. This presents the supply-siders' argument that, in medium- term, growth in real output is supply-determined.

2. Tax Cuts Increase Aggregate Supply:

Supply-side economists hypothesise that a tax reduction enhances post- tax return on labour and capital and, thereby, increases factor demand, both labour and capital. The increase in factor demand, given the factor supply, causes rise in factor prices This causes increase in factor supply. The increase in factor supply shifts the aggregate supply curve rightward which means increase in output. The effect of tax reduction on output is illustrated in figure 5.6: The aggregate demand curve is given by AD and vertical line ASC represents the classical aggregate supply curve and also the potential output. The curves AD and ASC intersect at point A determining the equilibrium level of output at Yo.

3. Tax Rate Determines the Tax Revenue -The Laffer Curve:

During the Keynesian era, most countries had adopted a taxation policy aimed mainly at raising revenue for public investment but, neither the policy-makers nor the economists were sure about the relationship between tax rates and tax revenue. A supply-side economist, Arthur B. Laffer, brought out this relationship in the form of a curve, called Laffer curve. The Laffer curve suggests that raising tax rate upto a limit increases revenue, but beyond a limit it decreases tax revenue. Laffer curve shows that after a certain point increase in tax rates can reduce tax revenue as incentives to work, save and investment are adversely affected. Total Tax Revenue (TR) collected is equal to the tax rate, which we denote by t multiplied by the total income which we denote by Y. Thus, total tax revenue TR = tY. According to Laffer, when tax rate t is raised beyond a certain point the national output and income Y which constitutes the base of taxation declines so much that total tax revenue ty falls.

Supply-Side Effects of Fiscal Policy

When fiscal changes alter tax rates, they influence people's incentives to work, invest, and use resources efficiently. Thus, tax changes also influence aggregate supply. Prior to 1980, macroeconomists generally ignored the supply-side effects of changes in tax rates, thinking they were of little importance. Supply-side economists challenged this view. The supply-side argument was central to the tax rate reductions of the 1980s, and it also affected tax legislation passed in both 2001 and 2002. From a supply side viewpoint, the marginal tax rate is crucially important. The marginal tax rate determines the breakdown of a person's additional income between tax payments on the one hand and personal income on the other. Lower marginal tax rates mean that individuals get to keep a larger share of their additional earnings.

For example, reducing the marginal tax rate from 40 per cent to 30 percent

allows individuals to keep 70 cents of each additional dollar they earn, instead of only 60 cents. In turn, the lower tax rates and accompanying increase in take-home pay provide them with a greater incentive to earn. Supply- side economists believe that these incentive effects are important. Most significantly, they argue that high marginal rates - e.g., rates of 50 per cent or more - seriously discourage people from working harder and engaging in productive activities. Tax policy changes affect the supply side of the economy differently than the demand side of the economy, though. On the demand side, lower taxes stimulate spending by consumers and increase aggregate demand. On the supply side, lower taxes encourage people to work more, increasing aggregate supply. Figure 5.8 graphically depicts the impact of a supply-side tax cut, one that reduces marginal tax rates:

The lower marginal tax rates increase aggregate supply because the new incentive structure encourages tax-payers to earn more and use resources more efficiently. If tax-payers think the cut will be permanent, both Long- and Short-Run Aggregate Supply (LRAS and SRAS) will increase. Real output and income will expand. As real income expands, aggregate demand will also increase (shift to AD2). If the lower marginal rates are financed by a budget deficit, though, aggregate demand may increase by a larger amount than aggregate supply, putting upward pressure on the price level. Supply-side economics should not be viewed as a short-run countercyclical tool. It will take time for people to react to the tax cuts and move their resources out of investments designed to lower their taxes and into higher-yielding, production- oriented activities .. The full positive effects of lower marginal tax rates will not be observed until both labor and capital markets have time to adjust fully to the new incentive structure. Clearly, supply-side economics is a long-run, growth oriented strategy, not a short-run stabilization tool. Here, the supply-side effect of lower marginal tax rates is illustrated. The lower marginal tax rates increase the incentive to earn and use resources efficiently. Because these are long-run as well as short-run effects, both LRAS and SRAS increase (shift to the right). Real output expands. In turn, the higher income levels accompanying the expansion in real output will stimulate aggregate demand (shift it to AD2).

Criticism of Supply-Side Policy and Management

The following are the major criticisms against the supply-side policy measures:

1)Moderate Supply-Side Effect:

If one goes by the U.S. experience, tax cut brings about a moderate effect on output and employment, not as much as suggested by the supply siders. Tax cuts do not necessarily guarantee that people will work for more hours. Instead, they find it easier to maintain their consumption expenditure with less hours of work. "Most of the statistical evidence suggests that it is unrealistic to expect tax reduction to lead to substantial increase in either labour supply or household saving." Therefore, the effect of tax cut on supply is only moderate.

2)**Effect of Tax Cut on Aggregate Demand Ignored:**

The supply-siders either ignored or underestimated the effect of tax cut on the aggregate demand whereas it does affect aggregate demand in a substantial way. A cut in personal income tax induces households to spend more on consumer goods and services and a cut in business tax encourages investment spending. In both the cases, the aggregate demand increases shifting AD curve rightward. Although supporters of supply-side Economics argue that a cut in tax reduces the government expenditure and thereby the aggregate demand. In reality, however, especially in the U.S., the reduction in government spending was much smaller than the tax cut. This is what generally happens in most other countries because it is neither practically feasible nor economically desirable to cut government spending as much as the tax cut.

3)**Limited Effect on Inflation:**

Supply-siders had suggested also the policies which were aimed at controlling inflation. But their policy measures have been found to have had a small effect on inflation. Instead, a policy measure like tax cut may even create inflationary conditions, as was experienced by Britain during the mid-1970s.

4)Adverse Effect on Income Distribution:

The supply-side policy measures have been found to have enhanced income inequality. The reason is that most supply-side measures like tax cut benefit the rich sections of the society more than the poor sections. This widens the gap between the incomes of the low-income and high-income households. As a result, supply-side policies tend to increase income inequalities

5)**Fall in Tax Revenue:**

Most supply-side policy measures relate to tax cut of one kind or another. This leads to loss of revenue and finally to budgetary deficits. Although Arthur Laffer, a staunch supply-sider, defended the tax cut by arguing that cutting tax rate increases tax revenue, a vast majority of economists have found this claim to be 'implausible'.

Importance of Supply-Side Policy

1)Product Market Reforms:

Product markets refer to markets in which allbnds of goods and services are made and traded, for example the market for airline travel; smart-phones, new cars; pharmaceutical products and the markets for financial services such as banking, mortgages and pensions. Supply-side policies in product markets are designed to increase competition and efficiency

2)Reduce Inflationary Pressure:

Supply-side policies can help reduce inflationary pressure in the long term because of efficiency and productivity gains in the product and labour markets. Shifting AS to the right will cause a lower price level. By making the economy more efficient supply side policies will help reduce cost push inflation.

3)Sustainable Growth:

Supply side policies will increase the sustainable rate of economic growthby increasing AS. Supply- side policy is less likely to create conflicts between the main objectives of stable prices, sustainable growth, full employment and a balance of payments. They can also help create real jobs and sustainable growth through their positive effect on labour productivity and competitiveness. Increases in competitiveness will also help improve the balance of payments.

4)Lower .Unemployment:

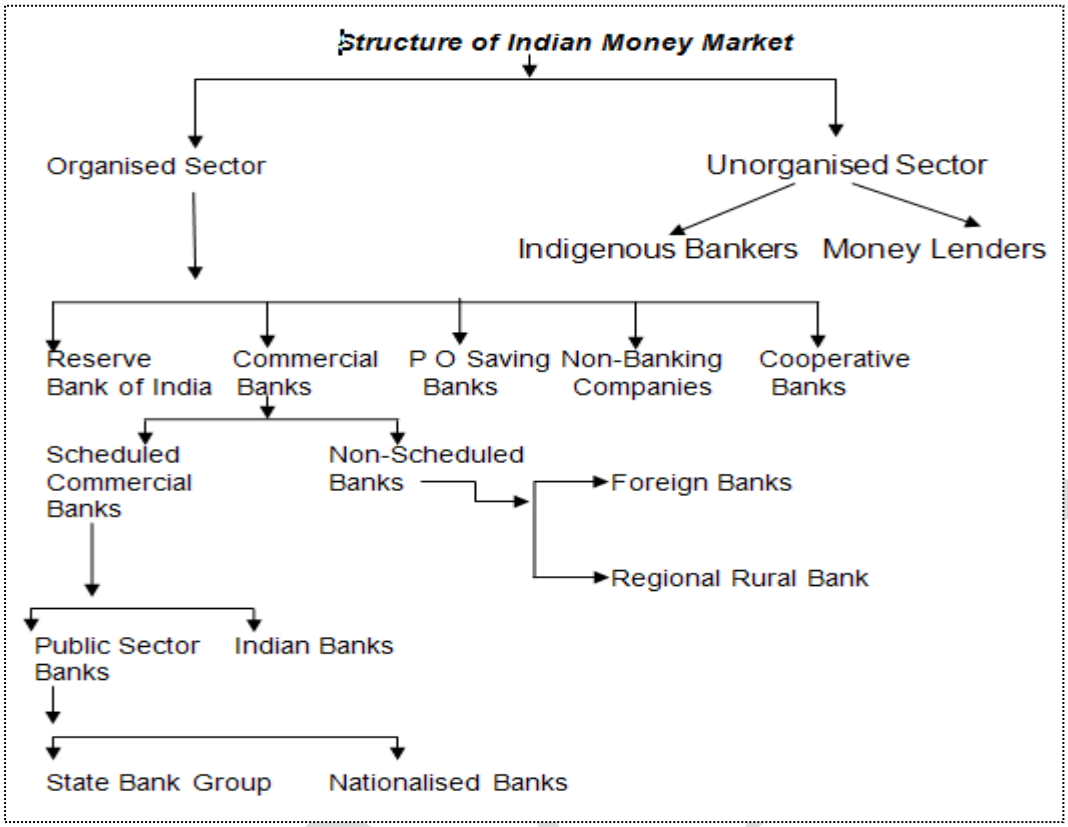
Supply side policies can help reduce structural, frictional and real wage unemployment and therefore help reduce the natural rate of unemployment.

5)Improved trade and Balance of Payments:

By making firms more productive and competitive they will be able to export more.

5.8 Money Market

Money markets is that segment of financial markets where borrowing and lending of the short-term funds takes place. The maturity of the money market instruments is one day to one year. In our country, Money Markets are regulated by both RBI and SEBI.



Demand, Supply, and Equilibrium in the Money Market

5.8.1 The Demand for Money

In deciding how much money to hold, people make a choice about how to hold their wealth. How much wealth shall be held as money and how much as other assets? For a given amount of wealth, the answer to this question will depend on the relative costs and benefits of holding money versus other assets. The demand for money is the relationship between the quantity of money people want to hold and the factors that determine that quantity.

To simplify our analysis, we will assume there are only two ways to hold wealth: as money in a checking account, or as funds in a bond market mutual fund that purchases long-term bonds on behalf of its subscribers. A bond fund is not money. Some money deposits earn interest, but the return on these accounts is generally lower than what could be obtained in a bond fund.

The advantage of checking accounts is that they are highly liquid and can thus be spent easily. We will think of the demand for money as a curve that represents the outcomes of choices between the greater liquidity of money deposits and the higher

interest rates that can be earned by holding a bond fund. The difference between the interest rates paid on money deposits and the interest return available from bonds is the cost of holding money.

Motives for Holding Money

One reason people hold their assets as money is so that they can purchase goods and services. The money held for the purchase of goods and services may be for everyday transactions such as buying groceries or paying the rent, or it may be kept on hand for contingencies such as having the funds available to pay to have the car fixed or to pay for a trip to the doctor.

The transactions demand for money is money people hold to pay for goods and services they anticipate buying. When you carry money in your purse or wallet to buy a movie ticket or maintain a checking account balance so you can purchase groceries later in the month, you are holding the money as part of your transactions demand for money.

The money people hold for contingencies represents their precautionary demand for money. Money held for precautionary purposes may include checking account balances kept for possible home repairs or health-care needs. People do not know precisely when the need for such expenditures will occur, but they can prepare for them by holding money so that they'll have it available when the need arises.

People also hold money for speculative purposes. Bond prices fluctuate constantly. As a result, holders of bonds not only earn interest but experience gains or losses in the value of their assets. Bondholders enjoy gains when bond prices rise and suffer losses when bond prices fall. Because of this, expectations play an important role as a determinant of the demand for bonds. Holding bonds is one alternative to holding money, so these same expectations can affect the demand for money.

Interest Rates and the Demand for Money

The quantity of money people hold to pay for transactions and to satisfy precautionary and speculative demand is likely to vary with the interest rates they can earn from alternative assets such as bonds. When interest rates rise relative to the rates that can be earned on money deposits, people hold less money. When interest rates fall, people hold more money. The logic of these conclusions about the money people hold and interest rates depends on the people's motives for holding money.

The quantity of money households want to hold varies according to their income and the interest rate; different average quantities of money held can satisfy their transactions and precautionary demands for money.

Which approach should the household use? That is a choice each household must make—it is a question of weighing the interest a bond fund strategy creates against the hassle and possible fees associated with the transfers it requires. Our

example does not yield a clear-cut choice for any one household, but we can make some generalizations about its implications.

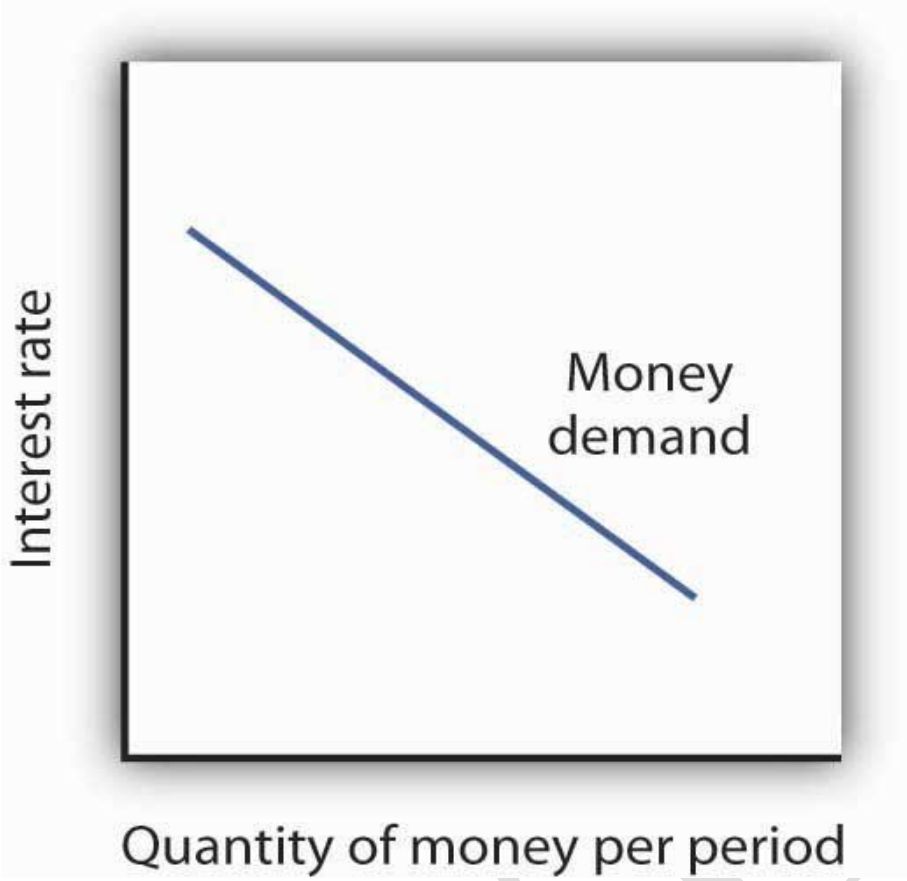
First, a household is more likely to adopt a bond fund strategy when the interest rate is higher. At low interest rates, a household does not sacrifice much income by pursuing the simpler cash strategy. As the interest rate rises, a bond fund strategy becomes more attractive. That means that the higher the interest rate, the lower the quantity of money demanded.

Second, people are more likely to use a bond fund strategy when the cost of transferring funds is lower. The creation of savings plans, which began in the 1970s and 1980s, that allowed easy transfer of funds between interest-earning assets and checkable deposits tended to reduce the demand for money.

Some money deposits, such as savings accounts and money market deposit accounts, pay interest. In evaluating the choice between holding assets as some form of money or in other forms such as bonds, households will look at the differential between what those funds pay and what they could earn in the bond market. A higher interest rate in the bond market is likely to increase this differential; a lower interest rate will reduce it. An increase in the spread between rates on money deposits and the interest rate in the bond market reduces the quantity of money demanded; a reduction in the spread increases the quantity of money demanded.

The Demand Curve for Money

We have seen that the transactions, precautionary, and speculative demands for money vary negatively with the interest rate. Putting those three sources of demand together, we can draw a demand curve for money to show how the interest rate affects the total quantity of money people hold. The demand curve for money shows the quantity of money demanded at each interest rate, all other things unchanged. Such a curve is shown in Figure 25.7 "The Demand Curve for Money". An increase in the interest rate reduces the quantity of money demanded. A reduction in the interest rate increases the quantity of money demanded.
Figure 25.7 The Demand Curve for Money



The demand curve for money shows the quantity of money demanded at each interest rate. Its downward slope expresses the negative relationship between the quantity of money demanded and the interest rate.

The relationship between interest rates and the quantity of money demanded is an application of the law of demand. If we think of the alternative to holding money as holding bonds, then the interest rate—or the differential between the interest rate in the bond market and the interest paid on money deposits—represents the price of holding money. As is the case with all goods and services, an increase in price reduces the quantity demanded.

5.8.2 Determinants of the Demand for Money

We draw the demand curve for money to show the quantity of money people will hold at each interest rate, all other determinants of money demand unchanged. A change in those "other determinants" will shift the demand for money. Among the most important variables that can shift the demand for money are the level of income and real GDP, the price level, expectations, transfer costs, and preferences.

Real GDP

A household with an income of $10,000 per month is likely to demand a larger quantity of money than a household with an income of $1,000 per month. That relationship suggests that money is a normal good: as income increases, people demand more money at each interest rate, and as income falls, they demand less.

An increase in real GDP increases incomes throughout the economy. The demand for money in the economy is therefore likely to be greater when real GDP is greater.

The Price Level

The higher the price level, the more money is required to purchase a given quantity of goods and services. All other things unchanged, the higher the price level, the greater the demand for money.

Expectations

The speculative demand for money is based on expectations about bond prices. All other things unchanged, if people expect bond prices to fall, they will increase their demand for money. If they expect bond prices to rise, they will reduce their demand for money.

The expectation that bond prices are about to change actually causes bond prices to change. If people expect bond prices to fall, for example, they will sell their bonds, exchanging them for money. That will shift the supply curve for bonds to the right, thus lowering their price. The importance of expectations in moving markets can lead to a self-fulfilling prophecy.

Expectations about future price levels also affect the demand for money. The expectation of a higher price level means that people expect the money they are holding to fall in value. Given that expectation, they are likely to hold less of it in anticipation of a jump in prices.

Expectations about future price levels play a particularly important role during periods of hyperinflation. If prices rise very rapidly and people expect them to continue rising, people are likely to try to reduce the amount of money they hold, knowing that it will fall in value as it sits in their wallets or their bank accounts. Toward the end of the great German hyperinflation of the early 1920s, prices were doubling as often as three times a day. Under those circumstances, people tried not to hold money even for a few minutes—within the space of eight hours money would lose half its value.

Transfer Costs

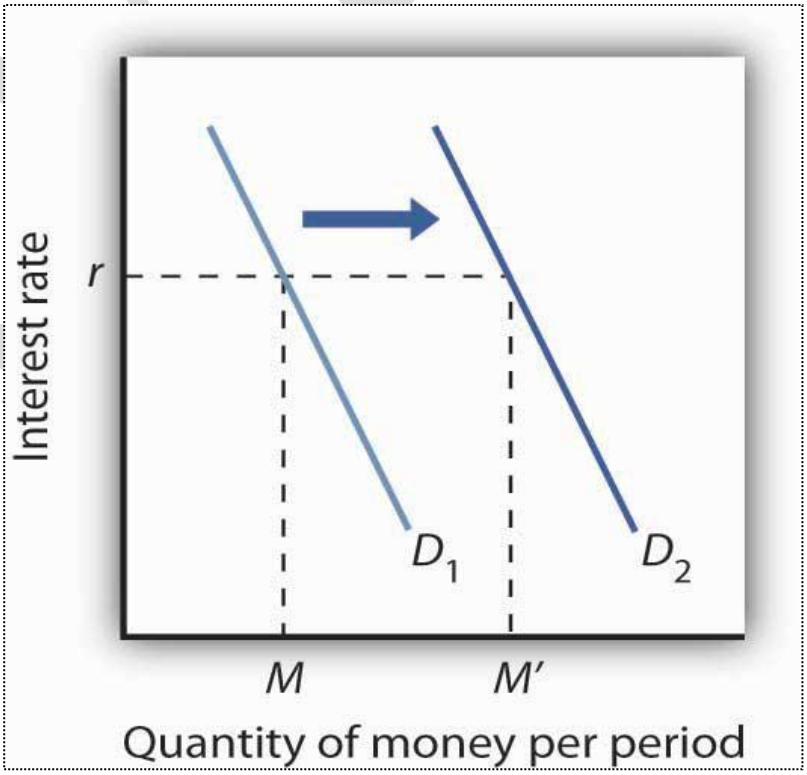
For a given level of expenditures, reducing the quantity of money demanded requires more frequent transfers between non money and money deposits. As the cost of such transfers rises, some consumers will choose to make fewer of them. They will therefore increase the quantity of money they demand. In general, the demand for money will increase as it becomes more expensive to transfer between money and non money accounts. The demand for money will fall if transfer costs decline. In recent years, transfer costs have fallen, leading to a decrease in money demand.

Preferences

Preferences also play a role in determining the demand for money. Some people place a high value on having a considerable amount of money on hand. For others, this may not be important.

Household attitudes toward risk are another aspect of preferences that affect money demand. As we have seen, bonds pay higher interest rates than money deposits, but holding bonds entails a risk that bond prices might fall. There is also a chance that the issuer of a bond will default, that is, will not pay the amount specified on the bond to bondholders; indeed, bond issuers may end up paying nothing at all. A money deposit, such as a savings deposit, might earn a lower yield, but it is a safe yield. People's attitudes about the trade-off between risk and yields affect the degree to which they hold their wealth as money. Heightened concerns about risk in the last half of 2008 led many households to increase their demand for money.

Figure 25.8 "An Increase in Money Demand" shows an increase in the demand for money. Such an increase could result from a higher real GDP, a higher price level, a change in expectations, an increase in transfer costs, or a change in preferences.



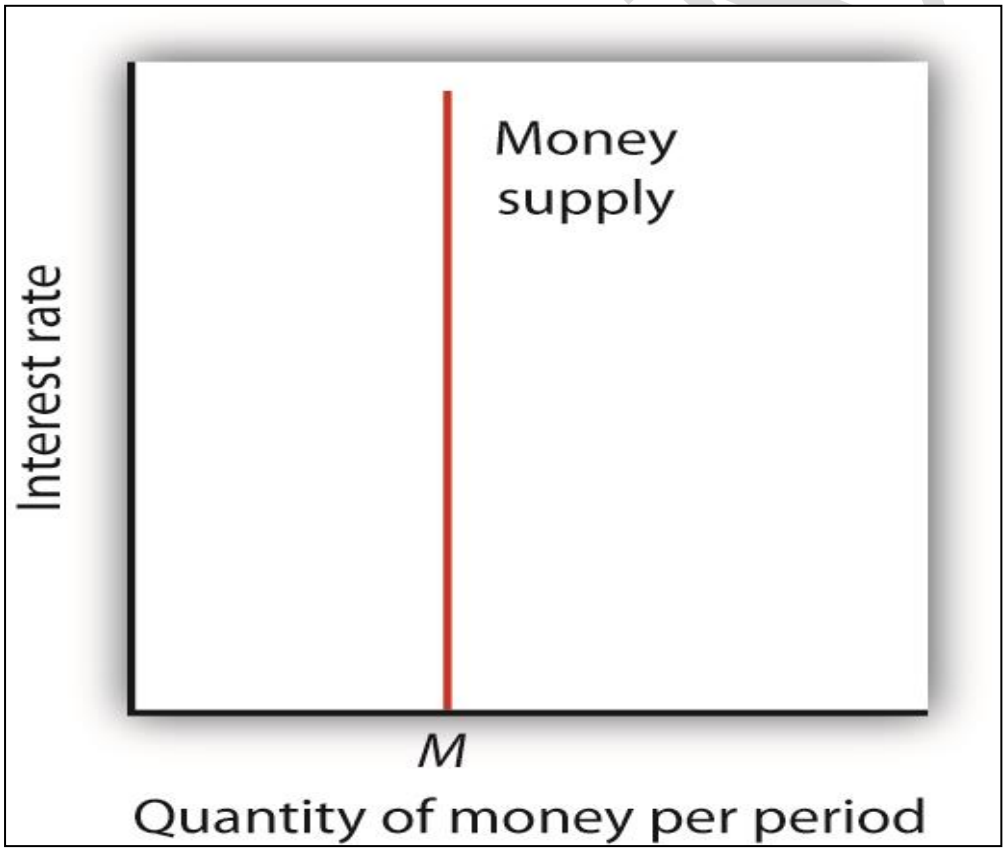
An increase in real GDP, the price level, or transfer costs, for example, will increase the quantity of money demanded at any interest rate *r*, increasing the demand for money from D_1 to D_2. The quantity of money demanded at interest rate *r* rises from *M* to *M′*. The

reverse of any such events would reduce the quantity of money demanded at every interest rate, shifting the demand curve to the left.

5.8.3 The Supply of Money

The supply curve of money shows the relationship between the quantity of money supplied and the market interest rate, all other determinants of supply unchanged. We have learned that the Fed, through its open-market operations, determines the total quantity of reserves in the banking system. We shall assume that banks increase the money supply in fixed proportion to their reserves. Because the quantity of reserves is determined by Federal Reserve policy, we draw the supply curve of money in Figure 25.9 "The Supply Curve of Money" as a vertical line, determined by the Fed's monetary policies. In drawing the supply curve of money as a vertical line, we are assuming the money supply does not depend on the interest rate. Changing the quantity of reserves and hence the money supply is an example of monetary policy.

The Supply Curve of Money



We assume that the quantity of money supplied in the economy is determined as a fixed multiple of the quantity of bank reserves, which is determined by the Fed. The supply curve of money is a vertical line at that quantity.

5.8.4Concepts of Money Supply (Monetary Aggregates)

The Reserve bank of India calculates the four concepts of Money supply in India. They are called Monetary Aggregates or Money Stock Measures**.** They are as follows:

Narrow Money (M1)

At any point of time, the money held with the **public** has two most liquid components

- **Currency Component:** This consists of all the coins and notes in the circulation
- **Demand Deposit Component:** Demand Deposit component is the money of the general public with the banks, which can be withdrawn by them using cheques, withdrawals and ATMs.

The above two components i.e. currency component and demand deposit component of the public money is called **Narrow Money** and is denoted by the RBI as **M1.** Thus,

- **M1 = Currency with the public + Demand Deposits of public in Banks**

  When a third component viz. Post office Savings Deposits is also added to M1, it becomes M2.

- **M2 = M1 + Post Office Savings.**

  Broad Money

  Narrow money is the most liquid part of the money supply because the demand deposits can be withdrawn anytime during the banking hours. Time deposits on the other hand have a fixed maturity period and hence cannot be withdrawn before expiry of this period. When we add the time despots into the narrow money, we get the broad money, which is denoted by M3.

- **M3** = Narrow money + Time Deposits of public with banks

  We note here that the Broad money does not include the interbank deposits such as deposits of banks with RBI or other banks. At the same time, time deposits of public with all banks including the cooperative banks are included in the Broad Money.

  Now, we understand that the major distinction between the M1 and M3 is "Treatment of deposits with the banks". If we go a little deep, the M3 is the treatment of "Time Deposits" of the public, since demand deposits are available against cheques and ATMs.

- **M4** = When you add the Post Office Savings money also into the M3, it becomes M4.

  Both M2 and M4 which include the Post office Savings with narrow money and broad money respectively are now a days irrelevant. Post Office savings was once a prominent figure when the banks had not expanded in India as we see them today all around. The RBI releases the data at times regarding the money supply in India and Post Office Savings Deposits have not been updated frequently.

  There is NOT much change in the money of people deposited with the Post office and RBI did not care to update this money. Further, there was a time when the Reserve Bank used broad money (M_3) as the policy target. However, with the weakened relationship between money, output and prices, it replaced M3 as a policy target with a multiple indicators approach. RBI started using the Multiple Indicator Approach since 1998

  Currently, Narrow Money (M_1) and Broad Money (M_3) are relevant indicators of money supply in India. The RBI in all its policy documents, monthly Bulletins and other documents shows these aggregates.

Reserve Money (M0)

The other name of the Reserve Money is "High Powered Money" and also "Monetary Base". Reserve Money is all the Cash in the economy and denoted by M_0. This has the following components:

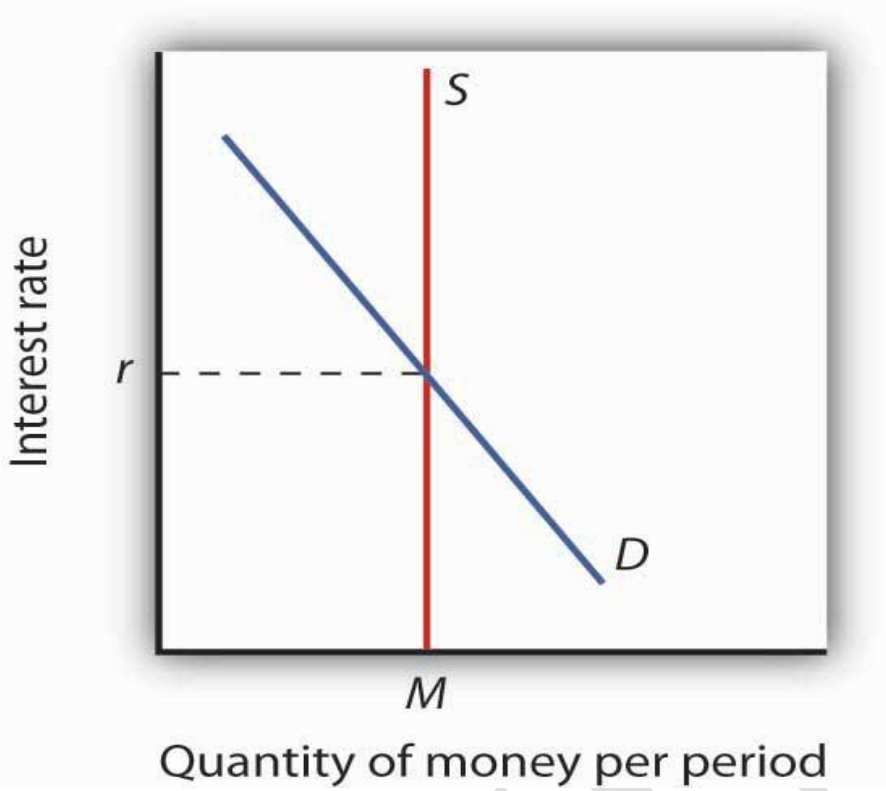
- Currency with the Public
- Other Deposits with the RBI
- Cash Reserves of the banks held with themselves
- Cash Reserves of the Banks held with RBI

Here we should know that Cash Reserves are also of two types viz. Required Reserves (RR) and Excess Reserves (ER). RR are those reserves which the banks are statutorily required to keep with the RBI. At present the Banks are required to keep 4.25% CRR (Cash Reserve Ratio) of their total time and demand liabilities. All reserves excess of RR are called Excess Reserves. ER are held with the Banks while RR is held with RBI. Banks hold the ER to meet their currency drains i.e. withdrawal of currency by depositors.

5.8.5 Equilibrium in the Market for Money

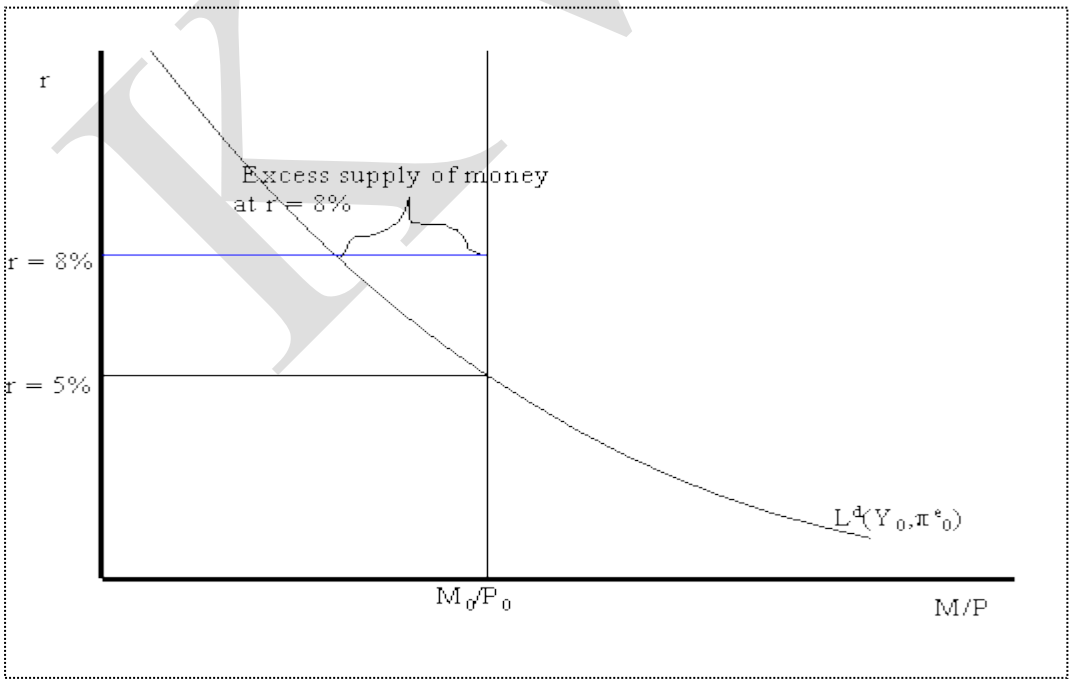
The money market is the interaction among institutions through which money is supplied to individuals, firms, and other institutions that demand money. Money market equilibrium occurs at the interest rate at which the quantity of money demanded is equal to the quantity of money supplied. Money Market Equilibrium" combines demand and supply curves for money to illustrate equilibrium in the market for money. With a stock of money (*M*), the equilibrium interest rate is *r*.

Money Market Equilibrium



The market for money is in equilibrium if the quantity of money demanded is equal to the quantity of money supplied. Here, equilibrium occurs at interest rate *r*.

Equilibrium in the money market



Real money demand and the real money supply as functions of the real interest rate are illustrated in the above graph. Real money demand is graphed holding fixed real income and expected inflation. The real money supply is equal to the nominal amount of M1, denoted M_0, divided by the fixed aggregate price level, P_0. It is assumed that the Fed does not alter the money supply based on the valued of the real interest rate. Therefore, the real money supply function is a vertical line in the graph with the real interest rate on the vertical axis and real money balances on the horizontal axis.

Notice that real money demand and real money supply intersect when the real interest rate is 5%. This is the value of the real interest that equates money demand with the money supply and establishes equilibrium in the money market. When the money market is in equilibrium there are no economic forces acting on the economy to alter the real interest rate.

If the real interest rate were 8% then the demand for real balances would be greater than the fixed supply of real balances (as illustrated above). In this case we say there is an excess supply of money in the money market. Practically, what this means is that individuals are holding more money than they would like given the high real interest rate. Accordingly, individuals will attempt to rebalance their portfilios; i.e. they will try to get rid of money by buying bonds (our generic non-money asset). In doing so the demand for bonds increases and so the price of bonds increases. Because bond prices are inversely related to the interest rate on bonds, the increased price of bonds lowers the real return on bonds (holding expected inflation fixed). Therefore, the excess supply of money at 8% (disequilibrium in the money market) leads to economic forces that act to lower the real interest rate.

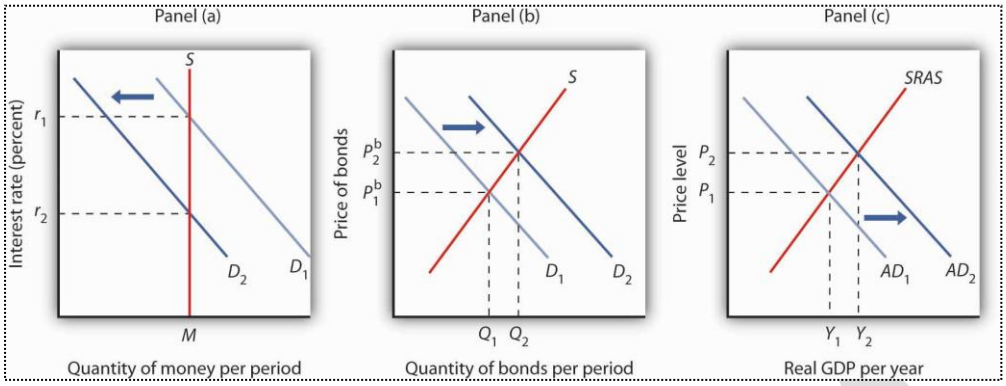
Effects of Changes in the Money Market

A shift in money demand or supply will lead to a change in the equilibrium interest rate. Let's look at the effects of such changes on the economy.

Changes in Money Demand

Suppose that the money market is initially in equilibrium at r_1 with supply curve S and a demand curve D_1 as shown in Panel (a) of Figure 25.11 "A Decrease in the Demand for Money". Now suppose that there is a decrease in money demand, all other things unchanged. A decrease in money demand could result from a decrease in the cost of transferring between money and nonmoney deposits, from a change in expectations, or from a change in preferences[1]. Panel (a) shows that the money demand curve shifts to the left to D_2. We can see that the interest rate will fall to r_2. To see why the interest rate falls, we recall that if people want to hold less money, then they will want to hold more bonds. Thus, Panel (b) shows that the demand for bonds increases. The higher price of bonds means lower interest rates; lower interest rates restore equilibrium in the money market.

Figure 25.11 A Decrease in the Demand for Money



A decrease in the demand for money due to a change in transactions costs, preferences, or expectations, as shown in Panel (a), will be accompanied by an increase in the demand for bonds as shown in Panel (b), and a fall in the interest rate. The fall in the interest rate will cause a rightward shift in the aggregate demand curve from AD_1 to AD_2, as shown in Panel (c). As a result, real GDP and the price level rise.

Lower interest rates in turn increase the quantity of investment. They also stimulate net exports, as lower interest rates lead to a lower exchange rate. The aggregate demand curve shifts to the right as shown in Panel (c) from AD_1 to AD_2. Given the short-run aggregate supply curve *SRAS*, the economy moves to a higher real GDP and a higher price level.

An increase in money demand due to a change in expectations, preferences, or transactions costs that make people want to hold more money at each interest rate will have the opposite effect. The money demand curve will shift to the right and the demand for bonds will shift to the left. The resulting higher interest rate will lead to a lower quantity of investment. Also, higher interest rates will lead to a higher exchange rate and depress net exports. Thus, the aggregate demand curve will shift to the left. All other things unchanged, real GDP and the price level will fall.

Changes in the Money Supply

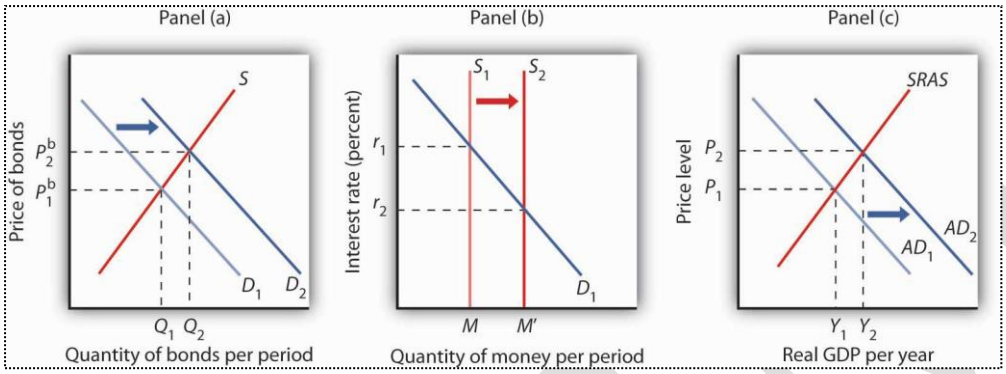
Now suppose the market for money is in equilibrium and the Fed changes the money supply. All other things unchanged, how will this change in the money supply affect the equilibrium interest rate and aggregate demand, real GDP, and the price level?

Suppose the Fed conducts open-market operations in which it buys bonds. This is an example of expansionary monetary policy. The impact of Fed bond purchases is illustrated in Panel (a) of Figure 25.12 "An Increase in the Money Supply".

The Fed's purchase of bonds shifts the demand curve for bonds to the right, raising bond prices to P^b_2. As we learned, when the Fed buys bonds, the supply of money increases. Panel (b) of Figure 25.12 "An Increase in the Money Supply" shows an economy with a

money supply of M, which is in equilibrium at an interest rate of r_1. Now suppose the bond purchases by the Fed as shown in Panel (a) result in an increase in the money supply to M'; that policy change shifts the supply curve for money to the right to S_2. At the original interest rate r_1, people do not wish to hold the newly supplied money; they would prefer to hold nonmoney assets. To reestablish equilibrium in the money market, the interest rate must fall to increase the quantity of money demanded. In the economy shown, the interest rate must fall to r_2 to increase the quantity of money demanded to M'.

Figure 25.12 An Increase in the Money Supply



The Fed increases the money supply by buying bonds, increasing the demand for bonds in Panel (a) from D_1 to D_2 and the price of bonds to P^b_2. This corresponds to an increase in the money supply to M' in Panel (b). The interest rate must fall to $r_2$to achieve equilibrium.

The lower interest rate leads to an increase in investment and net exports, which shifts the aggregate demand curve from AD_1 to AD_2 in Panel (c). Real GDP and the price level rise.

The reduction in interest rates required to restore equilibrium to the market for money after an increase in the money supply is achieved in the bond market. The increase in bond prices lowers interest rates, which will increase the quantity of money people demand. Lower interest rates will stimulate investment and net exports, via changes in the foreign exchange market, and cause the aggregate demand curve to shift to the right, as shown in Panel (c), from AD_1 to AD_2. Given the short-run aggregate supply curve *SRAS*, the economy moves to a higher real GDP and a higher price level.

Open-market operations in which the Fed sells bonds—that is, a contractionary monetary policy—will have the opposite effect. When the Fed sells bonds, the supply curve of bonds shifts to the right and the price of bonds falls. The bond sales lead to a reduction in the money supply, causing the money supply curve to shift to the left and raising the equilibrium interest rate. Higher interest rates lead to a shift in the aggregate demand curve to the left.

As we have seen in looking at both changes in demand for and in supply of money, the process of achieving equilibrium in the money market works in tandem with the achievement of equilibrium in the bond market. The interest rate determined by money market equilibrium is consistent with the interest rate achieved in the bond market

5.9 Monetary policy

Monetary policy is the process by which the **monetary** authority of a country, like the central bank or currency board, controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency.

5.9.1 Role of Monetary Policy in Economic Development of a Country

Role of monetary policy in the economic development of a country are as follows: 1. Appropriate Adjustment between Demand for and Supply of Money, 2. Price Stability, 3. Credit Control, 4. Creation and Expansion of Financial Institutions, 5. Suitable Interest Rate Structure, 6. Debt Management.

1. Appropriate Adjustment between Demand for and Supply of Money:

Economic development results in rising demand for money because the growth of economy and a corresponding contraction of the subsistence sector greatly increase the transaction demand for money.

Besides, the rise in per capita income and increase in population during the development process also increases the demand for money to carry out day-to-day transactions. The continuously rising demand for money makes it imperative for the monetary authority to increase money supply at a rate roughly equal to the rate of increase in real income, so that prices do not fall consequent upon a rise in national output.

A falling price level adversely affects the pace of economic growth by initiating a vicious downward spiral of prices and output. Similarly, if the supply of money is more than needed by the requirements of trade and industry, it may be used for speculative purposes, thereby inhibiting growth and causing inflation.

The gist of the argument is that a proper control upon the supply of money will prevent economic fluctuations and pave the ground for rapid development. The monetary policy, therefore, can play a vital role in the economic development of underdeveloped countries by minimizing fluctuations in prices and general economic activity by achieving all appropriate balance between the demand for money and the productive capacity of the economy.

2. Price Stability:

Maintenance of stability in the domestic level of prices and exchange rates is an important condition of economic growth. However, economic development leads to inflationary pressures in under-developed countries due to a variety of structural rigidities and imbalances.

The inflationary increase in prices adversely affects the propensity to save and diverts invertible resources into speculative and unproductive investments such as real estate, jewellery, gold, stock-piling of goods etc. The monetary authority, therefore, should keep a constant vigil on the movement of prices and so regulate the supply and direction of money and credit that it puts a check on rising prices.

Similarly, inflationary increase in prices leads to the frequent devaluation of the currency. The fluctuating exchange rates adversely affect international trade and the earning of foreign exchange tails, which could help in the development of the country.

In short, instability in internal prices and exchange rates impedes the rate of sustained economic growth and consequently monetary policy should aim at preventing excessive increase in prices and maintaining exchange stability at some realistic level. This implies the adopting of such monetary policies that will check inflation and frequent development of the currency.

The monetary authority can employ both traditional weapons of control such as bank rate, open market operations etc., and the direct control over foreign exchange for the correction of adverse balance of payments.

In under-developed economies, governments have to spend on a gigantic scale under the planning process to secure growth rate commensurate with the growth rate of population and also to provide social and economic overheads.

But the rate of saving being low, the government has to resort to large scale borrowing and deficit financing to cope with the rising investment. Since there is dearth of complementary resources in such economies and the supply curve of goods is generally inelastic, the abnormal increasing effective demand generated by huge government expenditure paves the way for inflation.

The best remedy for fight inflation is to reduce aggregates pending, encourage savings and discourage hoarding. For this, the Central Bank may raise the bank rate which would reduce the pressure of demand for bank credit by making borrowing costlier than before and this will discourage borrowing for hoarding and speculative purposes.

On the other hand, an increase in the rate of interest will stimulate savings. To reduce the credit creating capacity of the banks further, the Central Bank may supplement it with the sale of government and banks securities, raising the serve ratio and by instituting selective credit controls.

Thus the Central Bank by relying on both the quantitative and qualitative instruments of credit control can limit inflation and help the process of economic development.

3. Credit Control:

With a view to secure an accelerated rate of economic growth, the monetary authority should press into service its techniques of credit control to influence and shape the character and pattern of investment and production.

This will, of course, depend on the range of credit institutions that exist in the economy and also on the forms of credit controls that are employed by the Central Bank. In most of the under-developed countries, the banking system is not fully developed.

The commercial banks, mainly provide short-term credit requirements of businessmen and traders and are reluctant to provide medium and long-term credit to meet the financial requirements of industry and for manufacturing in general.

The monetary authority should step in to make appropriate guarantees and provide rediscounting facilities with a view to induce and encourage banks to provide medium and long-term loans for productive purposes. Besides joint loans by commercial banks and state owned financial institutions can greatly help in this direction.

Similarly, selective credit controls should be adopted to influence the pattern of investment and production by differentiating between the costs and availability of credit to different sectors and industries.

The selective credit control, unlike quantitative credit control makes discrimination between essential and non-essential use of bank credit and helps the funds to flow into desirable channels and uses without affecting the economy as a whole.

Thus in an underdeveloped economy, the monetary authority should control the uses of money and credit by an appropriate monetary policy so that investible resources flow into desirable channels without adversely affecting investment and production. This will quicken the pace of development.

4. Creation and Expansion of Financial Institutions:

Monetary policy can speed up the process of economic development by improving the currency and credit system of the country. For this propose more banks and financial institutions need to be established to provide larger credit facilities and to mobilise saving for productive purpose.

In under-developed countries there is death of financial institutions and banking facilities are available only to a limited extent. This being the case, the

savings of the people cannot be mobilised effectively for economic development and consequently the rate of growth is very slow.

The monetary authority can help in the expansion of financial institutions by granting subsidies and special concessions in the form of free remittance and rediscounting facilities to new institutions and by providing training facilities for their staff.

The Central Bank should pay special attention to the problem of rural credit. A network of cooperative credit societies with apex banks finances by the Central Bank can go a long way in providing the credit needs of the ruralites.

Similarly the Central Bank and financial corporations to provide finance to business and industry. This will obviously help increase the rate of economic evelopment.

There exists vast non-monetised sector in under-developed economies which is not responsive to changes in the quantity of money and interest rates and such, this sector remains outside the effective control of the Central Bank. This being the case all out efforts must be made by the monetary authority to extend the sphere of the monetised sector to make monetary policy a success.

For the attainment of the objective of growth with stability, the monetary authority of developing economies, therefore, has to play a positive role in creation, working and expansion of banking and other financial institutions and extend credit facilities where needed.

5. Suitable Interest Rate Structure:

Economic development requires investment on a gigantic scale both by the public sector and the private sector. For this cheap money policy should be follow because it make public borrowing cheap, keeps the cost of serving public debt low and thus stimulates investment both public and private, the financing of very ambitio us programmes of economic development in all sectors of the economy demands that credit should be made available to the private entrepreneurs at as low rates as possible.

Thus a policy of low interest rates serves as an incentive to investment for economic development. As against this it is pointed out that cheap money policy may induce the traders and speculators to borrow more from the banks and utilise these funds for hoarding and stockpiling and for other speculative purposes.

But this tendency on the part of private investors can be checked through selective credit control and thereby directing investment into desirable channels.

However, there are economists who suggest a policy of high interest rates on the following considerations:

a. It will serve as an anti-inflationary measure by restricting borrowing from the banks for speculative purposes and undesirable investments;
b. It will stimulate savings and thus increase the supply of investible sources.
c. It would secure the allocation of scarce capital into most productive uses and avoid productive and wasteful use of resources. But these arguments do not carry much weight. The productive and efficient use of investible resources can be better secured by direct controls and control over capital issues.

Further, qualitative methods of credit control can be used effectively to ensure flow of funds into desirable channels. So far a stimulus to savings is concerned, it may be mentioned that the volume of savings is more a function of the level of income rather than the rate of interest.

A higher rate of interest may, however, be used as a shock tactic to curb speculation in goods and securities when it gets beyond control and other methods have failed to control it. The developing countries, therefore, should be more pragmatic in their approach and must evolve such a differentiated interest rate policy which should restrain the superfluous spending, contain the inflationary pressures, promote capital formation and sustain the investment activity at a level such that the pace of growth is not slowed down.

6. Debt Management:

In developing economies, the government has to borrow on a large scale to implement the programmes of economic development and hence the responsibility of managing public debt effectively and efficiently so as to serve the requirements of economic growth, lies with monetary authority that is the Central Bank of the country.

The primary object of debt management "is to create conditions in which public borrowing can increase from year to year and on a big scale without giving any jolt to the system. And this must be on cheap rates to keep the burden of the debt low."

The policy of low interest rates is desirable for strengthening and stabilising the market for government bonds because a low rate o interest raises the price of government bonds and thus makes them more attractive to the public and ensure the public borrowing programme a success.

Besides, a low structure of interest rates minimizes the burden of public debt. Thus for speeding up the process of economic development, the monetary policy should aim at the efficient management of public debt which implies proper timing of the issuing of government bonds, stabilising their prices and minimising the burden of debt.

From the above discussion, it is clear that a wise monetary policy can go an long way in stimulating economic development.

Instruments or Tools of Monetary Policy

5.9.2 Instruments of Monetary Policy - Quantitative & Qualitative Tools

The instrument of monetary policy are tools or devise which are used by the monetary authority in order to attain some predetermined objectives. There are two types of instruments of the monetary policy as shown below.

3. Quantitative Tools
    1. #1: Reserve Ratios (SLR and CRR)
    2. #2: Open Market Operation (OMO)
    3. #3: Policy Rate
    4. Bank Rate
        1. Liquidity Adjustment facility (LAF)
        2. LAF Repo Rate
        3. Marginal Standing facility (MSF)
        4. Reverse repo Rate
        5. Repo Rate in recent years:
4. Monetary Policy: limitations
5. Qualitative Tools
    1. #1: Margin Requirements/ LTV
    2. #2: Consumer credit regulation
    3. #3: Selective credit control
    4. #4: Moral Suasion

Instruments of Monetary Policy

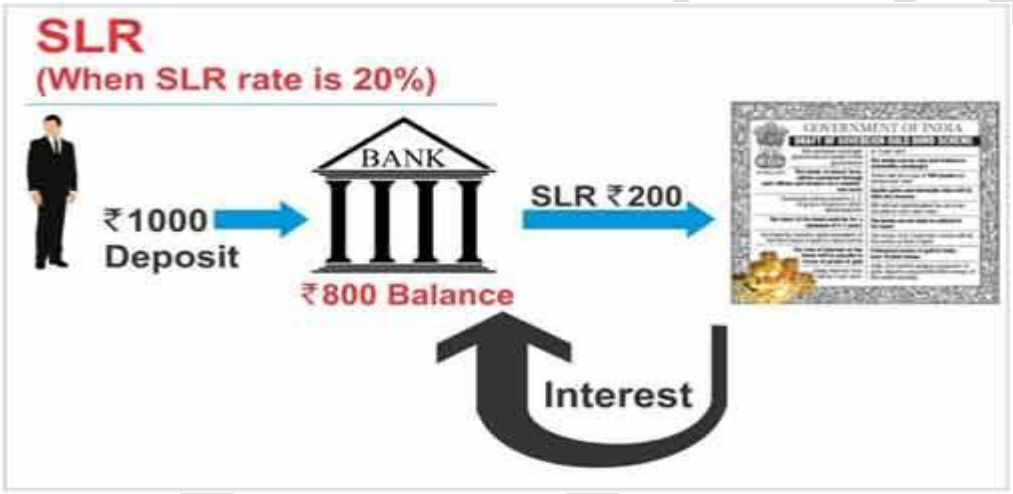
(A) Quantitative Instruments or General Tools

The Quantitative Instruments are also known as the General Tools of monetary policy. These tools are related to the Quantity or Volume of the money. The Quantitative Tools of credit control are also called as General Tools for credit control. They are designed to regulate or control the total volume of bank credit in the economy. These tools are indirect in nature and are employed for influencing the quantity of credit in the country. The general tool of credit control comprises of following instruments.

1. Variation in the Reserve Ratios (VRR)

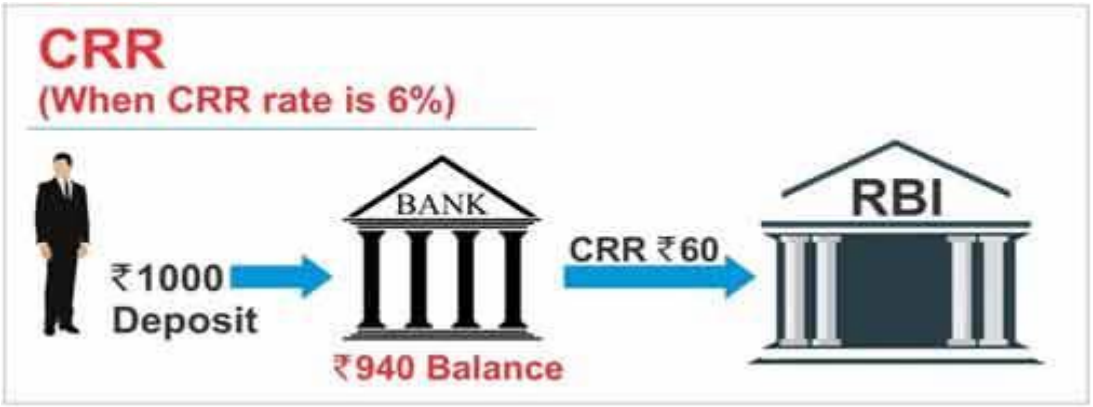
i. **Statutory liquidity ratio (SLR)** is the Indian government term for reserve requirement that the commercial banks in India require to maintain in the form of gold, government approved securities before providing credit to the customers. ... The SLR is determined by a percentage of total demand and time liabilities.

Every bank is required to maintain at the close of business every day, a minimum proportion of their Net Demand and Time Liabilities as liquid assets in the form of cash, gold and un-encumbered approved securities. The ratio of liquid assets to demand and time liabilities is known as Statutory Liquidity Ratio (SLR). RBI is empowered to increase this ratio up to 40%. An increase in SLR also restrict the bank's leverage position to pump more money into the economy.



ii.Cash reserve ratio and SLR is statutory liquidity ratio. Under **CRR** a certain **percentage** of the total bank deposits has to be kept in the current account with RBI which **means** banks do not have access to that much amount for any economic activity or commercial activity.

CRR means Cash Reserve Ratio. Banks in India are required to hold a certain proportion of their deposits in the form of cash. However, actually Banks don't hold these as cash with themselves, but deposit such case with Reserve Bank of India (RBI) / currency chests, which is considered as equivlanet to holding cash with RBI. This minimum ratio (that is the part of the total deposits to be held as cash) is stipulated by the RBI and is known as the CRR or Cash Reserve Ratio. Thus, When a bank's deposits increase by Rs100, and if the cash reserve ratio is 6%, the banks will have to hold additional Rs 6 with RBI and Bank will be able to use only Rs 94 for investments and lending / credit purpose



2. Open Market Operation (OMO)

The open market operation refers to the purchase and/or sale of short term and long term securities by the RBI in the open market. This is very effective and popular instrument of the monetary policy. The OMO is used to wipe out shortage of money in the money market, to influence the term and structure of the interest rate and to stabilize the market for government securities, etc. It is important to understand the working of the OMO. If the RBI sells securities in an open market, commercial banks and private individuals buy it. This reduces the existing money supply as money gets transferred from commercial banks to the RBI.

Contrary to this when the RBI buys the securities from commercial banks in the open market, commercial banks sell it and get back the money they had invested in them. Obviously the stock of money in the economy increases. This way when the RBI enters in the OMO transactions, the actual stock of money gets changed. Normally during the inflation period in order to reduce the purchasing power, the RBI sells securities and during the recession or depression phase she buys securities and makes more money available in the economy through the banking system. Thus under OMO there is continuous buying and selling of securities taking place leading to changes in the availability of credit in an economy.

However there are certain limitations that affect OMO viz; underdeveloped securities market, excess reserves with commercial banks, indebtedness of commercial banks, etc.

3. Bank Rate Policy (BRP)

The Bank Rate Policy (BRP) is a very important technique used in the monetary policy for influencing the volume or the quantity of the credit in a country. The bank rate refers to rate at which the central bank (i.e RBI) rediscounts bills and prepares of commercial banks or provides advance to commercial banks against approved securities. if the RBI reduces the bank rate, borrowing for commercial banks will be easy and cheaper.

This will boost the credit creation. Thus any change in the bank rate is normally associated with the resulting changes in the lending rate and in the market rate of interest. However, the efficiency of the bank rate as a tool of monetary policy depends on existing banking network, interest elasticity of investment demand, size and strength of the money market, international flow of funds, etc.

i. **Repo (Repurchase) rate**: It is the rate at which the RBI lends shot-term money to the banks against securities. When the repo rate increases borrowing from RBI becomes more expensive. Therefore, we can say that in case, RBI wants to make it more expensive for the banks to borrow money, it increases the repo rate; similarly, if it wants to make it cheaper for banks to borrow money, it reduces the repo rate
ii. **Reverse Repo rate**: It is the rate at which banks park their short-term excess liquidity with the RBI. The banks use this tool when they feel that they are stuck with excess funds and are not able to invest anywhere for reasonable returns. An increase in the reverse repo rate means that the RBI is ready to borrow money from the banks at a higher rate of interest. As a result, banks would prefer to keep more and more surplus funds with RBI.
iii. **Marginal Standing Facility** is a new Liquidity Adjustment Facility (LAF) window created by Reserve Bank of India in its credit policy of May 2011. MSF is the rate at which the banks are able to borrow overnight funds from RBI against the approved government securities.

The question is – Banks are already able to borrow from RBI via Repo Rate, then why MSF is needed? We note here that this window was created for commercial banks to borrow from RBI in certain emergency conditions when inter-bank liquidity dries up completely and there is a volatility in the overnight interest rates. To curb this volatility, RBI allowed them to pledge G-secs and get more funds from RBI at a rate higher than the repo rate. Thus, overall idea behind the MSF is to contain volatility in the overnight inter-bank rates.

(B) Qualitative Instruments or Selective Tools

The Qualitative Instruments are also known as the Selective Tools of monetary policy. These tools are not directed towards the quality of credit or the use of the credit. They are used for discriminating between different uses of credit. It can

be discrimination favoring export over import or essential over non-essential credit supply. This method can have influence over the lender and borrower of the credit. The Selective Tools of credit control comprises of following instruments.

1. Fixing Margin Requirements

The margin refers to the "proportion of the loan amount which is not financed by the bank". Or in other words, it is that part of a loan which a borrower has to raise in order to get finance for his purpose. A change in a margin implies a change in the loan size. This method is used to encourage credit supply for the needy sector and discourage it for other non-necessary sectors. This can be done by increasing margin for the non-necessary sectors and by reducing it for other needy sectors. Example:- If the RBI feels that more credit supply should be allocated to agriculture sector, then it will reduce the margin and even 85-90 percent loan can be given.

2. Consumer Credit Regulation

Under this method, consumer credit supply is regulated through hire-purchase and installment sale of consumer goods. Under this method the down payment, installment amount, loan duration, etc is fixed in advance. This can help in checking the credit use and then inflation in a country.

3. Publicity

This is yet another method of selective credit control. Through it Central Bank (RBI) publishes various reports stating what is good and what is bad in the system. This published information can help commercial banks to direct credit supply in the desired sectors. Through its weekly and monthly bulletins, the information is made public and banks can use it for attaining goals of monetary policy.

4. Credit Rationing

Central Bank fixes credit amount to be granted. Credit is rationed by limiting the amount available for each commercial bank. This method controls even bill rediscounting. For certain purpose, upper limit of credit can be fixed and banks are told to stick to this limit. This can help in lowering banks credit expoursure to unwanted sectors.

5. Moral Suasion

It implies to pressure exerted by the RBI on the indian banking system without any strict action for compliance of the rules. It is a suggestion to banks. It helps in restraining credit during inflationary periods. Commercial banks are informed about the expectations of the central bank through a monetary policy. Under moral suasion central banks can issue directives,

guidelines and suggestions for commercial banks regarding reducing credit supply for speculative purposes.

6. Control Through Directives

Under this method the central bank issue frequent directives to commercial banks. These directives guide commercial banks in framing their lending policy. Through a directive the central bank can influence credit structures, supply of credit to certain limit for a specific purpose. The RBI issues directives to commercial banks for not lending loans to speculative sector such as securities, etc beyond a certain limit.

7. Direct Action

Under this method the RBI can impose an action against a bank. If certain banks are not adhering to the RBI's directives, the RBI may refuse to rediscount their bills and securities. Secondly, RBI may refuse credit supply to those banks whose borrowings are in excess to their capital. Central bank can penalize a bank by changing some rates. At last it can even put a ban on a particular bank if it dose not follow its directives and work against the objectives of the monetary policy.

These are various selective instruments of the monetary policy. However the success of these tools is limited by the availability of alternative sources of credit in economy, working of the Non-Banking Financial Institutions (NBFIs), profit motive of commercial banks and undemocratic nature off these tools. But a right mix of both the general and selective tools of monetary policy can give the desired results

****