

12.4.3 Graphical Determination of Money Supply

The money supply is determined by:

1. The stock of high powered money (H) (monetary base),
2. The reserve ratio of bank, and
3. Cash-deposit ratio of the non-bank public.

Fig. 12.1 gives the size of deposit creation.

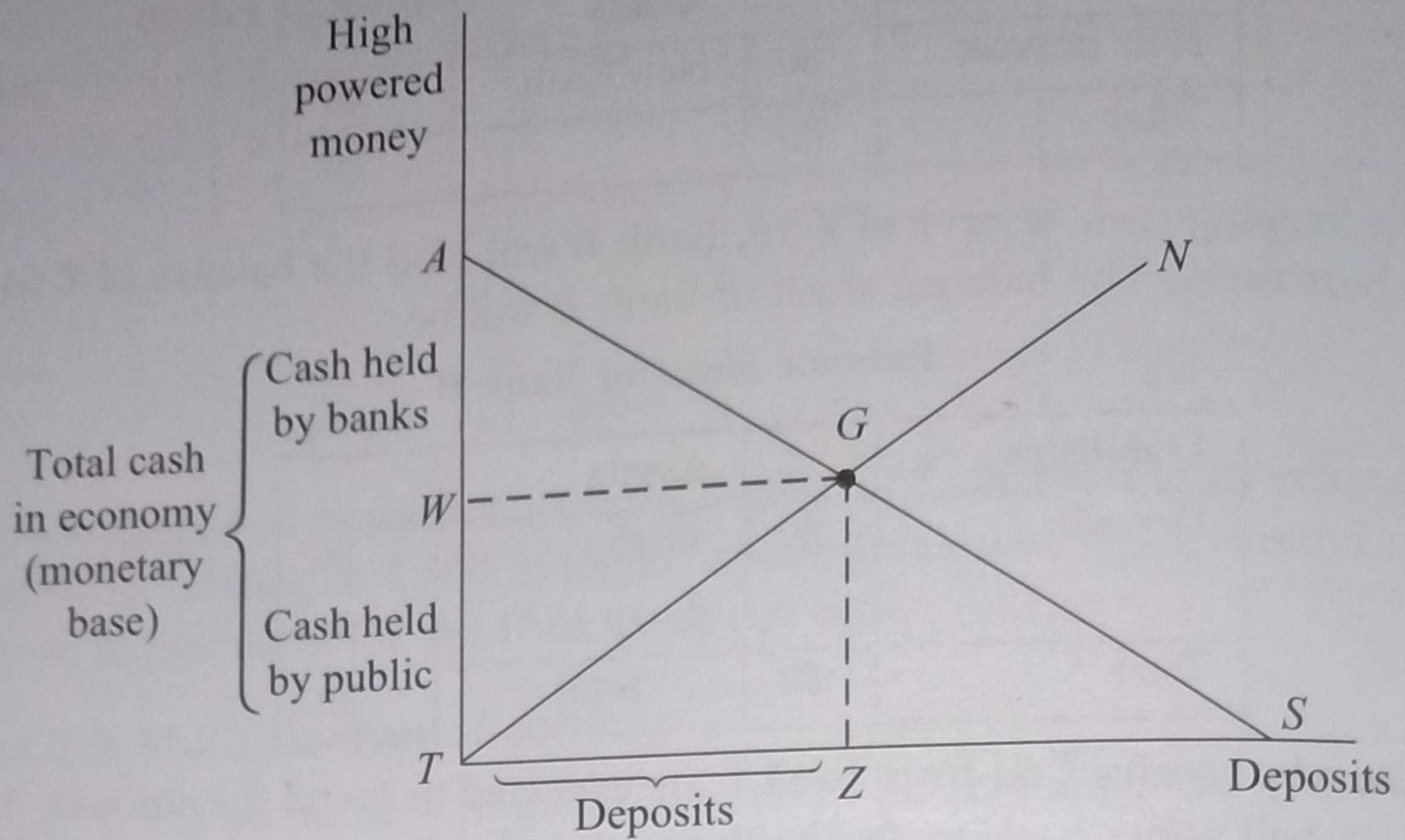


Fig. 12.1 : Determination of Money Supply by Ratio Approach

where

Banks' reserve ratio = AT/TS

Public's cash-deposit ratio = TW/TZ

Total cash = Total cash in the economy is AT . Deposits plus cash held by the public and banks make up the total money supply. The total stock of high-powered money or cash in the economy has to be held either by the bank or by the public.

Point A = Point A shows that public holds all the cash available, so there are no bank deposits. The total money supply is AT . It is all cash.

Point T = At point T, the **banks hold all the cash**. On that reserve base, they create deposits of TS .

AS = The line AS gives the level of deposit creation resulting from each level of cash reserves.

Line TN = This line shows the cash-deposit ratio for the non-bank public.

Point G = For a given base of high-powered money (cash), **deposit creation will be determined at the point where level of deposit creation and cash deposit ratio are equal**. This will be where TN and AS intersect each other. So the equilibrium outcome is at point G, where banks have AW cash in reserves and create TZ deposits. The public holds WT of cash. The total money supply at point G is given by TZ plus WT .

13.2.4 Money Multiplier—Determinants of Money Supply

Algebraic Derivation of Money Multiplier

$$M = C + D \quad \text{----- (1)}$$

$$H = C + R \quad \text{----- (2)}$$

where

H = High powered money. It is total cash in the economy.

C = Currency held by public

R = Cash held in bank reserves

D = Bank deposits

M = Money supply

Divide both equations by M , we get

$$\frac{H}{M} = \frac{C}{M} + \frac{R}{M} \quad \text{----- (3)}$$

$$\frac{M}{M} = \frac{C}{M} + \frac{D}{M}$$

$$\Rightarrow 1 - \frac{C}{M} = \frac{D}{M} \quad \text{----- (4)}$$

Multiply and divide by R the right hand side of equation 4, we get:

$$1 - \frac{C}{M} = \frac{D}{M} \times \frac{R}{R}$$

$$\Rightarrow 1 - \frac{C}{M} = \frac{R}{M} \times \frac{D}{R}$$

$$\Rightarrow \frac{R}{D} \left(1 - \frac{C}{M} \right) = \frac{R}{M} \quad \text{----- (5)}$$

Substitute (5) in (3), we get:

$$\frac{H}{M} = \frac{C}{M} + \frac{R}{D} \left(1 - \frac{C}{M} \right)$$

$$\text{or } \frac{M}{H} = \frac{1}{\frac{C}{M} + \frac{R}{D} \left(1 - \frac{C}{M} \right)}$$

$$\text{or } M = \frac{1}{\frac{C}{M} + \frac{R}{D} \left(1 - \frac{C}{M} \right)}$$

or

$$M = m \cdot H$$

where

M = money supply,

H = high powered money.

m = money multiplier. The value of money multiplier is

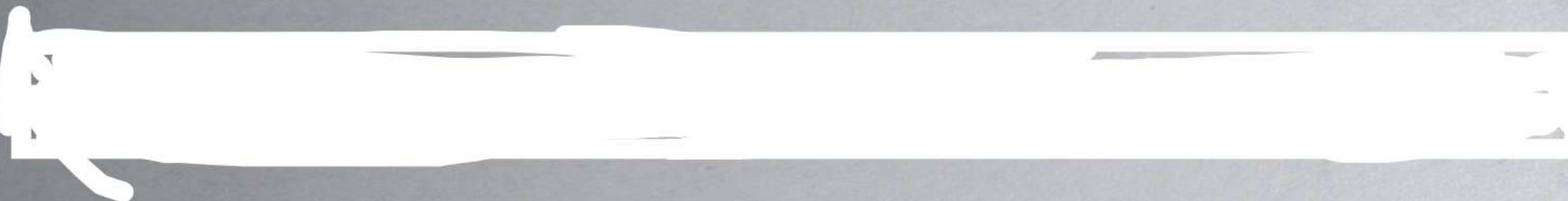
$$\frac{1}{\frac{C}{M} + \frac{R}{D} \left(1 - \frac{C}{M}\right)}. \text{ Money multiplier depends upon two}$$

ratios:

(a) $\frac{C}{M}$ = Currency of money supply ratio

(b) $\frac{R}{D}$ = Reserve to deposit ratio.

LM curve shows different combination of output level and interest rates at which money demand equals money supply.



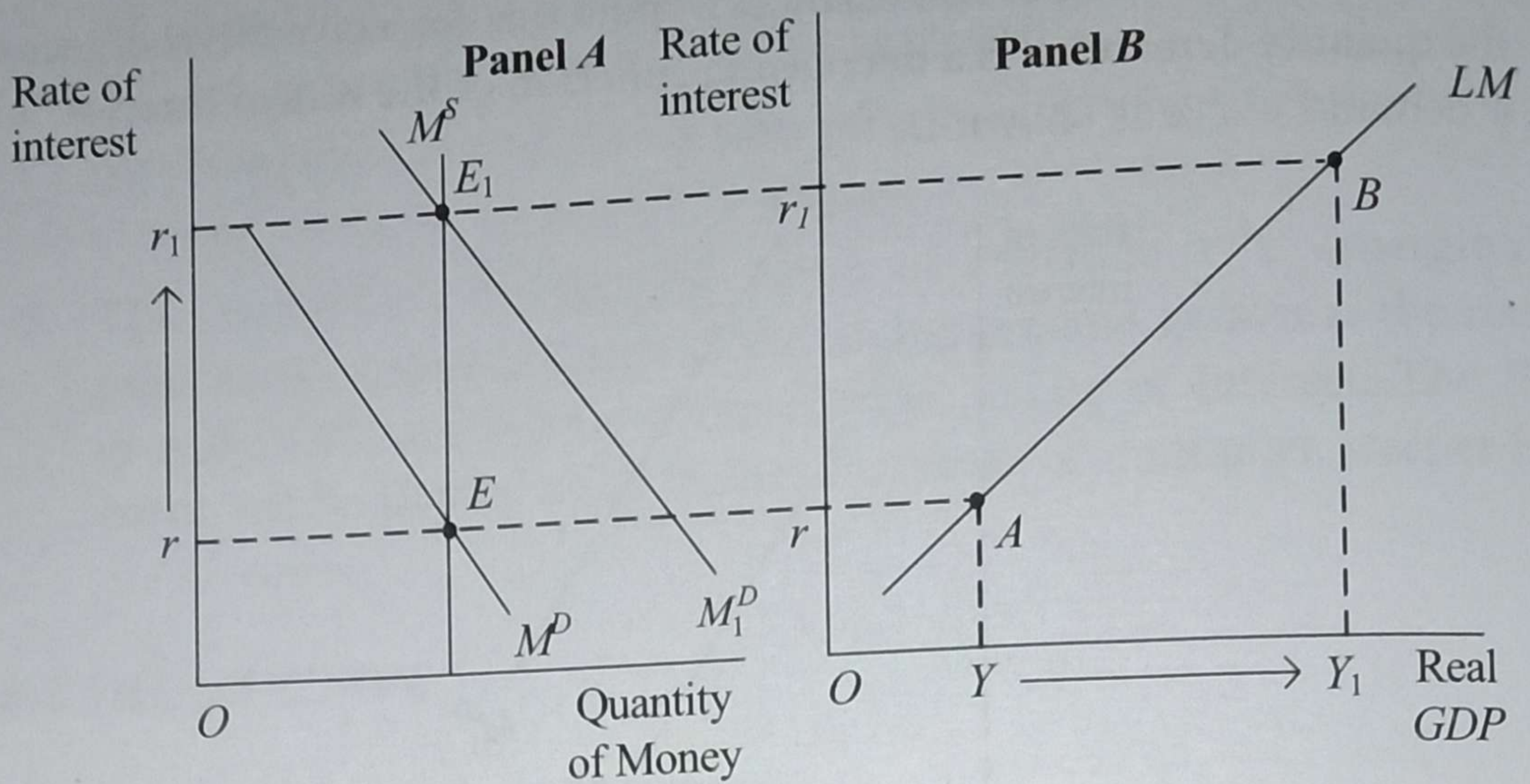


Fig. 16.5 : Derivation of the LM Curve

where

Point E = At a given income level (Y) the corresponding demand for real balance is M^D . It is shown in panel A. M^D curve is drawn as a decreasing function of the rate of interest. The existing supply of real balances, M^S is shown by the vertical line, since it is given and is independent of the rate of interest. Money market equilibrium occurs at point E where $M^D = M^S$. It gives rate of interest as or .

Point E_1 = With an increase in the level of income to Y_1 , demand for real balances shifts to the right to M_1^D . New equilibrium point occurs at point E_1 where $M_1^D = M^S$. Interest rate moves up to or_1 .

LM curve = Joining points A and B we get the LM curve. The LM curve is positively sloping showing that an increase in interest rate reduces the demand for real balances. Money market equilibrium implies that an increase in the interest rate is accompanied by an increase in the level of income and *vice versa*.

16.3.2 Shift in the LM Curve

The LM curve shifts by change in the money supply. An increase in the money supply shifts the LM curve to the right. It is shown in fig. 16.6.

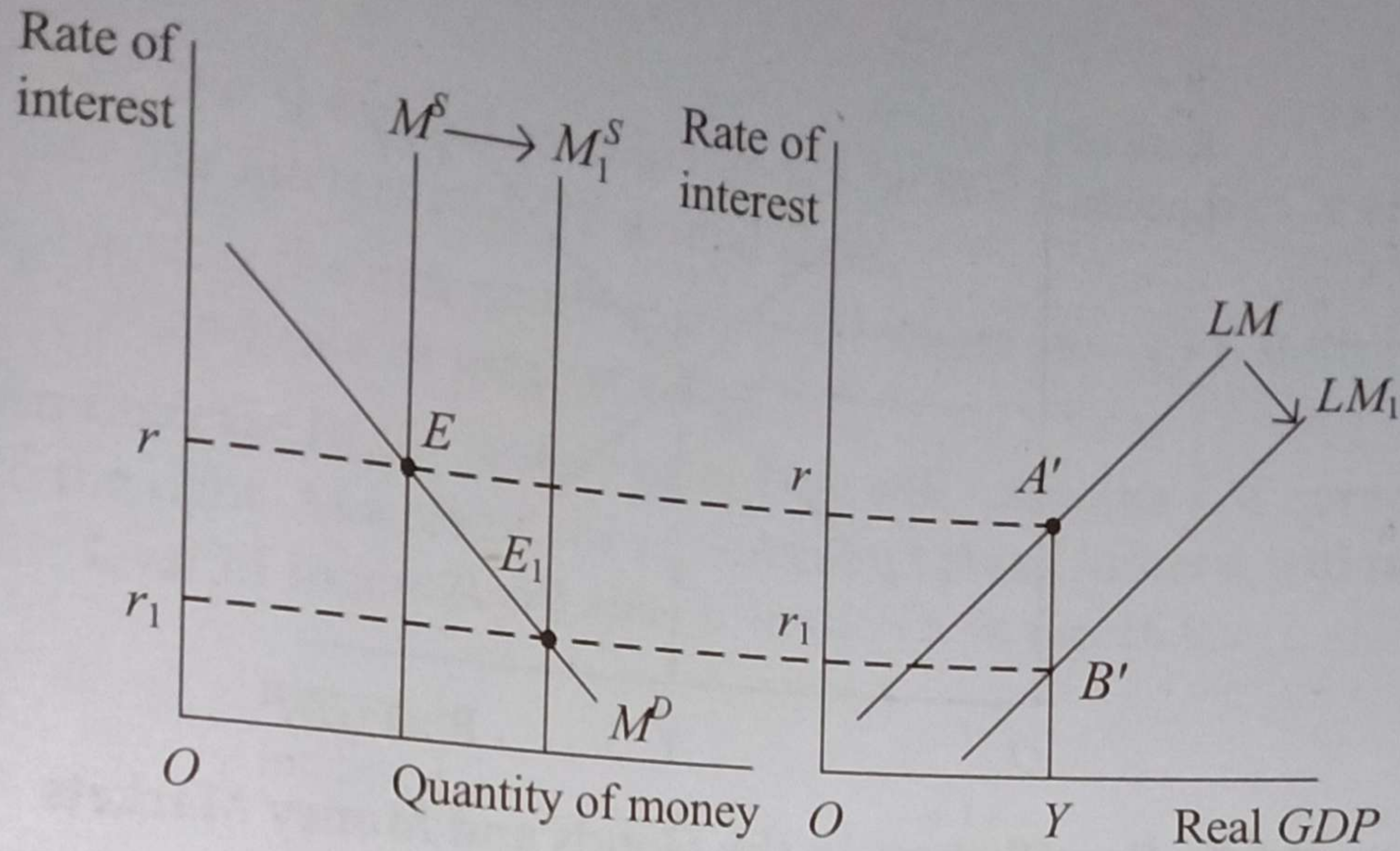


Fig. 16.6 : Shifts in LM Curve

where

Point E_1 and B = An **increase in money supply**, shifts M^S curve rightwards to M_1^S . New money market equilibrium is at point E_1 where $M^D = M_1^S$. It gives point B' in the second panel (point B' shows lower rate of interest or_1 and same income level $0Y$). Thus, LM curve shifts rightwards to LM_1 .

If money supply falls, then LM curve shifts to the left.

4.8 DEVALUATION (REVALUATION) VS DEPRECIATION (APPRECIATION)

Devaluation is a deliberate downward adjustment in the value of a country's currency relative to another currency, group of currencies or standard. It is a monetary policy tool used by countries that have a fixed exchange rate or nearly fixed exchange rate regime and involves a discrete official reduction in the otherwise fixed par value of a currency. The monetary authority formally sets a new fixed rate with respect to a foreign reference currency or currency basket. In contrast, depreciation is a decrease in a currency's value (relative to other major currency benchmarks) due to market forces under a floating exchange rate and not due to any government or central bank policy actions.

Revaluation is the opposite of devaluation and the term refers to a discrete raising of the otherwise fixed par value of a nation's currency. Appreciation, on the other hand, is a increase in a currency's value (relative to other major currencies) due to market forces under a floating exchange rate and not due to any government or central bank policy interventions.

Devaluation



Export Prices ↓ and Import Prices ↑



Exports ↑ and Imports ↓



Net Exports ↑



Improvement in BOP

1. Relative Prices— Purchasing Power Parity Theory

The **law of one price states** that if the costs of transportation are **small**, the price of the same good in different countries should be roughly the same. But in reality transportation costs are significant for many goods. Thus, the law of one price does not hold for these goods.

The theory that exchange rates are set so that the price of **similar goods** in **different countries** is the same is known as **Purchasing-Power Parity theory**. A high rate of inflation (or prices) in one country relative to another puts pressure on the exchange rate between the two countries. **There is a general**

tendency for the currencies of relatively high-inflation countries to depreciate. Let us take the situation when there is an increase in the U.S. price level relative to the price level in Great Britain. U.S. citizen will benefit by spending more on imports from Britain. It will increase the demand for pounds. It is shown in fig. 18.6.

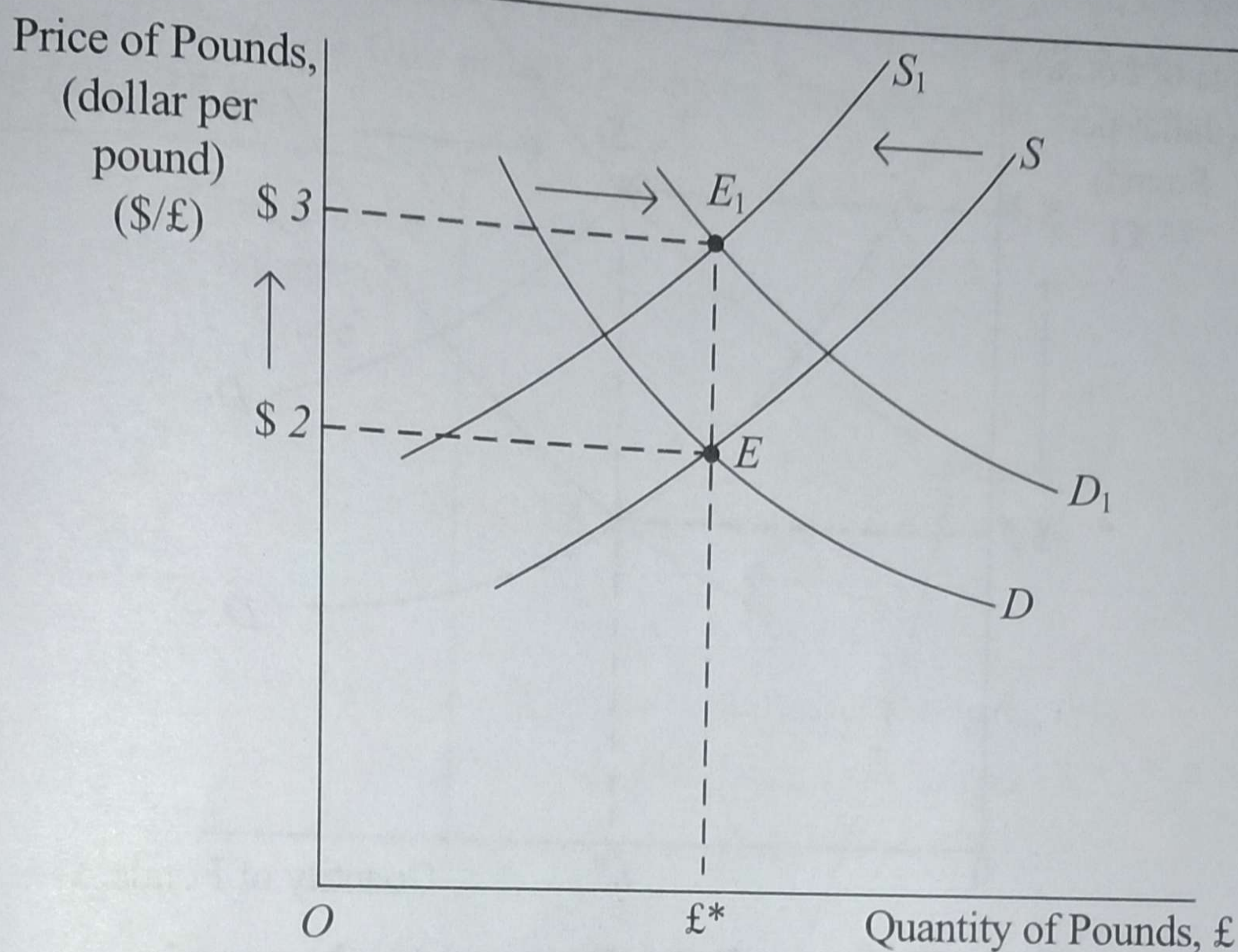


Fig. 18.6 : Exchange Rate Respond to Changes in Relative Prices

where

- E = It is initial equilibrium point where demand equals, supply. It gives $£^*$ as the equilibrium quantity of pounds. That is, 1 £ is sold for \$ 2.
- D_1 = It is increase in demand for pounds by U.S. citizen because of higher price level in the U.S.
- S_1 = At the same time British citizens find U.S. goods more expensive and reduce their demand for exports from the U.S. The supply curve of pounds decreases from S to S_1 .
- Point E_1 = New equilibrium occurs at point E_1 where $D_1 = S_1$. There is an increase in the price of pounds. Now, 1 £ costs \$ 3. **Pound appreciates and dollar depreciates.**

17.3 CURRENT ACCOUNT AND CAPITAL ACCOUNT OF BOP

BOP account is divided into two accounts—**current account and capital account**. The current account of *BOP* records transactions relating to exchange of goods and services and unilateral transfers. The capital account records transactions representing foreign financial assets and liabilities. Current transactions bring about a change in the current level of a country's national income, whereas capital transactions bring about a change in the capital stock of a country. Current transactions are of flow nature whereas capital transactions are generally of stock nature.

17.3.1 Current Account

Current account is that account which records imports and exports of goods, services and unilateral transfers. It includes record of:

(a) **Goods.** Current account shows export and import of visible items like wheat, rice, machine, etc.

(b) **Services/Invisibles.** The main services that are made use of in the international trade are shipping, insurance and banking services.

(i) **Shipping, Insurance and Banking Services.** Ships have to be hired for transporting goods from one country to another. The merchandise carried by the ships has to be insured for any loss and damage in transit. Banking services are used to facilitate receipts from and payments to foreign dealers. When foreign ships (e.g., ships from some company in Japan) are hired by a country (say India) to bring the goods imported from Japan then, apart from payment for import of goods, payment has also to be made to Japanese shipping company in foreign currency. And if goods are insured with Japanese companies and payments are routed through Japanese banks, insurance and banking charges will also have to be paid. If foreign countries hire Indian ships and use services of Indian insurance companies and banks, India will receive foreign currency. India may receive payments in foreign currency as 'port charges' if foreign ships are anchored in Indian ports, and make payments when our ships drop anchor in foreign ports.

(ii) **Investment Income.** When foreign companies make investment in India's industry and trade, the profit made by them in India have to be paid to their shareholders in the form of dividend. Similarly, interest has to be paid to foreign creditors for money borrowed in the past. Thus, dividend and interest flow out of the country and involve payment in foreign currency. In the same way, India may receive dividend and interest payments from the rest-of-the-world for investments made and loans given by Indian companies and institutions.

(iii) **Foreign Travel.** Tourism and travel among the countries has become an important item on balance of payments. When foreign tourists come to India, they bring in foreign currency with them and convert it into our currency to spend it in our domestic market. The country receives foreign currency. Similarly, when Indian tourists go abroad, they have to convert Indian currency into foreign currency to spend it abroad. This involves an outflow or payment of foreign exchange. People travelling abroad for

education, business or medical treatment make payments in foreign currency, while the foreigners coming to India are a source of receipts of foreign exchange.

- (iv) **Miscellaneous.** It includes all residual transactions of the current account such as royalties, management fees, subscription to journals, consultancy, telephone and telegraph services, etc.
- (c) **Transfer Payments.** These are unrequited transfers or unilateral transfers between residents and non-residents. These can be private which include gifts, donations, etc., or official which include donations, grants in cash by foreign governments, contribution from UN, WHO, etc.

The net balance of visible trade, *i.e.* export minus import of goods is called **trade balance**. If exports are more than imports, then there is trade surplus. If imports are more than exports, there is trade deficit. The sum of 'net visible' and 'net invisible' gives **current account balance**, which can show surplus or deficit. The current account balance is transferred to the capital account.

17.3.2 Capital Account

Capital account records capital transfer such as loans and investment between one country and the rest of the world which causes a change in the asset or liability status of the residents of a country or its government. It includes private capital, banking capital, official capital, gold and foreign capital.

- (a) **Private Capital.** In this only resident's capital transactions are included. It can be long-term or short-term capital. Long-term capital includes direct investment in shares, real estate, bonds, long-term loans, etc., whereas short-term capital includes short-term loans and repayment with their original maturity of one year or less. *Example.* Investment by an individual of one country to another country.
- (b) **Banking Capital.** It includes foreign financial assets and liabilities of the government and the central bank receipts of repurchases from IMF.
- (c) **Official Capital.** It is divided into:
- (i) *Loan.* It includes credit granted by foreign governments and international institutions to central and state governments.
 - (ii) *Amortisations of capital.* It means purchase and resale of securities sold to the foreigners.
 - (iii) *Miscellaneous errors and omissions.* These indicate understatement or overstatement of receipts and payments. At times data may be

incomplete or inaccurate (*i.e.* errors) or one side of transactions may escape recording (*i.e.* omissions).

(*d*) **Gold and Foreign Capital.** These are essential for stabilising the foreign exchange rate of the home currency. This reserve keeps changing depending on the net balance of other transactions.

The net balance of capital account shows a country's **overall balance of payments positions**. The capital account balance may show **surplus or deficit**.

6.2 ACTUAL AND POTENTIAL GDP

Gross Domestic Product: *GDP* refers to the value of final goods and services produced within the geographical area of the country. It measures the overall level of economic activity and does not consider whether the economic activity, *i.e.*, employment, production (agricultural and industrial), are done by resident or non-resident. Presently, more and more countries are moving towards the use of the concept of *GDP* to fall in the line with United Nation's System of National Accounts, which emphasises *GDP* as a measure of economic activity. International comparisons become easier when all countries follow the same standard of estimating national income aggregates.

6.2.1 Actual GDP

A country does not produce goods and services at its full capacity, given the amount of human, physical and financial resources. What a country can produce (potential producing capacity) and what it is actually producing (actual producing capacity) is generally different. The money value of goods and services that an economy is producing is called **Actual GDP**. Actual *GDP* is the amount of money on which various economic policies are based. It serves as a measuring rod of economic progress and evaluator of the performance of an economy. According to Lipsey and Chrystal, "**Actual GDP represents what an economy does infact produce**". Infact, actual *GDP* is the amount of goods and services that an economy actually produces during an accounting year. It is denoted by *Y*.

6.2.2 Potential GDP

In an ordinary course of life, if an economy uses its human, physical and financial resources to its fullest extent, then the amount of output produced is known as **Potential GDP**. It is that amount of production which an economy can produce, if it uses all its resources fully and to their utmost capacity. According to Lipsey and Chrystal, "**Potential GDP is the amount of goods and services that an economy could have**

produced when all its factors are fully employed at their normal level of utilisation." It is also known as full employment income or high employment income. Growth theory explains long term trend in Potential GDP. Potential GDP is denoted by Y^* .

6.2.3 GDP Gap

1. When $Y^* > Y$

In real life, it is not essential that actual GDP (Y) in a given year must be equal to the potential productive capacity of an economy. When potential GDP (Y^*) exceeds actual GDP (Y), the **GDP gap** measures the market value of goods and services that could have been produced, but the economy is unable to produce. There is under-production or excess capacity.

Lipsey and Chrystal call this gap as, "**Dead weight loss of unemployment**" because these losses occur when employable resources are unused. This gap is also called **Recessionary Gap** as it brings recessionary situation in an economy.

2. When $Y > Y^*$

During boom, actual GDP may exceed potential GDP causing an output gap to become negative (i.e., $Y^* - Y$ is negative). In this period, actual output exceeds potential output because potential GDP is defined at normal rate of utilisation of factors of production. During boom, it is possible that labour works longer hours than the normal working hours; factories operates an extra shift or may not close for regular routine maintenance. When actual GDP (Y) is more than the potential GDP (Y^*). The GDP gap between the two is called **Inflationary gap or negative gap**.

Keynes observed that the actual GDP of industrialised nations stayed below their potential level for almost a decade and as a result there was massive unemployment. He developed the *Theory of Income and Employment*. Keynes observed that during short period, the determination of GDP depended on the behaviour of key components of aggregate spending, which are consumption, investment, government spending and net exports.

policy. The objectives of monetary policy are:

1. Price stability

Price stability should be maintained, *i.e.*, change in the supply of money should be in accordance to the needs of an economic system. Gradual rise in prices is always preferred because that brings an increase in investment, employment and output. Rising prices attract producers to invest more. If prices are rising at a high rate then they should be brought down to stop the inflationary trend. If prices are checked to a great extent then they may lead to fall in the level of production and employment. This may give birth to depression in an economy.

To ensure price stability, strong monetary policy is required. The monetary policy does not depend upon Central Bank alone but rather on a large number of commercial banks and unorganised money market.

There are many other economic forces which affect production and distribution of goods which, in turn, affect prices. Thus, an effective monetary policy is required.

2. Exchange stability

The main objective of monetary policy is to preserve gold reserves of a country. For this, it is necessary that our exports are boosted and imports reduced. Normally exchange stability is not possible without price stability because increase in prices will make our exports costlier which leads to devaluation of rupee. Thus, price stability is a must to make exchange rate stable.

3. Attainment of full employment

Monetary policy can help in maintaining the rate of saving and investment at a level which will ensure full employment. If loans are made available to the public at cheap rate of interest, they will go for heavy investment. This will help in creating more employment opportunities. To achieve success in monetary policy, fiscal policy and economic policy should be well integrated.

4. Rapid economic growth

Rapid economic growth is a long period objective. It ensures adequate flow of money into desirable investment channels like infrastructure, building basic and key industries.

5. Policy of economic equality

Through monetary policy, money from those who are likely to hoard scarce commodities for speculative purposes can be taken and concessional credit for agriculture and industries can be extended which will promote greater economic equality. This will protect interest

of small entrepreneurs and less privileged sections of the community.

13.1.4 Speculative Motive: Concept of Liquidity Trap

1. It is demand for money as a 'store of wealth'

Wealth can be stored in the form of landed property, bonds, money, bullion, etc., For sake of simplicity, all forms of assets except money can be grouped in the form of bonds. Thus, according to Keynes there are two types of assets, i.e., money and bonds. The aim is to have the best portfolio—considering interest is earned on cash deposited in saving bank account and monetary return is earned on bonds. It is speculation about future changes in interest rate and bond prices that the resulting demand for money is called speculative demand for money.

2. Relationship between bond price and interest rate

Price of a bond is inversely related to market rate of interest. For example, let price of bond be ₹1,000. It yields fixed return of 10% per annum which means bond has fixed annual income of ₹100. Let us assume that rate of interest in saving bank account falls from 10% to 8%. The question is how much money kept in bank will get interest of ₹100 (equal to return from bond) after one year. Suppose, X is the amount, then the amount will be:

$$X \times \frac{8}{100} = 100 \Rightarrow X = 1,250$$

That means ₹ 1,250 kept in saving bank account will give the same return (i.e., ₹ 100) as ₹ 1,000 invested in bond. Naturally, people will prefer to buy bond than to deposit cash in bank. Competition among buyers will push up the price of ₹ 1,000 bond (face value) to ₹ 1,250. Thus, with fall in market rate of interest, price of bond rises and vice versa. Price of bond is inversely related to market rate of interest.

3. Relationship between speculative demand for money and rate of interest

Speculative demand for money is inversely related to rate of interest. That is, higher the rate of interest, smaller will be speculative demand for money and vice versa. Therefore, speculative demand for money (M_s^d) curve is downward sloping to the right. It is shown in fig. 13.1.

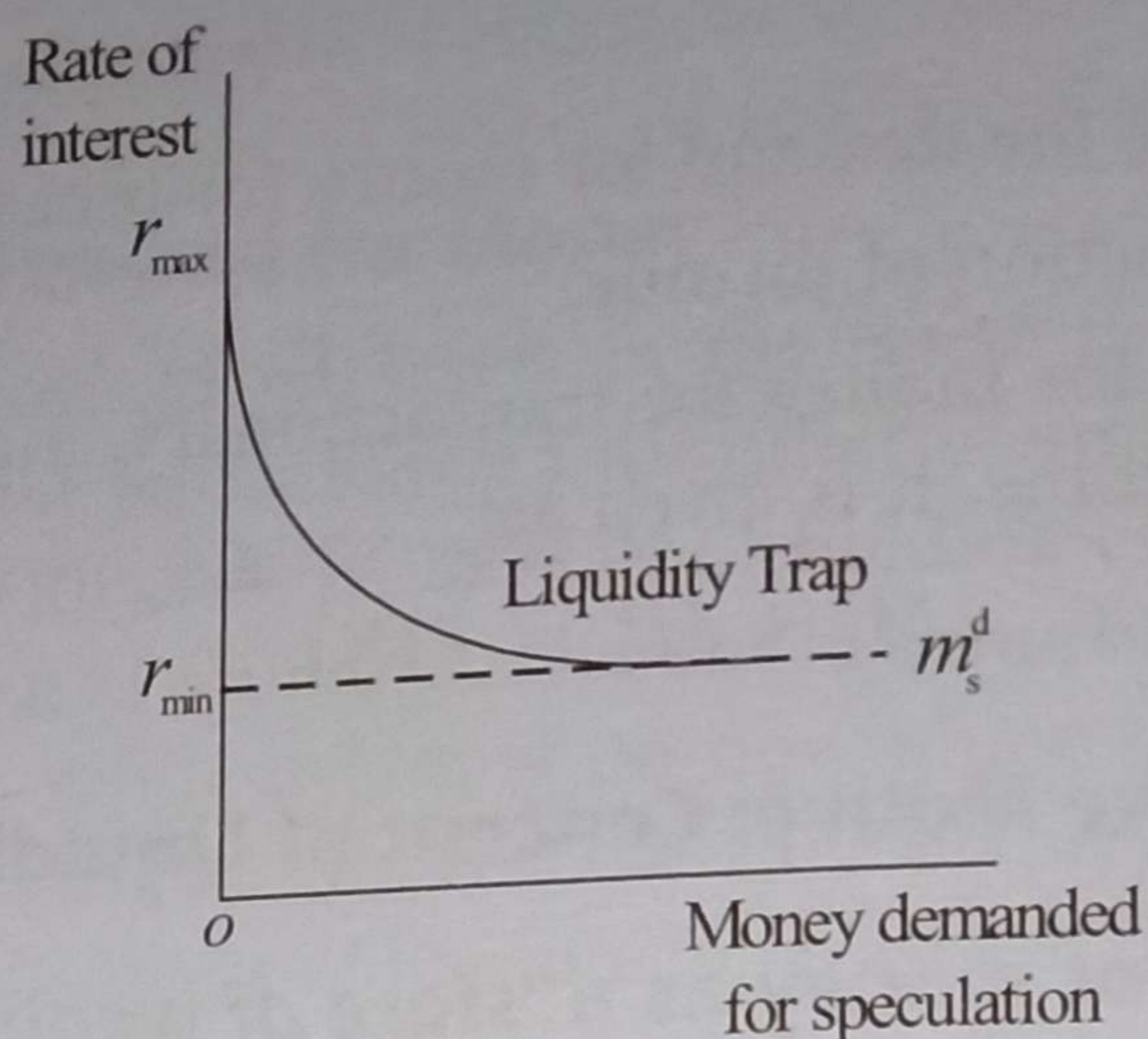


Fig. 13.1 : Liquidity Trap

In the figure, the speculative demand for money is plotted on the horizontal axis and the rate of interest on the vertical axis.

where

r_{\max} = When the interest rate is very high, every one expects it to fall in future and hence anticipate capital gains from bond-holding. Hence, people convert their money into bonds. Thus, speculative demand for money is low. When interest rate comes down, more and more people expect it to rise in the future, and hence, anticipate capital loss. People convert their bonds into money. Thus, speculative demand for money is high.

Speculative demand for money is inversely related to the rate of interest. The speculative demand for money can be written as:

$$M_s^d = \frac{r_{\max} - r}{r - r_{\min}}$$

where

r = It is the market rate of interest

r_{\max} and r_{\min} = They are the upper and lower limits of r respectively, both positive constraints. It is evident from the equation that as r decreases from r_{\max} to r_{\min} , the value of M_s^d increases from zero to infinity.

r_{\min} = If the market rate of interest is already low enough so that everybody expects it to rise in future, causing capital losses, nobody will wish to hold bonds. Everyone in the economy

will hold their wealth in money balance and if additional money is injected in the economy it will be used up to satisfy people's desire for money balances without increasing the demand for bonds and without further lowering the rate of interest below the floor r_{\min} . Such a situation is called **liquidity trap**. The speculative money demand function is infinitely elastic in this range.

10.8.3 Automatic Stabilisers

The use of taxes and spending by the government to eliminate recessionary and inflationary gaps is known as discretionary fiscal stabilisation. In other words, *discretionary fiscal stabilisation policy refers to the deliberate changes in tax rates and government spending that is targeted at stabilising an economy.*

In the words of *Lipsey* and *Chrystal*. “*Even when the government does not undertake to stabilise the economy via discretionary fiscal policy, the fact that net tax revenues rise with GDP means that there are fiscal effects that cause the budget to act as an automatic stabiliser for the economy.*”