

CBSE Class 12 Economics
NCERT Solutions
Chapter 06 (Macroeconomics)
Open Economy Macroeconomics

Question 1: Differentiate between balance of trade and current account balance.

Solution: Balance of Trade refers to the balance occurring on account of export and import of visible items (goods only). We can also say it is the difference between the values of exports and imports of goods.

Current account balance includes the following:

- (i) Export and import of goods / services
- (ii) Unilateral transfers from one country to the other.
- (iii) It is net value of balance of visible (goods) and invisible (services) trade / items and records transactions of both items. Current account balance has got wider concept.

Thus, Balance of Trade is only a component of current account balance.

Question 2: What are official reserve transactions? Explain their importance in the balance of payments.

Solution: Transactions by a central bank that cause changes in its official reserve is called official reserve transactions (ORT). These are usually purchase or sale of its own currency in the exchange market in exchange for foreign currencies or other foreign currency-denominated assets. In the balance of payment, a purchase of its own currency is a credit (+) and a sale is a debit (-)

Importance of ORT in balance of payments is as stated below

- i. Purchase of a country's own currency is a credit item in the balance of payments; whereas, sale of the currency is a debit item.
- ii. It helps to adjust the deficit and surplus in balance of payments.

Thus, ORT plays a vital role in economy of any country.

Question 3: Distinguish between the nominal exchange rate and the real exchange rate. If you were to decide whether to buy domestic goods or foreign goods, which rate would be more relevant? Explain.

Solution: Nominal exchange rate: It is price of foreign currency in terms of domestic currency.

When cost of purchasing one unit of foreign currency (say, dollar) is quoted in terms of domestic currency (say, rupees), it is called nominal exchange rate. Exchange rate is quoted in money terms i.e. so many rupees per dollar. For instance, if 1 American dollar can be obtained for 50 Indian rupees i.e. if it costs Rs.50 to buy 1 dollar, it will be called nominal exchange rate.

Real exchange rate: It is relative price of foreign goods in terms of domestic goods. When cost of purchasing one unit of domestic currency (say, rupees) is quoted in terms of foreign currency (say, dollar), it is called real exchange rate. For instance, in the above case it costs 2 cents (1 dollar=100 cents) to buy 1 rupee. People who plan to visit America need to understand how expensive American goods are relative to goods at home country

Real exchange rate =

$$e \frac{P_f}{P}$$

Where P_f - price level of foreign currency

P - Price level of domestic currency

e - Nominal exchange rate

For example, if a watch costs \$40 in US and the nominal exchange rate is 50 per US dollar, then, with real exchange rate of 1, it should cost Rs 2,000 ($eP_f = 50 \times 40 = \text{Rs}2000$) in India.

If, I was to decide whether to buy domestic goods or foreign goods, then real exchange rate will be more relevant, because real exchange rate takes the inflation differential among the countries into account and is also used as an indicator of a country's competitiveness in the foreign trade.

Question 4: Suppose it takes 1.25 yen to buy a rupee, and the price level in Japan is 3 and the price level in India is 1.2. Calculate the real exchange rate between India and Japan (the price of Japanese goods in terms of Indian goods). (Hint: First find out the nominal exchange rate as a price of yen in rupees).

Solution: Price level in foreign country: (Japan) $P_f = 3$

Price level in home country: (India) $P = 1.2$

Now, real exchange rate = $e \frac{P_f}{P}$

Price of 1.25 yen = 1 rupee

Price of 1 yen = $\frac{1}{1.25} = \frac{100}{125} = \frac{4}{5}$ Rupee

Therefore, $e = \frac{4}{5}$ Rupee

So, real exchange rate = $e \frac{P_f}{P} = \frac{4}{5} \times \frac{3}{1.2} = 2$

Therefore, the real exchange rate is 2.

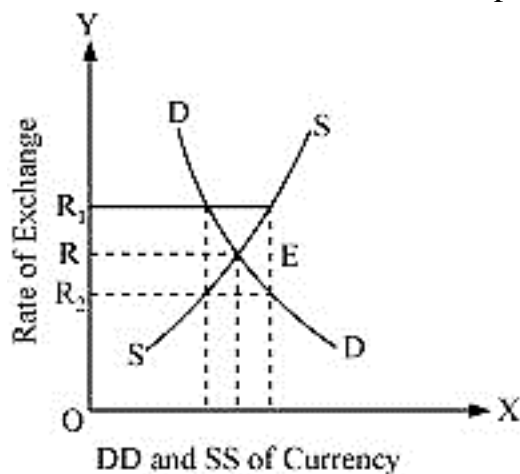
Question 5: Explain the automatic mechanism by which BOP equilibrium was achieved under the goldstandard.

Solution: Under the gold standard system, gold was taken as a common unit for measuring other country's currency. Thus, the value of a currency was defined in terms of gold. The exchange rate in an open market was determined by its worth in terms of gold. It was fixed in lower limits and upper limits; under which it was allowed to fluctuate. So, the exchange rate became stable under gold standard. All the countries-maintained stock of gold to exchange currency. The adjustment mechanism under the gold standard is referred to as the price-specie-flow mechanism expounded by David Hume. Under the gold standard, a balance of payment disequilibrium will be corrected by a counter-flow of gold. Thus, fixed exchange rate were maintained by an automatic equilibrating mechanism.

Question 6: How is the exchange rate determined under a flexible exchange rate regime?

Solution: Under flexible exchange rate regime, the rate of exchange is determined by the forces of demand and supply in the international market. In other words, the equilibrium rate of exchange occurs where demand and supply are equal to each other. Equilibrium rate is also determined at a level where foreign exchange demand's is equal to the supply of the same.

This can be illustrated with the help of the given figure:



In the figure, x -axis represents demand for and supply of foreign currency and y -axis represents the exchange rate. DD is the demand curve that is downward sloping, showing an inverse relationship between the rate of exchange and demand for foreign currency.

Whereas, the supply curve is upward sloping, showing positive relationship between the rate of exchange and the supply of foreign currency. E is the equilibrium rate of exchange, where the demand equates the supply of foreign exchange (OR). Now, if the exchange rate rises to OR_1 , then the supply exceeds the demand, forcing the exchange rate to fall back to OR. On the contrary, if the exchange rate falls to OR_2 , there is excess demand over supply. Hence, the rate of exchange rises from R_2 to R. Hence, the equilibrium exchange rate (OR) is determined by demand and supply of foreign currency.

Sources of demand in foreign exchange are payment of international loans, gifts and grants. Whereas sources of foreign exchange supplies are worldwide export, direct foreign investment etc.

Question 7: Differentiate between devaluation and depreciation.

Solution:

Devaluation	Depreciation
It occurs when the currency exchange rate is officially lowered under fixed exchange rate system.	When the value of currency falls as compared to other currencies under flexible exchange rate system, it is known as depreciation.
It exists under fixed/ pegged exchange rate system.	It exists under flexible exchange rate system.
It is due to government's decision / official action	It is due to the demand and supply forces., also known as market forces

Question 8: Would the central bank need to intervene in a managed floating system?

Explain why.

Solution: Managed Floating system refers to a system in which foreign exchange rate is determined by market forces. Central bank or government influences the exchange rate through intervention in the foreign market. It helps in moderating the exchange rate movements by purchase and sale of foreign currency. It allows adjustment in exchange rate according to the set rules and regulations which are officially declared in the foreign market.

1. It is a hybrid of a fixed exchange rate and a flexible exchange rate system.
2. In this system, Central bank intervenes in the foreign exchange market to restrict the fluctuations in the exchange rate within certain limits. The aim is to keep exchange rate close to desired target values.
3. For this, Central bank maintains reserves of foreign exchange to ensure that the exchange rate stays within the targeted value.
4. It is known as 'Dirty Floating'.

Question 9: Are the concepts of demand for domestic goods and domestic demand for goods the same?

Solution: In a closed economy, the demand for domestic goods and domestic demand for goods are similar terms. However, in an open economy, these two terms have different meanings. Demand for domestic goods includes both domestic and foreign countries demand.. Whereas, domestic demand for goods refers to the domestic market demand of a country, that is either produced domestically or abroad (foreign countries).

Question 10: What is the marginal propensity to import when $M = 60 + 0.06Y$? What is the relationship between the marginal propensity to import and the aggregate demand function?

Solution: Marginal propensity to import is the fraction of additional income spent on imports. It is given that $M = 60 + 0.06Y$

Therefore, marginal propensity to import (m) = 0.06. It reflects induced imports; that is the part of the total imports, which is a function of income.

Since the marginal propensity to import negatively affects the aggregate demand function, when income increases the aggregate demand decreases. This is because the additional income is spent on foreign goods and not on domestic products.

Question 11: Why is the open economy autonomous expenditure multiplier smaller than the closed economy one?

Solution: In case of a closed economy, equilibrium level of income is given by $Y =$

$$C + cY + I + G$$

$$\text{Or, } Y - cY = C + I + G$$

$$\text{Or, } Y(1 - c) = C + I + G$$

$$\text{Or, } Y = \frac{C + I + G}{1 - c}$$

Let, $(C + I + G) = A_1$

$$\text{Or, } Y = \frac{A_1}{1 - c} \dots\dots\dots(i)$$

$$\text{Or, } \frac{\Delta Y}{\Delta A_1} = \frac{1}{1 - c}$$

In the case of an open economy, equilibrium level of income is given by

$$Y = C + cY + I + G + X - M - mY$$

Or,

$$Y - cY + mY = C + I + G + X - M$$

$$\text{Or, } Y(1 - c + m) = C + I + G + X - M$$

$$\text{Or, } Y = (C + I + G + X - M) / 1 - c + m$$

Let autonomous expenditure $(A_2) = C + I + G + X - M$

Or, $Y = A_2 / 1 - c + m$

$$\frac{\Delta y}{(\Delta A_2)} = \frac{1}{(1 - c + m)} \dots\dots\dots(ii)$$

Comparing equations (1) and (2) and the denominators of the two multipliers, we can conclude that multiplier in an open economy is smaller than that in a closed economy, as the denominator in an open economy is greater than denominator in a closed economy.

An increase in autonomous demand leads to a smaller increase in output compared to a closed economy.

Question 12: Calculate the open economy multiplier with proportional taxes, $T = tY$, instead of lump-sum taxes as assumed in the text.

Solution: In the case of proportional tax, the equilibrium income would be

$$Y = C + c(1 - t)Y + I + G + X - M - mY$$

$$\Rightarrow Y - c(1 - t)Y + mY = C + I + G + X - M$$

$$\Rightarrow Y [1 - c(1 - t) + m] = C + I + G + X - M$$

$$Y = \frac{(C + I + G + X - M)}{[1 - c(1 - t) + m]}$$

Autonomous expenditure (A) = $C + I + G + X - M$. Therefore, open economy multiplier with proportional taxes

$$\frac{\Delta Y}{\Delta A} = \frac{1}{1 - c(1 - t) + m}$$

Question 13: Suppose $C = 40 + 0.8Y^D$, $T = 50$, $I = 60$, $G = 40$, $X = 90$, $M = 50 + 0.05Y$

(a) Find equilibrium income

(b) Find the net export balance at equilibrium income

(c) What happens to equilibrium income and the net export balance when the government purchases increase from 40 to 50?

Solution: Given:

$$C = 40 + 0.8Y^D$$

$$T = 50$$

$$I = 60$$

$$G = 40$$

$$X = 90$$

$$M = 50 + 0.05Y$$

(a) Equilibrium level of income

$$Y = C + c(Y - T) + I + G + X - M - mY$$

$$Y = \frac{A}{1 - c + m}$$

Where, $A = C - cT + I + G + X - M$

$$= \frac{C - cT + I + G + X - M}{1 - c + m}$$

$$= \frac{40 - 0.8 \times 50 + 60 + 40 + 90 - 50}{1 - 0.8 + 0.05}$$

$$= (40 - 40 + 60 + 40 + 90 - 50) / 0.25$$

$$= \frac{140}{0.25} = \frac{140}{25} \times 100$$

$$= 560$$

(b) Net exports at equilibrium income

$$NX = X - M - mY$$

$$= 90 - 50 - 0.05 \times 560$$

$$= 40 - 28 = 12$$

(c) When G increase from 40 to 50,

$$\text{Equilibrium income (Y)} = \frac{C - cT + I + G + X - M}{1 - c + m}$$

$$= \frac{(40 - 0.8 \times 50 + 60 + 50 + 90 - 50)}{(1 - 0.8 + 0.05)}$$

$$= (40 - 40 + 60 + 50 + 90 - 50) / 0.25$$

$$= \frac{150}{0.25} = \frac{150}{25} \times 100$$

$$=600$$

Net export balance at equilibrium income NX

$$= X - (M + mY)$$

$$= 90 - 50 - 0.05 \times 600$$

$$= 40 - 30$$

$$= 10$$

Question 14: In the above example, if exports change to $X = 100$, find the change in equilibrium income and the net export balance.

Solution: Given:

$$C = 40 + 0.8YD$$

$$T = 50$$

$$I = 60$$

$$G = 40$$

$$X = 100$$

$$M = 50 + 0.05Y$$

$$\text{Equilibrium income (Y)} = \frac{A}{1 - c + m}$$

$$= \frac{C - cT + I + G + X - M}{1 - c + m}$$

$$= \frac{40 - 0.8 \times 50 + 40 + 60 + 100 - 50}{1 - 0.8 + 0.05}$$

$$= \frac{40 - 40 + 40 + 60 + 100 - 50}{0.25}$$

$$= \frac{150}{0.25}$$

$$= \frac{150 \times 100}{25}$$

$$= 600$$

Net export balance $NX = X - mY$

$$= 100 - 50 - 0.05 \times 600$$

$$= 50 - 0.05 \times 600$$

$$= 50 - 30 = 20$$

Question 15: Explain why $G - T = (S^P - I) - (X - M)$.

Solution: In a closed economy, savings and investments are equal at equilibrium level of income. However, in an open economy savings and investments differ.

$$Y = C + I + G + X - M$$

$$\Rightarrow Y = C + I + G + NX \text{ [As } NX = X - M]$$

$$\Rightarrow Y - C - G = I + NX \dots (1)$$

Now, the component on the LHS can be regarded as national savings. That is, net national income which is left after consumption and government spending.

$$S = I + NX$$

National Savings (S) in an economy include private savings (S^P) and government savings (S^G).

$$\text{So, } S^P + S^G = I + NX$$

$$\Rightarrow NX = S^P + S^G - I$$

$$\Rightarrow NX = (Y - C - T) + (T - G) - I \text{ [As } S^P = Y - C - T \text{ and } S^G = T - G]$$

$$\Rightarrow NX = Y - C - T + T - G - I \Rightarrow NX = Y - C - G - I$$

$$\Rightarrow G = Y - C - I - NX$$

$$\Rightarrow G - T = Y - C - I - NX - T \text{ [Subtracting } T \text{ from both sides]}$$

$$\Rightarrow G - T = Y - C - T - I - NX$$

$$\Rightarrow G - T = (S^P - I) - NX$$

$$\Rightarrow G - T = (S^P - I) - (X - M) \quad [NX = X - M]$$

Question 16: If inflation is higher in country A than in Country B, and the exchange rate between the two countries is fixed, what is likely to happen to the trade balance between the two countries?

Solution: The exchange rate is one of the most vital determinant in the country's level of trade. Country A has a higher inflation than country B. Since, the exchange rate is fixed, it is advantageous for country B to export goods to country A. Similarly, it is advantageous for country A to import goods from country B. On the other hand, it would be expensive for country A to export goods to country B. Thus, country A will have trade deficit as it will import more goods as compared to exports, compared to country B. Country B will import less goods as compared to exports, from country A. Hence, there is a trade surplus in country B.

Question 17: Should a current account deficit be a cause for alarm? Explain.

Solution: Current account deficit is the excess of total imports of goods, services and transfers over total exports of goods, services and transfers. This happens due to high rate of inflation, unfavorable economic growth, exports are challenging due to fixed exchange rate. This situation makes a country debtor to the rest of the world. But, this cannot be always treated as a cause for alarm because countries might be running in deficits (current account) to increase productivity and exports in future. Also, more investment will help in building capital stock, which in future will lead to rise in output.

Question 18: Suppose $C=100+0.75YD$, $I=500$, $G=750$, taxes are 20 percent of income, $X=150$, $M= 100 + 0.2Y$. Calculate equilibrium income, the budget deficit or surplus and the trade deficit or surplus.

Solution: Given:

$$C = 100 + 0.75YD$$

$$I = 500$$

$$G = 750$$

$$X = 150$$

$$M = 100 + 0.2Y$$

$$\text{Equilibrium income (Y)} = C + c(Y - T) + I + G + X - M - mY$$

$$\text{Or, } Y = 100 + .75 \left(Y - \frac{20}{100} Y \right) + 500 + 750 + 150 - 100 - 0.2Y$$

$$\text{Or, } 1400 + \frac{75}{100} \times \frac{4Y}{5} - 0.2Y$$

$$\text{Or, } Y = 1400 + \frac{3}{5}Y - 0.2Y$$

$$Y = 1400 + 2Y/5$$

$$Y - 2Y/5 = 1400$$

$$\text{Or, } 3Y/5 = 1400$$

$$\text{Or, } Y = 1400 \times 5/3 = 7000/3$$

Government expenditure = 750

$$\text{Government receipts (taxes)} = \frac{20}{100} \times \frac{7000}{3} = \frac{1400}{3} = 466.6$$

Since, government expenditure > government receipts

It shows the government is running on deficit budget

$$NX = X - M - mY$$

$$= 150 - 100 - 0.2 \times 7000/3$$

$$= 150 - 100 - 1400/3$$

$$= 150 - 100 - 466.66$$

$$= 150 - 566.66$$

$$= -416.66$$

Since NX is negative, it implies trade deficit.

Question 19: Discuss some of the exchange rate arrangements that countries have entered into to bring about stability in their external accounts.

Solution: To combine the two extreme positions, 'fixed' and 'flexible', the following exchange rate arrangements are used by governments to bring stability in external accounts:

i. Wider Bands: A system that allows adjustment in fixed exchange rate is referred to as wider bands. It permits only 10% variation between the currencies of any two countries. For example, a country can improve its balance of payments (BOP) deficit by depreciating its currency, which leads to increase in demand for domestic goods due to increase in purchasing power of other currencies. This further leads to the increase in exports, hence improving the BOP.

ii. Crawling Peg: Crawling peg system allows continuous and regular adjustments in the exchange rate. Only 1% of variation is allowed at a time.

iii. Managed floating: Managed floating is a scheme under which government can intervene to vary the exchange rate when the situation demands so. There is no specific limit of variation as in crawling peg and wider bands.

In finance an exchange rate between two currencies is the rate at which one currency will be exchanged for another.

There are mainly three major types of exchange rate systems which are known as the float, the fixed rate, and the pegged float.

- **Floating exchange rate:** Also known as flexible exchange rate. A system where the value of currency in relation to others is allowed to freely fluctuate subject to market forces. The dollar is an example of a floating currency. Many economists believe floating exchange rates are the best possible exchange rate regime because these regimes automatically adjust to economic circumstances.
- **Fixed exchange rate:** Also known as pegged exchange rate system. A system where a currency's value is tied to the value of another single currency, to a basket of other currencies, or to another measure of value, such as gold. The central bank of a country remains committed at all times to buy and sell its currency at a fixed price. The most famous fixed rate system is the gold standard, where a unit of currency is pegged to a specific measure of gold. Second important one is The Bretton Woods System where all currencies are pegged or related to US Dollar. China is well-known for its fixed exchange rate. It was one of the few countries that could impose a fixed rate by making it illegal to trade its currency at any other rate.
- **Pegged float exchange rate:** A currency system that fixes an exchange rate around a certain value, but still allows fluctuations, usually within certain values, to occur. These are a hybrid of fixed and floating regimes. There are three types of pegged float regimes, namely Crawling bands, Crawling pegs, Pegged with horizontal bands.

One more Exchange rate which is common today is **Managed Floating**, also known as dirty floating. It is a mixture of a flexible exchange rate system (the float part) and a fixed rate system (the managed part). It can be best described as the system where exchange rates are allowed to fluctuate from day to day within a range before the central bank will intervene to adjust it. India has a managed float exchange regime. The rupee is allowed to fluctuate with the market within a set range before the central bank will intervene.