UNIT-I
OUTPUT & EMPLOYMENT IN AN OPEN ECONOMY

SESSION- VII

IN THIS SESSION:

- Alternative Representation of Open Economy Equilibrium in terms of Saving-Investment Balance and Trade Balance

- Statement of the Foreign Trade Multiplier when there are Foreign Repercussions

Equilibrium in Open Economy: Leakages from the Income-Expenditure Flow

Equilibrium can also be characterized as equality between net leakages and net injections.

Leakages:

- Saving

- Imports: Explicitly considered.

        APM, MPM

- APM: Average Propensity to Import:

- Representing equilibrium in terms of equality between net leakages and net injections.
- **Saving:** Function of Disposable Income
- Disposable income is distributed among saving and consumption:

$$Y-T \equiv C + S$$

$$S \equiv (Y-T) - C$$

$$\equiv (Y-T) - (a + b(Y-T))$$

$$S \equiv (Y-T) - (a + b(Y-T))$$

or,

$$S \equiv (1-b)Y - (a - T(1-b))$$

Imports: Function of national income:

$$M = M_0 + m.Y$$

Alternative Representation of Equilibrium:

Equilibrium defined in terms of equality between net leakages and net injections:

$$S + T + M = I + G + X$$

Where,

S, M	$\rightarrow$	Functions of Income,
T, I, G, X	$\rightarrow$	All are assumed given / exogenously determined.

Equilibrium in the Open Economy

The equilibrium expression for national income, as derived before:

$$Y = \frac{1}{(1-b+m)} \{a - bT + I + G + X - M^*)\qquad\qquad 11)$$

Also, as we have seen, the foreign trade multiplier is given by:

$$\Delta Y / \Delta X = \frac{1}{(1-(b-m))}$$

$$= \frac{1}{1-b+m}\qquad\qquad\qquad 12)$$

(higher b or mpc, higher the multiplier, and higher mpm, lower is the value of the multiplier).

We have also seen that:

$$\Delta Y / \Delta X = \frac{1}{(mps + mpm)} \rightarrow \text{A result that we will use later.}$$

Income Determination in an Open Economy: Alternative Formulation

Equilibrium defined in terms of equality between net leakages and net injections:

We have, so far, derived our equilibrium income using the equality between

Y and Aggregate Expenditure

i.e., $\qquad Y \quad = \quad C+I+G+ (X-M) \qquad \ldots \, \ldots \ldots \qquad 13)$

Now, we can write:

$$Y = C+S+T+M = C+I+G+ X,$$

Or, taking away C from both sides,

$$S+T+M = I+G+X, \qquad \qquad \ldots \qquad \ldots \quad 14)$$

That is, at equilibrium level of national income, the sum of saving, taxes and imports in the economy should equal the sum of autonomous injections, that is, investment, government spending and exports.

This gives us an alternative equilibrium condition in terms of net leakages and net injections.

$$S + T + M = I + G + X \qquad \ldots \qquad \ldots \qquad 15)$$

Where,

S, M $\rightarrow$ Functions of Income,

T, I, G, X $\rightarrow$ All are assumed given / exogenously determined.

Simplifying assumption:

No government spending or taxes.

So that, 15) above becomes:

$$S(Y) + M(Y) = I + X$$

- Figure 3 graphically depicts

- A)   Determination of equilibrium national income using the S+M = I+X condition,

- B)   The effect of an increase in exports (can be worked with increase in imports, too)---

- And

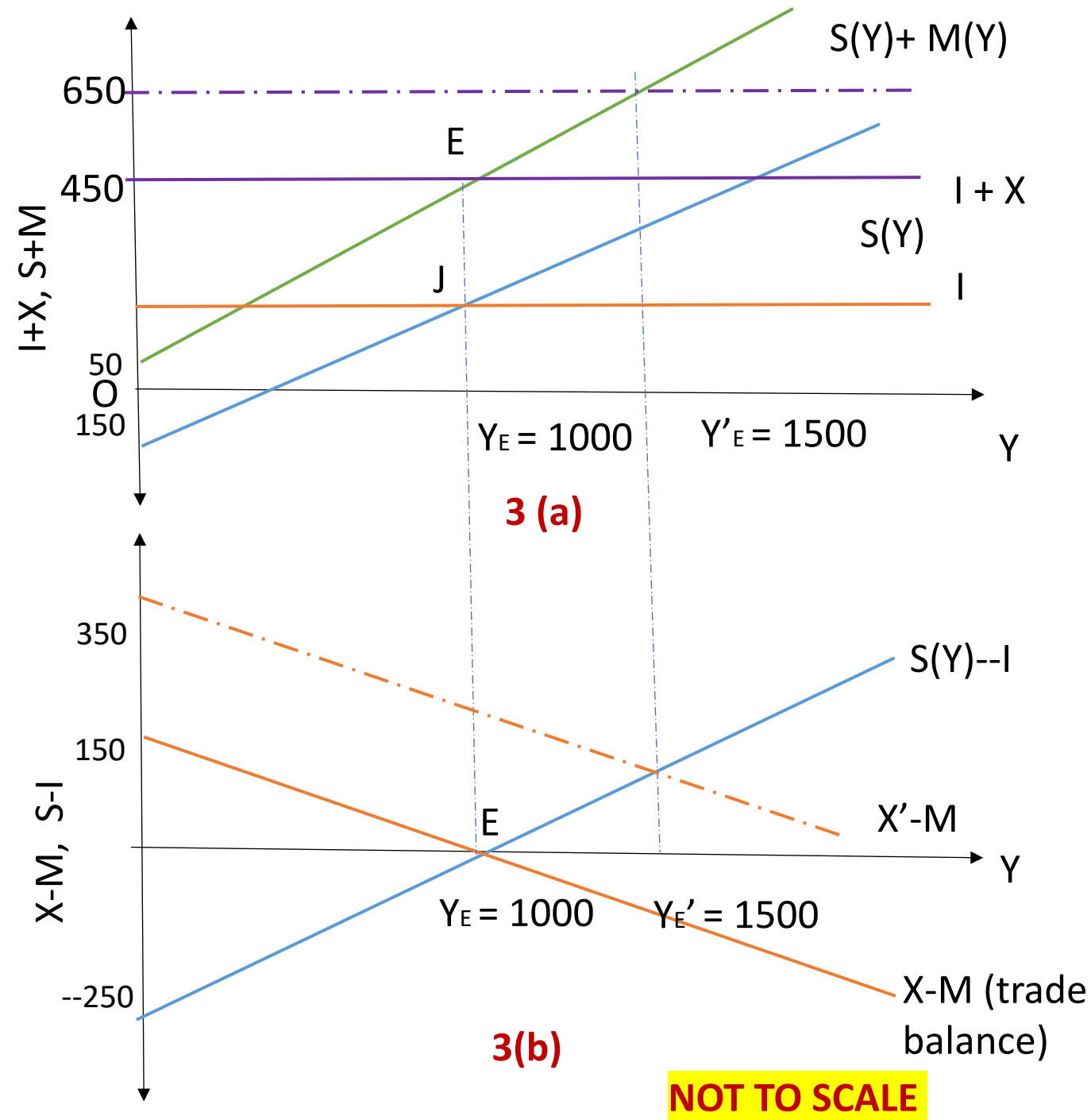- C)   calculating the trade balance at equilibrium income.

Fig 3: National Income Determination in a Small Open Economy

The top panel (a) measures saving plus imports, and investment plus exports on the vertical axis, and NY along the horizontal axis..

The equilibrium level of national income, YE=1000 is given by point E where the I+X function crosses the S(Y) + M(Y) function.

At YE=1000, S=I=150, so X = M = 300.

The bottom panel (b) measures (X-M) and (S-I) on the vertical axis, and national income Y on the horizontal axis.

(Why does X-M fall, and S(Y)-I rise?)

At E, Ye where X-M(Y) function crosses the S(Y)-I function, and X-M = S-I = 0.

An autonomous increase in X of 200 (broken lines in top and bottom panels) raises YE to 1500, and X'-M is now 125 = S-I.

What is the advantage of using figure 3(b)? The trade balance can be read directly from the figure. any disturbance → automatic income adjustment mechanism.

- (X-M falls because we are subtracting a rising M(Y) from a constant X as Y rises.

- S(Y)-I function rises because we subtract a constant (I) from the rising saving function).

Equilibrium Income

- The equilibrium level of national income is

$$Y_E = 1000,$$

Determined where the (I + X) function crosses the S(Y) + M (Y) function (point E in the top panel (a)).

That is, at a point where:

$$INJECTIONS = LEAKAGES$$

$$I + X = S + M$$

$$150 + 300 = 150 + 300$$

$$450 = 450$$

Note that at the equilibrium national income level, the trade balance is also in equilibrium (X=M=300).

This equilibrium is stable (mismatch between leakages and injections would lead the system to Y_E.

Open Economy: Foreign Income Adjustment Process

- So far, we have studied

    i)   Equilibrium GNP (Y) in an open economy, and

    ii)   The effect of a change in exports on Y

- In all this, we assumed that:
- Autonomous changes in imports and/or exports do not have any *repercussions,*

- For the rest of the world, or for the trading partners of our domestic economy.

Foreign Income Adjustment Process

- Repercussions   ➡️   Consequences/ Impact

- This assumption, (of NO repercussions), is valid only when our domestic economy is of very small size.

- For a large country, such autonomous changes (in X and/or M), will affect the incomes; exports and imports of its trading partners.

- Such changes will be more or less equivalent to the changes in home country.

- We now drop this assumption (of a small home country).

- We will now see how autonomous changes in one country affect the income and trade balance of its trading partners.

- To do this, we assume there are only two countries, A and B.

- (In a two-nation world, say A and B,

- How does an autonomous increase happen in country A's exports?

- It results from an equal and autonomous increase in imports of country B).

Foreign Repercussions and the Foreign Trade Multiplier

- Foreign repercussion on country A: Which partly offsets the initial increase in its autonomous exports.

- We state here, without derivation, the effect of foreign repercussions on the home country's foreign trade multiplier.

- Result
- The foreign trade multiplier for country A with foreign repercussions will be smaller, than it would have been without foreign repercussions.

- The foreign trade multiplier of country A with foreign repercussions for an autonomous increase in exports, k_{ft} will be given by:

$$k_{ft} = \Delta Y_a / \Delta X_a = 1/mps_a + mpm_a + mpm_b (mps_a / mps_b))$$