International Economics

Unit 2

Elasticity and Absorption Approaches to the Balance of Payments

- **Aim**: There is an important question we have to answer:

  – Does a devaluation always improve the current account?

There are two main approaches trying to give us an answer:

1.- The Elasticity Approach

2.- The absorption Approach

Some open economy identities

- In an open economy, GDP differs from that of a closed economy because.

  - There is an additional injection: export expenditure
  - There is also an additional leakage: import expenditure

- Thus, the identity for an open economy is:

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

  If we deduct taxation T from both sides of the equation

  - $Yd = C + I + G + X - M - T$

  And, if we consider private savings ($S = Yd - C$), we can rearrange eq. so

  - $(X - M) = (S - I) + (T - G)$

Open economy multipliers

- $Y = C + I + G + X - M$
- $C = Ca + cY$
- $S = Sa + sY$ (we assume $T = 0$)
- $M = Ma + mY$
- $I = Ia = I$
- $G = Ga = G$
- $X = Xa = X$
- If we substitute all these equations in the first identity:

Open economy multipliers

- $Y = Ca + cY + I + G + X - Ma - mY$

Therefore:

- $(1 - c + m)Y = Ca + I + G + X - Ma$

As we consider T = 0, (1 - c) = s

- $Y = \frac{1}{s+m}(Ca + I + G + X - Ma)$

This equation can be transformed into difference form to yield:

- $dY = \frac{1}{s+m}(dCa + dI + dG + dX - dMa)$

Open economy multipliers (Y)

- The government expenditure multiplier

$$\frac{dY}{dG} = \frac{1}{s+m} > 0$$

- The export multiplier

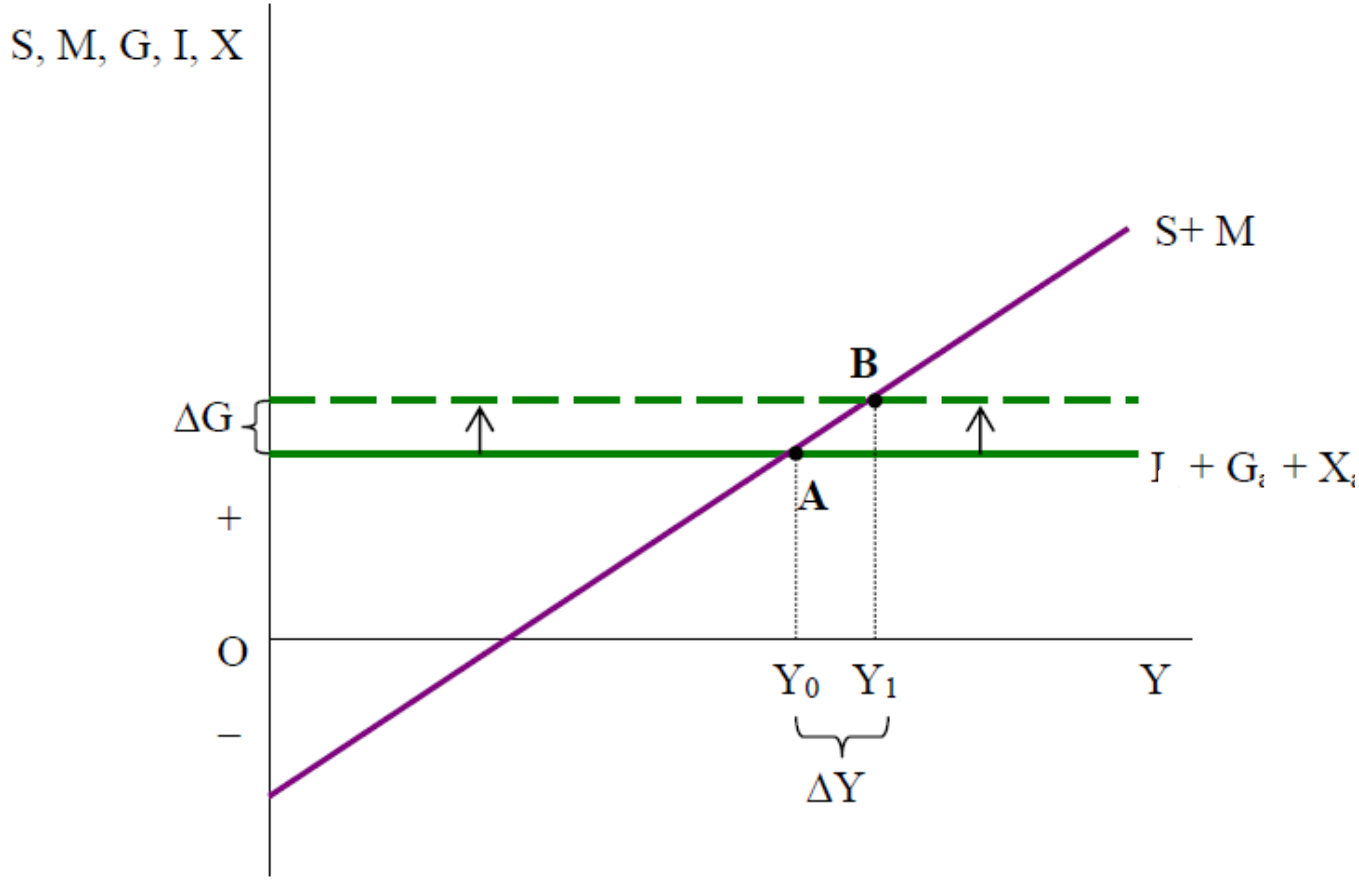
$$\frac{dY}{dX} = \frac{1}{s+m} > 0$$

- The import multiplier

$$\frac{dY}{dM} = -\frac{1}{s+m} < 0$$

Open economy multipliers (Y)

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



Open economy multipliers (X - M)

- $Y = \frac{1}{s+m}(Ca + I + G + X - Ma)$
- $(s + m)Y - (Ca + I + G + X - Ma) = 0$
- $mY - \frac{m}{s+m}(Ca + I + G + X - Ma) = 0$
- $mY - \frac{m}{s+m}(Ca + I + G + X - Ma) + X + Ma = X + Ma$
- $X - M = X - Ma - \frac{m}{s+m}(Ca - Ma + I + G + X)$
- $dCA = dX - dMa - \frac{m}{s+m}(dCa - dMa + dI + dG + dX)$

Open economy multipliers (X - M)

- The government expenditure multiplier

$$\frac{dCA}{dG} = -\frac{m}{s+m} < 0$$

- The investment multiplier

$$\frac{dCA}{dI} = -\frac{m}{s+m} < 0$$

- The export multiplier

$$\frac{dCA}{dX} = \frac{s}{s+m} > 0$$

Elasticity approach

- **Aim**: Investigate the impact of exchange rate changes on the current account.

  – Exchange rate: direct quotation
  – Current account. For simplicity we make it equal to the trade account

- **Assumptions**

  1.- The supply elasticities for the domestic export good and the foreign import good are, with respect to the exchange rate, infinite

  ↓

  This means that changes in demand have no effects on prices

  ↓

  This also means that P and P* are fixed

  2.- Domestic income is constant

- **The equations of the model**

$$CA = P\,X_v - S\,P^*\,M_v$$

$$CA = X - S\,M$$

$$dCA = \mathrm{d}X - S\,dM - M\,dS$$

$$\frac{dCA}{dS} = \frac{dX}{dS} - S\,\frac{dM}{dS} - M\,\frac{dS}{dS}$$

At this point we introduce two definitions:

$$\eta_X = \frac{dX/X}{dS/S} \quad \Longrightarrow \quad dX = \eta_X \frac{dS}{S} X$$

$$\eta_M = -\frac{dM/M}{dS/S} \quad \Longrightarrow \quad dM = -\eta_M \frac{dS}{S} M$$

Then, substituting we have:

$$\frac{dCA}{dS} = \frac{\eta_X X}{S} + (\eta_M M) \text{ - M}$$

And assuming that initially we have balance trade (X=SM):

$$\frac{dCA}{dS} = \text{M}(\eta_X + \eta_M - 1)$$

This giving us the Marshall-Lerner condition:

$$Marshall - Lerner \text{ condition} \quad \eta_x + \eta_m > 1$$

What if initially the CA is not in equilibrium? In this case, X=θSM, being θ higher or lower than 1, so

$$\frac{dCA}{dS} = \mathrm{M}(\theta\eta_X + \eta_M - 1)$$

The Marshall-Lerner condition becomes:

$$\theta\eta_X + \eta_M > 1$$

Whatever the condition, it is clear there are two direct effects of a devaluation on the current account:

- The price effect, which contributes to worsening the current account
- The volume effect, which contributes to improving the current account

The Marshall Lerner condition assesses what effect is higher and, therefore, if the devaluation improves or not the current account.

Example. Devaluation and the current account

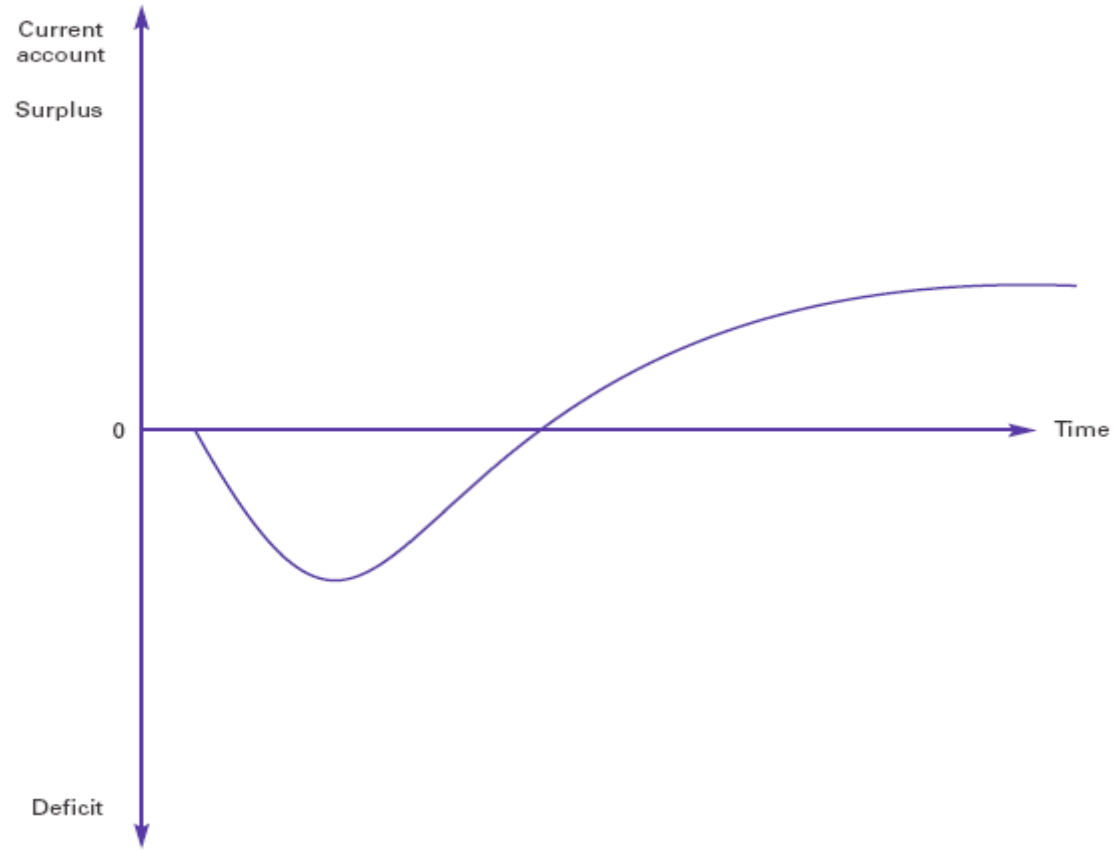
	Volume	Price	Euro Value	Dollar Value
Initial Exchange rate: 0.5€=1$				
EU exports	100	€1	€100	$200
EU Imports	40	$5	€100	$200
Current balance			€0	$0
Devaluation domestic currency: New Exchange rate: 0.66€ = 1$				
EU exports	105	€1	€105	$157.5
EU Imports	36	$5	€120	$180
Current balance			-€15	-$22.5
Devaluation domestic currency: New Exchange rate: 0.66€ = 1$				
EU exports	130	€1	€130	$195
EU Imports	30	$5	€100	$150
Current balance			€30	$45

What does the empirical evidence tell us about η_x and η_m?

Empirical evidence is not conclusive. Elasticity optimists and elasticity pessimists. General thoughts are:

1.- Industrialised countries versus developing countries. The Marshall – Lerner condition is more probable to be fulfilled in industrialized/developed countries than in developing countries

2.- Short-run versus long-run (J-curve effect)



Absorption approach

- **Aim**: Investigate the impact of exchange rate changes on the current account.
- - **Assumptions**
  - The supply elasticities of both the domestic and foreign goods are infinite
  - Domestic income (Y) is not held constant anymore (In particular, by definition changes in export and import volumes brought about by a devaluation DO affect national income). Therefore, the model considers how changes in Y might affect CA
- **The equations of the model**

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

$$A = C + I + G$$

$$A = A_d + aY$$

$$CA = X - M = Y - A$$

$$dCA = dY - dA$$

$$dA = adY + dA_{\mathrm{d}}$$

$$dCA = (1 - a)dY - dA_{\mathrm{d}}$$

$$dCA/dS = (1\text{-}a)\, dY/dS - dA_d/dS$$

$$dCA/dS > 0 \Rightarrow (1\text{-}a)\, dY/dS > dA_d/dS$$

The effects of a devaluation on national income

- Employment effect

Marshall-Lerner condition
- It is fulfilled $\rightarrow \Delta(X - M) \rightarrow \Delta Y$
- It is not fulfilled $\rightarrow \nabla(X - M) \rightarrow \nabla Y$

- Terms of trade effect (TOT)

The TOT represents the amount of exports that can be obtained in exchange for a unit of imports

TOT = Price of exports/ Price of imports= P/SP*

$$\Delta S \rightarrow \nabla TOT \rightarrow \nabla Y$$

The effects of a devaluation on direct absorption

- Real balance effect

$$M/P_{\mathrm{I}} = k \qquad P_{\mathrm{I}} = \alpha\ \mathrm{P} + (1 - \alpha)\ S\ P^{*}$$

Assumption: The money supply is constant

$$\Delta S \rightarrow \Delta P_I \rightarrow to\ keep\ real\ balances\ wil\ sell\ bonds \rightarrow \nabla Pb \rightarrow \Delta r \rightarrow \nabla I(\nabla C) \rightarrow \nabla A_d$$

- Income redistribution effect

-The rise in the general prices will, theoretically, affect negatively to people with fixed incomes, and then positively to people with variable incomes. As the first ones are generally "poor" people with a high level of absorption in terms to income, and the second ones are "rich" people with a low level of absorption in terms of income, this income redistribution effect will tend to reduce direct absorption

The effects of a devaluation on direct absorption

- Money illusion effect

If prices increases and there is (consumers suffer from) money illusion, they will buy the same bunch of goods as before, so direct absorption will increase. But it could be the other way around. Anyway, this would be a short-run and temporary effect.

- Expectational effects

Economic agents can think that price increase is going to continue in the future, so they are going to buy more goods today, then direct absorption will rise

- Laursen-Metzler effect

The change in the TOT has two effects: Income (already explained) and substitution effects. The deterioration in the TOT makes domestically produced goods relatively cheaper compared to foreign produced goods, which implies a substitution effect leading to an increase in direct absorption

The effects of a devaluation on direct absorption

Conclusions

- The effects of a devaluation on Y and A_d are ambiguous
- The effects of a devaluation on CA are indeterminate

- CA = Y – A

Lesson for policy makers: A devaluation is more likely to succeed if it is accompanied by other policy measures that rise income relative to absorption