

Macroeconomics

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1 Macroeconomics Essentials

1.1 Issues of macroeconomics

- GDP: gross domestic product: measures total income (or output). income generated within geographical boundaries
- GNP \equiv GNI (gross national income): gross national product (separated) : income generated by inhabitants of country

1.2 Macroeconomics Essentials

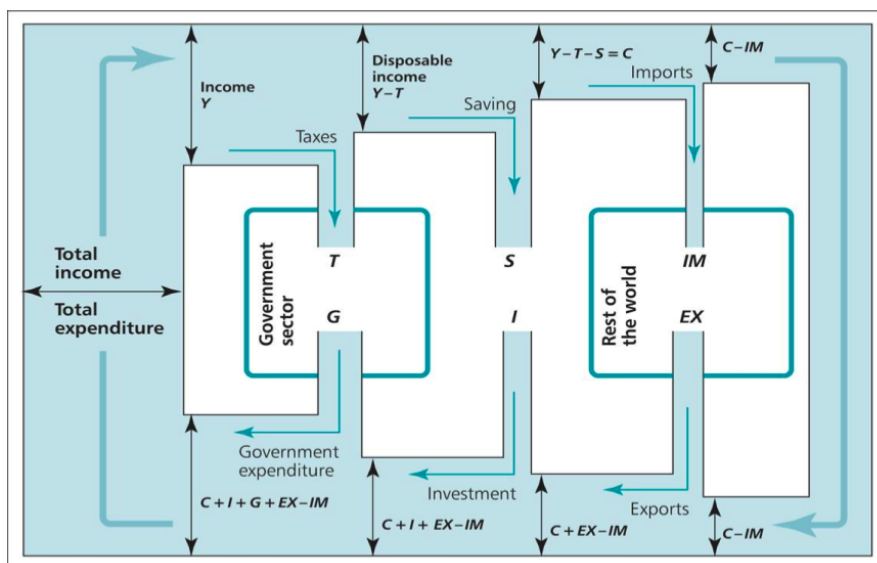


Figure 1: Circular Flow

$$(S - I) + (T - G) + (IM - EX) = 0 \quad (1)$$

where

- S : savings and I : investments

- T : taxes and G : gov. expenditure
- IM : imports and EX : exports ($NX = EX - IM$)

Quantity Equation

$$MV = PY \quad (2)$$

where

- M money supply
- V velocity of money (turnover): average frequency in which a unit of money is spent.
- P price level
- Y real income

Nominal income is thus PY .

Gouvernement budget

$$G - T = \Delta B_{CB} + \Delta B_{PS} \quad (3)$$

where ΔB are the bonds **owed** to either the private sector (PS) or the central bank (CB). C'est les obligations du pays (confédération). Si le pays est en déficit ($G - T > 0$) et donc le nombre d'obligations émises augmente ($\Delta > 0$).

$$CA + CP + OR = 0 \quad (4)$$

where

- CA : current account: records goods into and out of the country $= NX$
- CP : capital account: flow of financial assets into and out of the country $-\Delta F$
- OR : official reserve account: purchase and sales of foreign country by central Bank. $= -\Delta RES$

$$NX = \Delta F + \Delta RES \quad (5)$$

The central bank balance sheet

$$\Delta M = \Delta B_{CB} + \Delta RES \quad (6)$$

2 Booms and Recessions (I): Keynesian Cross

2.1 Circular flow model revisited: terminology and overview

Expenditure: amount of money spent.

Aggregate expenditure

$$AE \equiv C + I + G + EX - IM \quad (7)$$

$$\underbrace{C}_{\text{consumption}} = Y - T - S \quad (8)$$

Actual expenditure: Y

$$Y = AE + I^u \quad (9)$$

2.2 Income determination: a first look

We set G, I, NX constant and

$$C = cY \quad (10)$$

where c is the **marginal propensity to consume**.

We then have

$$AE = cY + G + I + NX \quad (11)$$

at equilibrium

$$Y = AE \quad (12)$$

thus

$$Y = \frac{1}{1-c}(G + I + NX) \quad (13)$$

and

$$\Delta Y = \frac{1}{1-c}(\Delta G + \Delta I + \Delta NX) \quad (14)$$

if $\Delta I = \Delta NX = 0$

$$\Delta Y = \frac{1}{1-c}\Delta G \quad (15)$$

and the expression $\frac{1}{1-c}$ is called the **multiplier**

3 Money, interest rates and the global economy

3.1 The money market, the interest rate and the LM curve

The money demand function

$$L = kY - hi \quad (16)$$

where L demand for real money. Y is the income and i the interest rate. Note that $L_Y > 0$ and $L_i < 0$.

Then

$$i = \frac{k}{h}Y - \frac{1}{h}L \quad (17)$$

At equilibrium, we have

$$L = \frac{M}{P} \quad (18)$$

where M is the money supply (nominal prices \rightarrow we divide by price level P).

LM-curve identifies interest-rate i and income Y for which money demand equals money supply.

3.2 Aggregate expenditure, the interest rate and the exchange rate: the IS curve

Consumption function

$$C(Y, Y_+^e) = c_1 Y + c_2 Y_+^e \quad (19)$$

can be simplified to $C(Y)$

Investment function

$$I(i, Y_+^e) = b_1 Y_+^e + b_2 i \quad (20)$$

can be simplified to $I(i)$

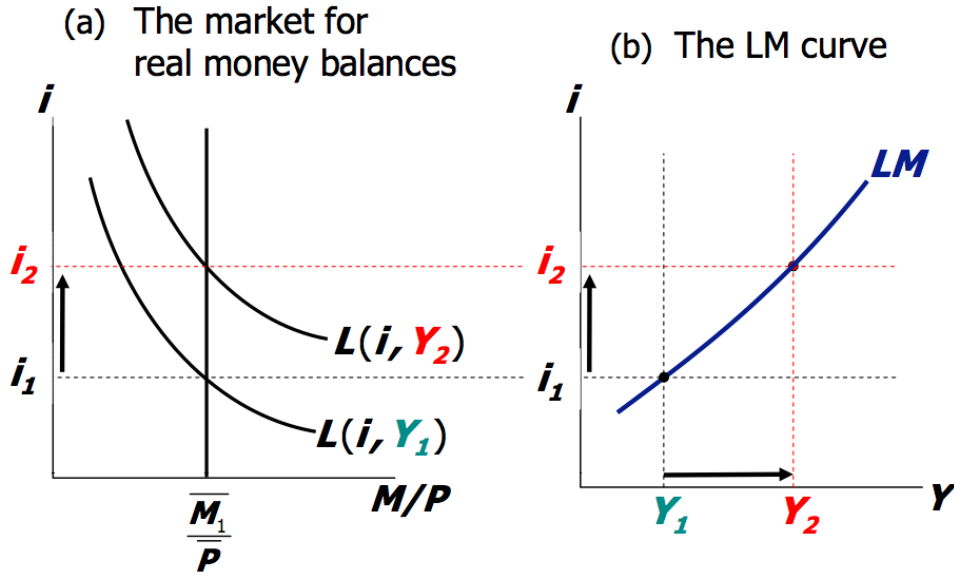


Figure 2: LM-curve

Real exchange rate

$$R = E \frac{P^{\text{world}}}{P} \quad (21)$$

import function

$$IM = m_1 Y - m_2 R \quad (22)$$

export function

$$EX = x_1 Y^{\text{world}} + x_2 R \quad (23)$$

Putting the last 4 equations into $Y = C + I + G + NX$ yields

$$i = -\frac{1-c-m_1}{b} Y + \frac{x_2+m_2}{b} R + \frac{\bar{I} + G + x_1 Y^{\text{world}}}{b} \quad (24)$$

The *LM*-curve is for the money market (money supply M)
and
the *IS*-curve is for the goods market I , C and NX

4 Exchange rates and the balance of payments

under flexible exchange rate $OR = 0 \Rightarrow CA = -CP$

the current account is determined by

$$CA \equiv NX = EX - IM = x_1 Y^{\text{world}} + x_2 R - m_1 Y + m_2 R \quad (25)$$

and the capital account by

$$CP = \kappa(i - i^{\text{world}}) \quad (26)$$

putting the last 3 equations together yields

$$i = i^{\text{world}} + \frac{m_1}{\kappa} Y - \frac{x_1}{\kappa} Y^{\text{world}} - \frac{m_2 + x_2}{\kappa} R \quad (27)$$

The 3 endogenous variables of the IS-LM-FE (or Mundell-Fleming) model are Y, i, R . Note that $R = E$ when $P = P^{\text{world}}$ because of 21.

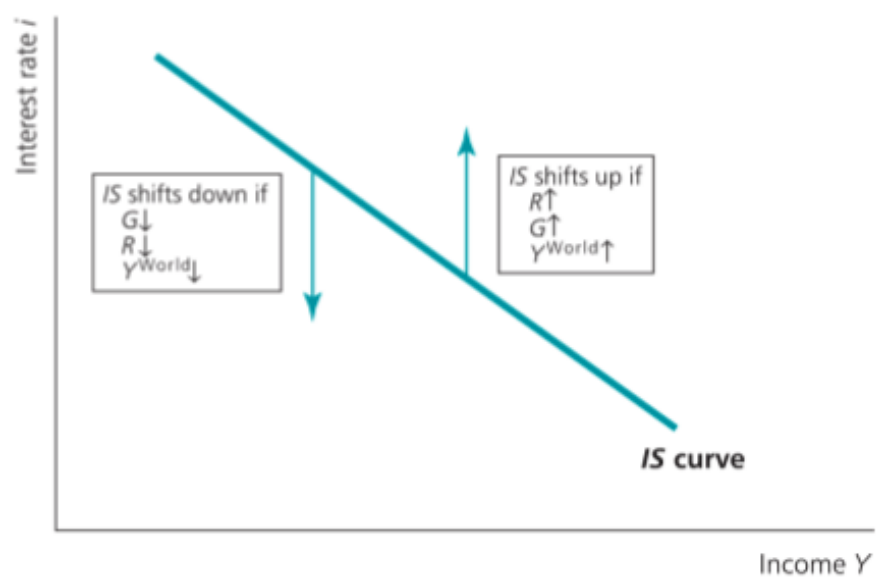


Figure 3: IS -curve