

1 INTRODUCTION

1. Endogenous variables are explained within the model while exogenous variables are taken as given. This means that we can use the model to understand how a change in one exogenous variable affects the endogenous variables in the model if other exogenous variables are held constant. Which variables we treat as exogenous depends on the situation. If a country has a fixed exchange rate, for example, it makes sense to treat the exchange rate as exogenous, but if it has a floating exchange rate, we need to treat the exchange rate as endogenous. The effect of a given change in a specific exogenous variable depends on what other variables are treated as exogenous.
2. These decisions are analysed in Chapters 2, 3 and 6. There we show that prices depend primarily on wages and labour productivity. When firms set wages, they take account of wages set by other firms and of the level of unemployment. Investments depend primarily on the expected real interest rate (the interest rate minus expected inflation), expected future demand and the level of capital that the firm has.
3. These decisions are analysed in Chapters 4 and 12. There we show that consumption depends primarily on four factors: current income, expected future income, the real interest rate, and the level of wealth. Demand for imported goods depends on the same factors, plus the relative price between domestically produced and foreign goods. This relative price is called the real exchange rate.
4. This choice is analysed in Chapter 12. When foreign lenders choose between lending in the currencies of two different countries, they consider the interest rates on loans in the different currencies and the expected change in the exchange rate between the two currencies. If a currency is expected to depreciate, lenders require a higher interest rate in order to lend in that currency. The *interest parity condition*, which is derived in chapter 12, says that the expected returns must be the same on loans in two different currencies.
5.
 - a) $Y = C + I + C^G + I^G + X - IM = 50 + 20 + 23 + 3 + 36 - 32 = 100$
 - b) Let K be the capital stock and call the depreciation rate δ . Then we have
Net domestic product $= Y - K \cdot \delta = 100 - 200 \cdot 0.075 = 100 - 15 = 85$.
 - c) Net national disposable income
 $= Y - K \cdot \delta + Y^F + Tr^F = 100 - 15 + 5 - 2 + 0 = 88$.
 - d) Labour share $= \frac{60}{100 - 10} = \frac{60}{90} = \frac{2}{3} \approx 0.67 = 67$ percent.

e) Gross capital share = $\frac{100 - 10 - 60}{100 - 10} = \frac{30}{90} = \frac{1}{3} \approx 0.33 = 33$ percent.

Net capital share = $\frac{100 - 10 - 60 - 15}{100 - 10} = \frac{15}{90} \approx 0.17 = 17$ percent.

6.

a) Private gross saving = $Y + Y^F + iD - T - C = 100 + 5 - 2 + 1 - 24 - 50 = 30$.

Private net lending = $30 - 20 = 10$.

b) Government gross saving = $24 - 23 - 1 = 0$.

Government net lending = $0 - 3 = -3$.

c) Current account = $36 - 32 + 5 - 2 + 0 = 7$, which is equal to private plus government net lending.

7.

a) $\frac{500/10}{150} = \frac{1}{3}$.

b) $\frac{500/200}{150/30} = \frac{5/2}{5} = \frac{1}{2}$.

c) In euros, the cost of the basket in country B is $200/10 = 20$ while it is 30 in country A. The basket is cheaper in country B, so country B has a higher income when we consider the purchasing power of the income in the home country.

8.

a) $\frac{P_2^A \cdot Y_2^A + P_2^B \cdot Y_2^B + P_2^C \cdot Y_2^C}{P_1^A \cdot Y_1^A + P_1^B \cdot Y_1^B + P_1^C \cdot Y_1^C} = \frac{11 \cdot 9 + 20 \cdot 5 + 8 \cdot 4}{10 \cdot 8 + 20 \cdot 5 + 5 \cdot 4} = \frac{231}{200} = 1.155$.

Nominal expenditure increased 15.5 percent.

b) To measure inflation we measure how much more the basket bought in year 1 would cost in year 2:

$$\frac{P_2^A \cdot Y_1^A + P_2^B \cdot Y_1^B + P_2^C \cdot Y_1^C}{P_1^A \cdot Y_1^A + P_1^B \cdot Y_1^B + P_1^C \cdot Y_1^C} = \frac{11 \cdot 8 + 20 \cdot 5 + 8 \cdot 4}{10 \cdot 8 + 20 \cdot 5 + 5 \cdot 4} = \frac{220}{200} = 1.10$$

Inflation was 10 percent. You had to pay 10 percent more for the same basket.

- c) To measure the real increase in consumption we measure how much expenditure would have increased if prices had been the same as in year 1:

$$\frac{P_1^A \cdot Y_2^A + P_1^B \cdot Y_2^B + P_1^C \cdot Y_2^C}{P_1^A \cdot Y_1^A + P_1^B \cdot Y_1^B + P_1^C \cdot Y_1^C} = \frac{10 \cdot 9 + 20 \cdot 5 + 5 \cdot 4}{10 \cdot 8 + 20 \cdot 5 + 5 \cdot 4} = \frac{210}{200} = 1.05.$$

Real consumption increased 5 percent. Expenditure would have increased 5 percent if prices had remained unchanged.

- d) Nominal expenditure increased 10 percent because of inflation and 5 percent in real terms, i.e. around 15 percent. The approximate calculation is $10+5=15$. The exact calculation is $1.10 \cdot 1.05 = 1.155$.