

National accounts and measurement

EC108 In-class PS1, Q1

Suppose that an economy shows only the following activities in a specific year. It costs an automobile manufacturing company €10,000,000 to assemble 5,000 cars. The cars are then sold to stores for €12,000,000. The stores pay their workers an annual wage of €1,000,000 and then sell the cars directly to the consumers for €15,000,000.

- (a) Calculate the GDP of this economy using the production-of-final-goods approach.
- (b) Calculate the GDP of this economy using the expenditure approach.
- (c) Calculate the GDP using the value-added approach. Show the value added at each stage of production.
- (d) Calculate the GDP using the income approach. Show the costs incurred and profits earned.

EC108 Pre-class PS1, Q6

A woman marries her gardener. Before they were married, she paid him £60,000 per year. He continues to do the gardening for her as before (but as a husband rather than as a wage earner). She earns £1,000,000 per year both before and after her marriage. The marriage:

- (a) Does not change GDP.
- (b) Decreases GDP by £60,000.
- (c) Increases GDP by £60,000.
- (d) Increases GDP by more than £60,000.
- (e) None of the above.

EC108 In-class PS1, Q2

The Consumer Price Index (CPI) is a measure of the average price of goods that a typical household consumes. To calculate the CPI, a basket of 700 goods and services that reflects the UK society's buying habits is used to construct the index. Assume that UK consumers buy only meat and movie tickets as their basket of goods and services. The Office for National Statistics determines that in each year, the average consumer

purchases one pound of meat and one movie ticket, and the prices per pound of meat and per movie ticket are as in the table below:

Year	Price of meat	Price of a movie ticket
2015	£2	£5
2016	£1.9	£4.8
2017	£2	£4.9
2018	£2	£5
2019	£2	£5.2
2020	£2.1	£5.3

- (a) What is the cost of the consumer price basket in 2010?
- (b) What is the cost of the consumer price basket in 2011 and in subsequent years?
- (c) Represent the cost of the consumer price basket as an index number in the years 2010 to 2015. Set the value of the index number equal to 100 in 2010. Calculate the annual rate of inflation using the percent change in the value of the consumer price basket between each year from 2010 through 2015.

EC108 In-class PS1, Q3

If nominal GDP rises from \$100 trillion to \$120 trillion, while the GDP deflator rises from 2.0 to 2.2, the percentage change in real GDP is approximately equal to:

- (a) -10%
- (b) 10%
- (c) 20%
- (d) 9.1%
- (e) 0%

Question Unemployment

At a particular point in time in an economy there are

- 31.2 million employed people
- 1.3 million unemployed people
- 8.2 million non-participants

- a) Find the unemployment rate.
- b) Find the labour-force participation rate.
- c) Find the employment rate.

Based on EC108 In-class PS9, Q1

The actual and potential output for a given economy are shown in the table below. Fill in the rest of the table.

Year	Actual output, Y_t	Potential output, \bar{Y}_t	Output gap, x_t	Growth rate of actual output
2018	18.0	18.0		
2019	18.2	18.6		
2020	18.5	19.2		
2021	19.5	19.8		
2022	20.0	20.4		

What do you think happens to unemployment during this period?

IS-LM model

Based on EC108 In-class PS9, Q1

Consider the following numerical example of the IS-LM model:

$$C = 100 + 0.3Y_D$$

$$I = 150 + 0.2Y - 1000i$$

$$T = 100$$

$$G = 200$$

$$\left(\frac{M}{P}\right)^s = 1200$$

$$\left(\frac{M}{P}\right)^d = 2Y - 4000i$$

- (a) Write the equation for equilibrium in the goods market and illustrate graphically.
- (b) Find the Keynesian multiplier of government spending.
- (c) Derive the IS relation.
- (d) Write the equilibrium condition in the money market and illustrate graphically
- (e) Derive the LM relation.
- (f) Solve for the equilibrium values of output, interest rate, consumption and investment.
- (g) Expansionary monetary policy. Suppose that the central bank increases money supply to 1,500. What is the impact of this expansionary monetary policy on the IS and LM curves? Find the new equilibrium values of output, interest rate, consumption and investment.
- (h) Expansionary fiscal policy. Suppose that the government increases its spending to 300. What is the impact of this expansionary fiscal policy on the IS and LM curves? Find the new equilibrium values of output, interest rate, consumption and investment.

Intertemporal choice

EC108 In-class PS5, Q3

In Fisher's two-period consumption model, if $Y_1 = 20000$, $Y_2 = 15000$, and $r = 0.5$, then the maximum possible consumption in period two is:

- (a) 15,000.
- (b) 25,000.
- (c) 35,000.
- (d) 45,000.
- (e) None of the above.

EC108 Pre-class PS5, Q2

A household has an income of £10,000 today and £50,000 tomorrow.

- (a) If the real interest rate is 5%, what is the household's maximum possible consumption in period 1/period 2? What is the household's permanent income?
- (b) If today's income unexpectedly increases by £1,000, what is the change in permanent income?
- (c) If income goes up by £1,000 permanently (in both periods), what is the effect on permanent income?