Макроэкономика 1 — МИЭФ, 2024 final

МИЭФ | Макроэкономика 1 | 2024 | final

Рисунки пока рендерятся в тестовом режиме и могут отличаться от исходных материалов.

SECTION 1

A. Multiple-choice questions — 20 marks

Choose **one** correct answer for each question. Each question is worth **4 marks**. The same questions must be explained in Section B.

A1

Consider the Solow model with labour-augmenting technology A, which grows at rate $g > 0$. Population grows at rate $n > 0$. What is the growth rate of the real wage in the steady state?

- (a) 0
- (b) n
- (c) g
- (d) $n + g$

A2

What will be the effect of stronger employment-protection policy on equilibrium search unemployment?

- (a) No effect
- (b) Negative
- (c) Positive
- (d) Ambiguous

A3

What was the main reason for the Bank of Russia to keep the key rate at 16% per annum in June 2024?

- (a) An increase in current inflation
- (b) An increase in expected inflation
- (c) An increase in OFZ yields

- (d) An increase in labour-market tightness

A4

In a closed economy, the central bank pursues flexible inflation targeting. How does an increase in the interest-rate sensitivity of investment demand affect the AD schedule in (Y, π) space?

- (a) It shifts the schedule parallel to the right
- (b) It shifts the schedule parallel to the left
- (c) It rotates the schedule clockwise
- (d) It rotates the schedule counterclockwise

A5

What will be the long-run effect of permanently greater thriftiness on net exports in a small open economy with perfect capital mobility and fully flexible prices and wages?

- (a) No effect
- (b) Negative
- (c) Positive
- (d) Ambiguous

SECTION 2

B. Open-ended explanations — 30 marks

Each question is worth **6 marks** and requires a concise, precise explanation.

B1 — 6 marks

Consider the Solow model with labour-augmenting technology that grows at rate $g > 0$. Population grows at rate $n > 0$. Derive the growth rate of the real wage in the steady state.

B2 — 6 marks

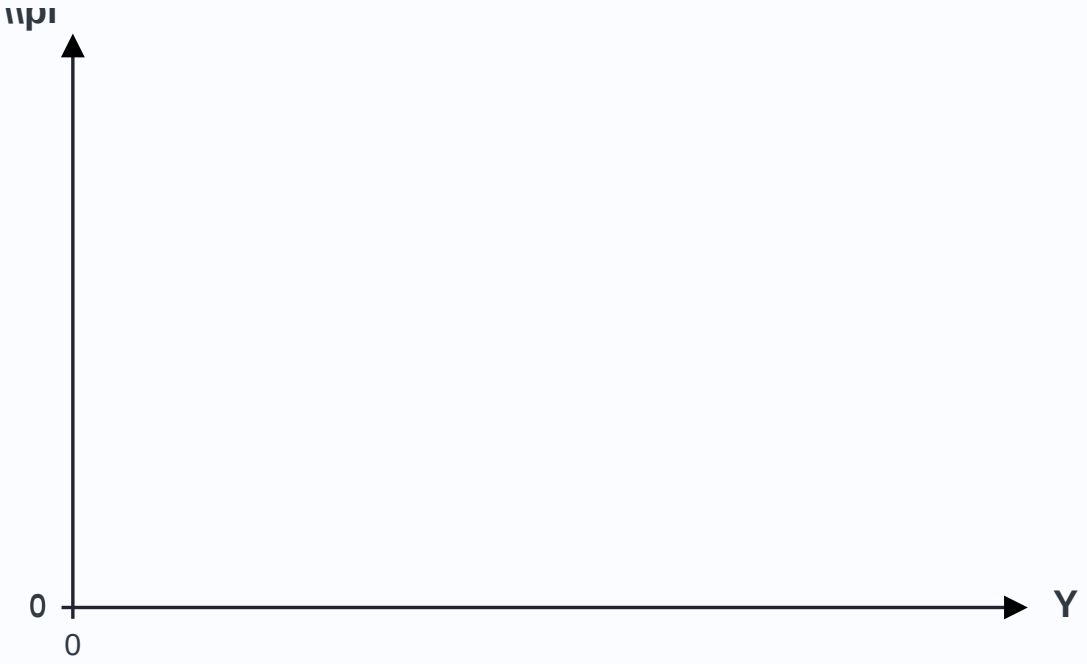
What will be the effect of stronger employment-protection policy on equilibrium search unemployment? Derive the formula and briefly explain the economic intuition.

B3 — 6 marks

What was the main reason for the Bank of Russia to keep the key rate at 16% per annum in June 2024?

B4 — 6 marks

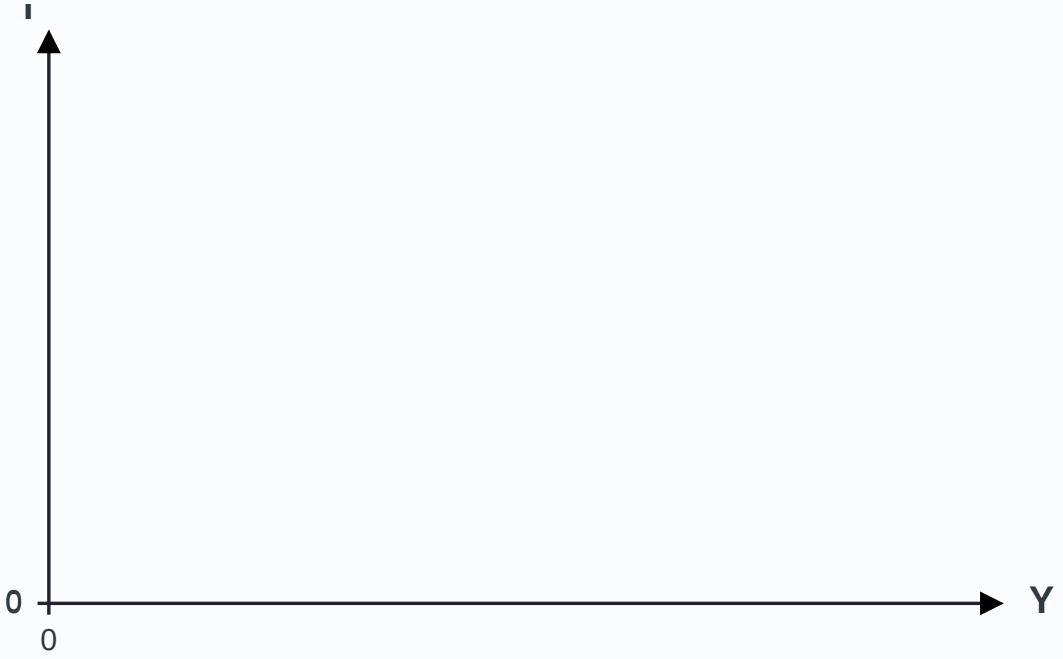
In a closed economy, the central bank pursues flexible inflation targeting. How does an increase in the interest-rate sensitivity of investment demand affect the AD schedule in (Y, π) space? Prove your answer analytically and illustrate it in the diagram below.



Blank diagram for Question B4

B5 — 6 marks

What will be the long-run effect of permanently greater thriftiness on net exports in a small open economy with perfect capital mobility and fully flexible prices and wages? Illustrate your answer in the diagram below and explain the sign of ΔNX.



Blank diagram for Question B5

SECTION 3

C. Problem — 70 marks

In a small open economy with imperfect capital mobility, the poor earn a fraction ω of national income and the remainder is earned by the rich. Profits are normalised to zero. Both income groups have the same autonomous consumption $c_0/2$ and the same marginal propensity to consume c_1. The budget is balanced: all taxes levied on the poor at proportional rate t finance public consumption, while all taxes levied on the rich at rate τ finance public investment. Private investment demand is

$$I(r) = I_0 - br,$$

where $I_0 = c_0$ and $b > 0$. Net exports are

$$NX = NX_0 - \zeta Y - dE,$$

while the capital and financial account is determined by the uncovered-interest-parity condition with $cf = b$ and $\rho = i^f = 0$.

The central bank successfully targets inflation at $\pi^* = 0$ by setting the nominal interest rate according to

$$i = i^* + (1 + \alpha)(\pi - \pi^*),$$

where $i^* > 0$ is the neutral nominal interest rate.

Initially, the rich and the poor are taxed at the same rate, $t = \tau$. Assume a fully flexible exchange-rate regime in (a), (b) and (c).

(a) (10 marks) Derive the algebraic expression for the initial equilibrium output level Y_0.

(b) (10 marks) Derive algebraically the marginal effect of a higher t on equilibrium output:

$$\frac{dY}{dt}.$$

(c) (10 marks) Illustrate in the $IS - MP - BP$ or $BPIS - MP$ diagram the effect of a higher t on Y. What happens to NX and private saving in the new equilibrium? Explain.

(d) (10 marks) Now consider a fixed exchange-rate regime. Illustrate in the $IS - MP - BP$ or $BPIS - MP$ diagram the effect of a higher t on Y. What happens to NX and private saving in the new equilibrium? Explain.

(e) (10 marks) Suppose now that the tax system is progressive, so $\tau > t$ above a certain income threshold. The rich attempt to *temporarily* reduce their taxable base below this threshold by splitting reported income among family members. Which model parameter should be changed to capture this shock? Illustrate in the $IS - MP - BP$ or $BPIS - MP$ diagram the effect of such a temporary shock on Y under a flexible exchange-rate regime. What happens to NX and private saving in the new equilibrium? Explain.

Finally, consider the very-long-run consequences of tax evasion by the rich. Assume that the economy is closed and that the average saving rates of the rich and the poor are identical and equal to a share s of their after-tax incomes. The budget remains balanced: taxes levied on the poor at rate t finance public consumption, while taxes levied on the rich at rate τ finance public investment. Output is

$$Y = AF(K, L),$$

where A is a constant level of technology, K is physical capital that depreciates at rate δ, and L is a constant level of employment.

(f) (10 marks) First, let

$$F(K, L) = \sqrt{KL}.$$

How will a small permanent tax evasion of the kind described in (e) affect per-capita consumption on the balanced growth path if the economy was initially dynamically inefficient? Use the Solow diagram.

(g) (10 marks) Now let

$$F(K, L) = K.$$

How will permanent tax evasion of the kind described in (e) affect the growth rate of output per capita? Sketch the time path of

$$g\left(\frac{Y}{L}\right).$$