

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

MACROECONOMICS

**Guidelines for self-study
of Bachelor's (first) degree students
of all specialities**

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M12

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A set of computing and analytical tasks, topics of essays and presentations for students' self-study according to the themes of the academic discipline, as well as guidelines for doing them are given to help the students obtain professional competences in order to settle topical macroeconomic issues.

For Bachelor's (first) degree students of all specialities, all forms of study.

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Introduction

The academic discipline "Macroeconomics" is a part of the complex of economic disciplines that consists of economic theory, economic history, microeconomics, world economic thought, modern economic theories, international economy, regional economy, social economy, environmental economy, economics of labor, etc. It is the basis for other economic disciplines because it helps future economists to form the market mode of thinking that, in turn, is a component of effective management in modern macroeconomic processes.

Students' self-study is a significant part of the study of the academic discipline "Macroeconomics" that includes guidelines to preparation for the lectures, classes and seminars as well as the recommendations on how to do scientific research and write essays. Students' self-study is supported by the following methodological writings: syllabus of the academic discipline, textbook [4], multimedia textbook [3], methodological guidelines for practical tasks [7], interactive tasks, interactive texts for students' self-assessment.

The aim of the guidelines to self-study on this discipline is to provide the students with the main theoretical information on macroeconomics, assist in doing computing tasks and obtaining competences in the analysis of key macroeconomic indicators.

The guidelines involve several types of tasks (computing tasks, web-based exercises) which allows the lecturer to choose the right types of self-study activity according to the level of preparation of students and, thus, correct the process of learning. Examples of computing tasks which are given in the guidelines contain all the needed formulas and explanations as to the use of them. The list of typical written tasks for students' self-study is also given.

Besides, the guidelines involve the recommendations on how to do analytical tasks related to real economic situations as well as the topics of essays and presentations on two content modules and themes according to the syllabus of the academic discipline.

Content module 1. Analysis of the main markets of the economy

Theme 1. Macroeconomics as a science

1. Questions for self-study

1. The stages of the development of macroeconomics.
2. The circular flow model. The two-sector model.

Recommended literature: [3; 5, p. 115; 6, p. 14–15; 9, p. 47–54].

Guidelines for self-study on theme 1

Students should begin self-study on theme 1 with the consideration of the stages of the macroeconomics development (mercantilism, physiocrats, English classical school, Marxists, Keynesian economics, monetarist economics, rational expectations theory, supply-side theory, institutional economics), paying close attention to the contribution of modern macroeconomics thinkers (J. Keynes, M. Fleming, R. Mundell, F. Modigliani, P. Samuelson) to the formation of macroeconomics as a part of economic theory. Students should obtain information in the form of presentations. It is also very important to distinguish between the subject matter of macroeconomics and the subject matter of microeconomics, political economy, economic theory and economics. For this purpose, students should do corresponding web-based exercises.

After that students should study the main problems, key terms and indicators of macroeconomics. Besides, it is very useful to consider the main methods of macroeconomics (deductive method, inductive method, analysis, prediction, dialectics, aggregation, macroeconomic modeling, the circular flow model, the two-sector model) so that students should prepare for class discussion, at least, two examples of the use of each method in the macro-economic practice.

In order to successfully complete self-study on theme 1, students should analyze the relationship between macroeconomics and other disciplines (history, psychology, sociology, philosophy, politics, etc.) and write an essay on one of the proposed topics.

2. Web-based exercises

1. Look for a newspaper on the Internet. Find a news story about macroeconomics. How do you know that it is about macroeconomics?

2. Find a news story about instruments of macroeconomics. How do you know that it is about fiscal, monetary and trade policies?

3. Essays

1. Macroeconomics as a theoretical basis for economic policy.
2. The relationship between macroeconomics and other social sciences.

Guidelines for writing the essays

The students have to choose one of the offered topics and write an essay on about four sheets including the title and the references. In the essays students should make a point – not a statement of fact, but an interpretation – and support it persuasively with evidence from publications. In order to achieve this aim, students should use scientific writings by three or four researchers and give "for" and "against" arguments through brief quotations from the assigned works. All quotations must be properly and thoroughly documented. The assignments are intended, through the experience of writing and rewriting, to improve students' skills as a critical reader, writer, and researcher.

The essay is given to the lecturer both in the printed and electronic form using the personal education system Moodle [12]. The technical requirements to the design of the essay are as follows: A4 page size; Times New Roman; 14 font size; 1.5 interline spacing; 1.25 cm indentation; 200 mm right, upper, lower margin, 25 mm left margin.

4. Presentations

1. The main macroeconomics thinkers (J. Keynes, M. Friedman, S. Kuznets, F. Modigliani, P. Samuelson).
2. Modern macroeconomics concepts: Keynesian theory, monetarists view, neoclassical synthesis.
3. The methodology of modern macroeconomics.

Guidelines for making presentations

Students have to choose one of the offered topics and prepare a presentation on about ten slides in the program environment Microsoft Power Point (.ppt, .pttx). Presentations must contain text and statistics presented in the form of graphs, figures, images, pictures, etc.

Theme 2. Macroeconomic indicators in the system of national accounts

1. Questions for self-study

1. Limitations of the GDP measure. The underground economy.
2. National wealth and its measure.

Recommended literature: [3; 5, p. 110–114; 6, p. 26–28; 8, p. 31–49; 9, p. 23–25].

Guidelines for self-study on theme 2

Students should begin self-study on theme 2 with the consideration of the approaches to calculation of GDP (value added method, distribution method, expenditure method), paying close attention to the calculation of GDP using the expenditure method (tasks for self-study 2, 5, 6). It is also very important for students to determine the measures of GDP and causes of emergence of the underground sector in developing countries. For this purpose students should prepare a presentation on one of the offered themes.

After that students should proceed to the macroeconomic indicators on the net basis (gross national product (GNP), net domestic product (NDP), net national product (NNP), national income (NI), disposable income (DI)). They should do the computing task (task 7). The necessary formulas for the calculation of these indicators are given in [1, p. 44–45; 2, p. 64–70].

In order to successfully complete self-study on theme 2, students should distinguish between nominal and real GDP. For this purpose, students should study the literature [4, p. 29–31; 5, p. 114] and do the computing tasks (tasks 1, 4, 5, 9).

2. Tasks for self-study

Task 1. Study the data given in Table 2.1.

Table 2.1

Year	Nominal GDP, bln francs	Deflator, %	Real GDP, bln francs
2017	163.42	104.6	
2018	176.31	99.8	
2019	173.11	100.5	
2020	181.11	116.2	

Calculate real GDP for each year.

Guidelines for doing task 1

In order to solve this task, use the following formula:

$$GDP_R = \frac{GDP_N}{D} \cdot 100, \quad (2.1)$$

where GDP_R is real GDP;
 GDP_N is nominal GDP;
D is the deflator.

Entering the input data in formula (2.1), we obtain:

$$GDP_R(2017) = \frac{163.42 \text{ bln francs}}{104.6} \cdot 100 = 156.23 \text{ bln francs.}$$

$$GDP_R(2018) = \frac{176.31 \text{ bln francs}}{99.8} \cdot 100 = 176.66 \text{ bln francs.}$$

$$GDP_R(2019) = \frac{173.11 \text{ bln francs}}{100.5} \cdot 100 = 172,25 \text{ bln francs.}$$

$$GDP_R(2020) = \frac{181.11 \text{ bln francs}}{116.2} \cdot 100 = 155.86 \text{ bln francs.}$$

Task 2. Calculate the size of gross investment of the country Beta if its economy is characterized by the following data: GDP is 152 bln euros, consumption is 75 bln euros, government purchases of goods and services is 27 bln euros, net export is 5 bln euros.

Guidelines for doing task 2

In order to calculate the size of gross investment, use the expenditure method of calculation of GDP that is mathematically described as:

$$Y = C + I + G + NE, \quad (2.2)$$

where Y is GDP;
C is consumption;
I is gross investment;
G is government purchases of goods and services;
NE is net exports (it is the difference between the export and import of the country).

Hence $I = Y - C - G - NE$.

Entering the input data in this formula, we obtain:

$$I = 152 \text{ bln euros} - 75 \text{ bln euros} - 27 \text{ bln euros} - 5 \text{ bln euros} = 45 \text{ bln euros.}$$

Task 3. Nominal GDP of the country Z is 163.2 bln dollars, consumption is 55 % of GDP, gross investment is 23 % of GDP, net exports is 3.5 % of GDP. Calculate the size of government purchases of goods and services of this country.

Guidelines for doing task 3

In order to calculate the size of government purchases of goods and services, use the expenditure method of calculation of GDP:

$$Y = C + G + I + NE.$$

Hence $G = Y - C - I - NE$.

Because the initial data is presented in relative units we can write the following:

$$G = 100 - 55 - 23 - 3.5 = 18.5 \text{ \%}.$$

The size of government purchases of goods and services in absolute units equals:

$$G = 18.5 \text{ \%} \cdot Y = 0.185 \cdot 163.2 \text{ bln dollars} = 30.19 \text{ bln dollars.}$$

Task 4. Real GDP of the country A was 214 bln pesos in 2019. Calculate nominal GDP in 2020 if real GDP increased by 4 % and price level increased by 27 %.

Guidelines for doing task 4

1. Calculate real GDP in 2020:

$$GDP_{2020} = 214 \text{ bln pesos} \cdot 1.04 = 222.56 \text{ bln pesos.}$$

2. Calculate nominal GDP in 2020 using the formula:

$$GDP_N = \frac{GDP_R \cdot D}{100}.$$

Entering the data in the formula, we obtain:

$$GDP_n = \frac{222.56 \text{ bln pesos} \cdot 127}{100} = 282.65 \text{ bln pesos.}$$

Task 5. Study the data given in Table 2.2.

Table 2.2

Year	Nominal GDP, bln kroner	GDP deflator, %	Real GDP, bln kroner
2017	240.24	108.25	
2018	280.12	115.06	
2019	305.06	104.02	
2020	310.48	99.88	

Calculate real GDP for each year.

Task 6. Use the following information to calculate gross domestic product (GDP) of country A: consumption is 175 bln dollars, gross investment is 55 bln dollars, government purchases are 44 bln dollars, export is 14 bln dollars, import is 9 bln dollars.

Task 7. The economy of country Alfa is characterized by the following data (bln euros): $C = 55 + 0.3 \cdot (Y - T + TR)$, $I = 10 + 0.3 \cdot Y$, $G = 64$, $NE = 12 - 0.04 \cdot Y$, $T = 35$, $TR = 10$. Calculate GDP of this country using the expenditure method.

Task 8. Wages and salaries amount to 350 bln UAH, rent is 35 bln UAH, net interest income is 10 bln UAH, proprietors income is 45 bln UAH, corporate profit is 75 bln UAH, consumption of fixed capital (depreciation) is 18 bln UAH, taxes on production and imports, transfers make 22 bln UAH, statistical discrepancy is 25 bln UAH, personal taxes amount to 12 bln UAH, net foreign factor income is 20 bln UAH. Calculate gross national product (GNP), net national product (NNP), net domestic product (NDP), national income (NI), personal income (PI).

Task 9. Real GDP of the country Beta was 250 bln euros in 2019. Calculate nominal GDP in 2020 if real GDP decreased by 2.5 % but price level increased by 11.08 %.

Recommended literature: [1, p. 44–45; 2, p. 64–70; 4, p. 27–29, 31–32; 5, p. 110–114].

3. Presentations

1. Countries with the largest gross domestic product in 2020.
2. Nominal and real GDP in Ukraine (1991 – 2020).
3. The underground economy in developing countries.

Theme 3. The labor market

1. Questions for self-study

1. Economic and social costs of unemployment.
2. Modern macroeconomic concepts of the equilibrium in the labor market.
3. Government programs to stimulate employment.

Recommended literature: [3; 4, p. 391–294, 356–360; 6, p. 41–45].

Guidelines for self-study on theme 3

Students should begin self-study on theme 3 with the consideration of different types of unemployment and measures of the labor force utilization. In order to cover these questions, students should write an essay devoted to the identification of causes of unemployment in developed and developing countries.

After that students should proceed to learning the causes and consequences of unemployment, paying close attention to economic and social costs of unemployment. For this purpose, they should do computing tasks (2, 3, 5 – 8) related to Okun's law that establishes the impact of cyclical unemployment on GDP.

In order to successfully complete self-study on theme 3, students should distinguish between the classical and Keynesian approaches to the setting of equilibrium on the labor market and consider government programs to stimulate employment. These questions are covered in the textbooks [4, p. 42–50; 5, p. 125–134].

2. Tasks for self-study

Task 1. Calculate frictional unemployment rate in the country Z, if the natural unemployment rate is 4.5 % and the structural unemployment rate is 3.5 %.

Guidelines for doing task 1

To solve this task, use the formula:

$$U_N = U_F + U_S, \quad (3.1)$$

where U_N is the natural rate of unemployment;

U_F is the frictional rate of unemployment;

U_S is the structural rate of unemployment.

Hence $U_F = U_N - U_S$.

Entering the input data in formula (3.1), we obtain:

$$U_F = 4.5 \% - 3.5 \% = 1 \%$$

Task 2. The economy of the country A is characterized by the following data: actual unemployment rate is 10.5 %, frictional unemployment rate is 2.5 % and structural unemployment rate is 2.9 %. Calculate: 1) the cyclical unemployment rate; 2) the GDP gap according to Okun's law.

Guidelines for doing task 2

1. To calculate the cyclical unemployment rate, do the following:

a) calculate the natural unemployment rate using the formula:

$$u_N = u_{FR} + u_{STR}$$

Entering the input data in the formula above, we obtain:

$$u_N = 2.5 \% + 2.9 \% = 5.4 \%$$

b) calculate the cyclical unemployment rate using the formula:

$$u_C = u_A - u_N, \tag{3.2}$$

where u_C is the cyclical unemployment rate.

Entering the input data in formula (3.2), we obtain:

$$u_C = 10.5 \% - 5.4 \% = 5.1 \%$$

2. Calculate the GDP gap according to Okun's law:

$$\Delta Y = -\beta \cdot (u_A - u_N), \tag{3.3}$$

where ΔY is the GDP gap;

β is Okun's coefficient ($2 < \beta < 3$, in our case β is 2.5);

u_A is the actual unemployment rate.

Entering the input data in this formula, we obtain:

$$\Delta Y = -2.5 \cdot 5.1 \% = -12.75 \%$$

Task 3. Actual GDP of the country Delfa is 950 bln euros, natural unemployment rate is 6 %, actual unemployment rate is 10.8 %. Calculate potential GDP of the country Delfa.

Guidelines for doing task 3

In order to calculate potential GDP, use Okun's law that is mathematically described as:

$$\frac{Y_A - Y_P}{Y_A} = -\beta \cdot (u_A - u_N), \quad (3.4)$$

where Y_P is potential GDP;
 Y_A is actual GDP.

Entering the input data in formula (3.4), we obtain:

$$\frac{Y_A - 950 \text{ bln dollars}}{950 \text{ bln dollars}} = -2.5 \cdot (10.8 - 6) = -12 = -0.12;$$

$$950 \text{ bln dollars} - Y_P = -0.88 \cdot Y_P;$$

$$950 \text{ bln dollars} = -0.12 \cdot Y_P + Y_P;$$

$$Y_P = 1079.5 \text{ bln dollars.}$$

Task 4. Calculate the actual unemployment rate and the cyclical unemployment rate if all residents of the country A amount to 78 million people, residents under 16 years of age are 3.4 million people, institutionalized adults make 2.9 million people, adults not looking for jobs amount to 0.75 million people, the number of unemployed is 2.6 million people, the natural unemployment rate is 1.05 %.

Task 5. Calculate the GDP gap according to Okun's law if the actual unemployment rate is 12.4 %, frictional unemployment rate is 3.5 % and structural unemployment rate is 3.4 %.

Task 6. Using Okun's law calculate the GDP gap of the country X if its economy is characterized by the following statistics: actual unemployment rate is 12.8 %, natural unemployment rate is 5.6 %, potential GDP is 178 bln dollars.

Task 7. Using Okun's law calculate the potential GDP of the country Alfa if its economy is characterized by the following statistics: actual unemployment rate is 10.5 %, structural unemployment rate is 1.8 %, frictional unemployment rate is 2.9 %, actual GDP is 178 bln dollars.

Task 8. Calculate the actual GDP gap of the country Delfa if its economy is characterized by the following data: structural unemployment rate is 2.3 %, frictional unemployment rate is 3.5 %, seasonal unemployment rate is 1.01 %, cyclical unemployment rate is 3.09 %, potential GDP is 178 bln dollars.

Recommended literature: [1, p. 160–161; 2, p. 103–105; 4, p. 35–38; 5, p. 129–134].

3. Analytical tasks

Task 1. Analyze the peculiarities of the Phillips curve in advanced economies.

Guidelines for doing task 1

In order to do this task, students have to choose a developed country to be analyzed, gather the real statistics covering a period of at least thirty six months and build a Phillips curve in the short run plotting the inflation rate on the vertical axis and unemployment rate on the horizontal axis. It is also useful for students' self-study to build a Phillips curve in the long run based on the statistics covering six or seven years, compare the obtained results and make some recommendations on how to improve the employment policy in the analyzed economy.

Task 2. Analyze the peculiarities of Okun's law in post-socialist economies.

Guidelines for doing task 2

In order to do this task, students have to choose a post-socialist economy to be analyzed and gather some statistics covering at least three years. The necessary statistics must include the following: real GDP, actual unemployment rate and natural unemployment rate. Students have to calculate the GDP gap using Okun's law:

$$\Delta Y = (Y - Y^*) / Y^* = -\beta \cdot (u - u^*), \quad (3.5)$$

where Y^* is the potential GDP;

Y is the actual GDP;

β is Okun's coefficient ($\beta = 2.5$);

u is the actual unemployment rate;

u^* is the natural unemployment rate.

4. Essays

1. Comparing the main forces creating the natural unemployment rate in the advanced economies and Ukraine.

2. Forces creating cyclical unemployment in Ukraine.

3. Unemployment rate variation within post-socialist countries.

Theme 4. The goods market

1. Questions for self-study

1. Modern theories of aggregate supply.
 2. Economic shocks: price shocks, demand shocks, supply shocks. The Keynesian model of the aggregate demand shock.
 3. The ratchet model and its effect in the "overheated economy".
- Recommended literature: [3; 6, p. 63–64; 8; 9, p. 259–265].

Guidelines for self-study on theme 4

Students should begin self-study on theme 4 with learning the theories of aggregate supply, paying close attention to rational expectations theory and supply-side theory. It is very important for students to cover the aggregate supply function and do the computing tasks.

After that students should proceed to the consideration of the essence, types and consequences of economic shocks in a market economy. For this purpose, they have to write an essay devoted to the historical energy price shocks and their influence on the world economy (essay theme 1).

In order to successfully complete self-study on theme 4, students should examine the so called ratchet effect. It is the breaking of macroeconomic equilibrium caused by aggregate demand and mechanisms of its recovery. For this purpose, students should compare the ratchet effect in developed and developing economies (essay theme 2).

2. Tasks for self-study

Task 1. Use the following data to calculate aggregate demand that equals total expenditures (bln dollars): $C = 20 + 0.5 \cdot (Y - T)$, $T = 25$, $I = 50$, $G = 45$, $NE = 15$.

Guidelines for doing task 1

In order to calculate the size of aggregate demand, use the expenditure method of calculation of GDP that is mathematically described as:

$$Y = C + I + G + NE.$$

Entering the data in this formula, we obtain:

$$Y = 20 + 0.5 \cdot (Y - 25) + 50 + 45 + 15;$$

$$Y = 20 + 0,5 \cdot Y - 12.5 + 50 + 45 + 15;$$

$$0.5 \cdot Y = 117.5;$$

$$Y = 285 \text{ bln dollars.}$$

Task 2. Country Beta is characterized by the following data: potential GDP is 585 bln dollars, sensibility of the quantity of production to a decline in the actual price level from the expected price level is 0.8, the actual price level is 108 %, the expected price level is 105.5 %. Calculate the total output of this country.

Guidelines for doing task 2

In order to do this task, use the short-run aggregate supply function (SRAS function) that is described as:

$$Y_{AS} = Y_P + \alpha \cdot (P - P_E), \quad (4.1)$$

where Y_{AS} is the total output in the short run;

Y_P is the potential GDP;

α is the sensibility of the quantity of production to a decline in the actual price level from the expected price level;

P is the actual price level;

P_E is the expected price level (or price level at full employment that equilibrates the labor market and eliminates cyclical unemployment).

Entering the data in the SRAS function, we obtain:

$$Y_{AS} = 585 \text{ bln dollars} + 0.8 \cdot (108 \% - 105.5 \%) = 587 \text{ bln dollars.}$$

Task 3. In 2019 aggregate supply in the country A equalled 700 bln dollars and the AD curve was described as $AD = 1500 - 20 \cdot P$. In 2020 aggregate supply increased by 25 % and the AD curve was described as $AD = 2375 - 30 \cdot P$. Calculate how the equilibrium price level changed during 2019 – 2020.

Guidelines for doing task 3

1. Calculate the equilibrium price level in the country in 2019:

$$AD = AS;$$

$$1500 - 20 \cdot P = 700;$$

$$P = 40 \text{ dollars.}$$

2. Calculate the equilibrium price level in the country in 2020:

$$2375 - 30 \cdot P = 700 \cdot 1.25;$$

$$P = 50 \text{ dollars.}$$

Task 4. Calculate the total output of the country A if the potential GDP is 950 bln euros, the sensibility of the quantity of production to a decline in the actual price level from the expected price level is 0.88, the actual price level is 109.8 %, the expected price level is 106.04 %.

Task 5. Use the following data to calculate aggregate demand that equals the total expenditures (bln dollars): $C = 20 + 0.7 \cdot (Y - T)$, $T = 40$, $I = 35$, $G = 50$, $NE = 10$.

Task 6. The economy of the country Alfa is characterized by the following data (bln euros): $C = 300 + 0.7 \cdot (Y - T + TR)$, $I = 250 + 0.5 \cdot Y$, $G = 500$, $Ex = 150$, $Im = 125$, $T = 270$, $TR = 60$. 1) Calculate the aggregate demand that equals the equilibrium GDP. 2) Calculate aggregate demand if government purchases of goods and services increase to 700, taxes increase to 350, transfers increase to 75, imports increase to 175.

Task 7. In 2019 aggregate supply equalled 700 bln dollars and the AD curve was described as $AD = 1700 - 25 \cdot P$. In 2020 aggregate supply increased by 20 % and the AD curve was described as $AD = 250 - 30 \cdot P$. Calculate how the equilibrium price level changed during 2019 – 2020.

Recommended literature: [1, p. 70; 2, p. 141–143; 4, p. 55].

3. Analytical tasks

Task 1. Analyze the peculiarities of the aggregate demand curve within EU economies.

Guidelines for doing task 1

In order to do this task, students have to choose a European country to be analyzed, gather real statistics covering at least four years, build an aggregate demand curve plotting the price levels on the vertical axis and aggregate demand on the horizontal axis. Students should also build a graph that shows the components of aggregate demand (in percent) in the analyzed country.

Task 2. Analyze the peculiarities of the aggregate supply curve within EU economies.

Guidelines for doing task 2

In order to do this task, students have to choose a EU country to be analyzed, gather real statistics covering at least twelve months, build a short-run aggregate supply curve (SRAS) plotting the price levels on the vertical axis

and the real GDP on the horizontal axis. Students should determine the horizontal (or Keynesian) zone, the vertical (or Neoclassical) zone and the intermediate zone on the SRAS curve. It is also useful for students' self-study to build a long-run aggregate supply curve (LRAS) based on the statistics of three or four years and compare the obtained results.

4. Essays

1. Historical energy price shocks and their influence on the world economy.
2. Comparative analysis of the ratchet effect in developed and developing economies.

Theme 5. The money market

1. Questions for self-study

1. Classical and Keynesian approaches to the money demand function.
2. The structure of the banking system in Ukraine.

Recommended literature: [3; 5, p. 232–240; 6, p. 78–81, 83–85; 9, p. 313–329, 425–430].

Guidelines for self-study on theme 5

Students should begin self-study on theme 5 with learning the main approaches to the money demand function, paying close attention to the classical and Keynesian models. To deepen their knowledge about the mechanism of functioning of the money market, students should do computing tasks (tasks for self-study 1 – 6). The necessary formulas for calculation of the indicators characterizing the money market (deposit multiplier, money multiplier, money base, money supply) are given in the textbooks [2, p. 180–183; 4, p. 88, 93].

After that students should proceed to the consideration of the role of private financial institutions in the money creation process. For this purpose, they have to write an essay on one of the offered themes devoted to the history, activities and profitability of the largest financial institutions in the banking system of Ukraine and other countries. It will be very helpful and useful for students to turn to the information resources [10 – 11] and the methodological support [12].

In order to successfully complete self-study on theme 5, students should study the structure of the money base in different types of economic

systems by comparing the structure of monetary aggregates in developed and developing economies.

2. Tasks for self-study

Task 1. According to the expansion monetary policy of the Central Bank of South Korea the country is planning to increase money supply by 100 bln won. How should money base be increased if the cash-deposit ratio is 0.12 and the required reserve ratio is 0.18?

Guidelines for doing task 1

1. Calculate the value of the money multiplier using the formula:

$$m_m = \frac{cr + 1}{cr + rr}, \quad (5.1)$$

where m_m is the money multiplier;
cr is the cash-deposit ratio;
rr is the required reserve ratio.

Entering the input data in formula (5.1), we obtain:

$$m_m = \frac{0.18 + 1}{0.18 + 0.17} = 3.37.$$

2. Calculate how the money base should be increased using the formula:

$$MS = m_m \cdot MB, \quad (5.2)$$

where MS is money supply;
MB is money base.

Hence $\Delta MS = m_m \cdot \Delta MB$.

$$\Delta MB = \frac{\Delta MS}{m_m};$$

$$\Delta MB = \frac{750 \text{ bln won}}{3.37} = 222.55 \text{ bln won.}$$

Task 2. The deposits of the commercial bank "Mriya" (Poland) amount to 45 mln zloty. The required reserve ratio is 18 %. Besides, this commercial

bank holds 5 % excess reserves of deposits. Calculate the sum of money that the bank can lend.

Guidelines for doing task 2

1. Calculate the sum of compulsory bank reserves using the formula:

$$R_C = rr \cdot D, \quad (5.3)$$

where R_C is compulsory bank reserves;
D is deposits.

Entering the input data in formula (5.3), we obtain:

$$R_C = 0.18 \cdot 45 \text{ mln} = 8.1 \text{ mln zloty.}$$

2. Calculate the sum of excess bank reserves:

$$R_E = 0.05 \cdot 45 \text{ mln} = 2.25 \text{ mln zloty.}$$

3. Calculate the sum of money that the bank can lend:

$$\text{Credits} = 45 \text{ mln} - 8.1 \text{ mln} - 2.25 \text{ mln} = 34.65 \text{ mln zloty.}$$

Task 3. The monetary system of the country A is characterized by the following indicators: cash is 50 bln euros, checkable (demand) deposits make 70 bln euros, time deposits are 25 bln euros, money market funds are 15 bln euros. Calculate the monetary aggregate M2.

Task 4. According to the expansion monetary policy of the National Bank of Ukraine the government is planning to increase the money supply by 50 bln UAH. How will the money base increase if the cash-deposit ratio is 0.12 and the required reserve ratio is 0.15?

Task 5. Suppose the banking system of the country A is characterized by the following indicators: excess reserves are 80 bln zloty, outstanding checkable deposits are 150 bln zloty, the required reserve ratio is 0.18. Calculate the size of the bank actual reserves in that economy.

Task 6. Suppose the banking system of the country Z is characterized by the following indicators: bank reserves are 20 bln UAH, checkable deposits are 100 bln UAH, the required reserve ratio is 0.15, households deposits are 500 bln UAH. Calculate the size of excess reserves in the economy of the country Z.

Recommended literature: [1, p. 200, 213; 2, p. 180–183; 4, p. 88, 93].

3. Essays

1. Comparative analysis of the structure of the monetary base in developed and developing economies.

2. History, activities and profitability of the world's largest private sector financial institutions in terms of total revenue in 2020.
3. The role of financial institutions in the Ukrainian economy.
4. Money multiplier variation in post-socialist countries.

Theme 6. The inflation mechanism

1. Questions for self-study

1. The Keynesian and monetarist view on the causes of inflation.
 2. Economic benefits and challenges of inflation. Social costs of inflation.
 3. The instruments of macroeconomic policy to fight inflation.
- Recommended literature: [3; 6, p. 97–100; 8; 9, p. 405–407].

Guidelines for self-study on theme 6

Students should begin self-study on theme 6 with learning the causes of inflation, paying close attention to the Keynesian and monetarist view on this problem. These questions are covered in the textbook [9, p. 436–437]. It is very important for students to know the types of inflation (demand-pull inflation, cost-push inflation, creeping inflation, hyperinflation, expected inflation, unexpected inflation).

After that students should consider the indicators characterizing the price level in the country distinguishing between the consumer price index (CPI), the producer price index (PPI), the international price index (IPI), the employment cost index (ECI), the core inflation index (CII), the Laspeyres price index (LPI), the Paasche price index (PPI) and the Fisher ideal index (FII), and do tasks 1, 3, 4. The necessary formulas for doing these tasks are given in the textbooks [2, p. 107, 183–184, 225–256; 5, p. 134–140]. Besides, it is very useful to analyze the dynamics of inflation throughout the world, so students should prepare presentations on the offered themes.

In order to successfully complete self-study on theme 6, students should study the Phillips equation that shows the relationship between unemployment and inflation in a market economy, do the computing tasks for self-study and make presentations on the offered themes.

2. Tasks for self-study

Task 1. Calculate the inflation rate for each year using the data given in Table 6.1.

Table 6.1

Years	Consumer price index, %
2017	104.6
2018	115.6
2019	119.5
2020	129.2

Guidelines for doing task 1

In order to calculate the inflation rate, use the following formula:

$$\pi = \frac{P_t - P_{t-1}}{P_{t-1}} \cdot 100, \quad (6.1)$$

where P_t is the consumer price index in the current year;
 P_{t-1} is the consumer price index in the base year.

Entering the input data in formula (6.1), we obtain:

$$\pi_{2017} = \frac{115.6 - 104.6}{104.6} \cdot 100 = 10.52.$$

$$\pi_{2018} = \frac{119.5 - 115.6}{115.6} \cdot 100 = 3.73.$$

$$\pi_{2019} = \frac{129.2 - 119.5}{119.5} \cdot 100 = 8.12.$$

Task 2. The economy of the country Beta is characterized by the following indicators: the natural unemployment rate is 8 %, the actual unemployment rate is 10 %, the expected inflation rate is 6 %, the empiric coefficient that defines the angle of inclination of the Phillips curve, and the sensibility of cyclical unemployment to inflation rate is 0.25. Calculate the actual inflation rate in that economy using the Phillips equation.

Guidelines for doing task 2

In order to do this task, use the Phillips equation that is mathematically described as:

$$\pi = \pi_e - \beta \cdot (u - u^*), \quad (6.2)$$

where π is the actual inflation rate;

π_e is the expected inflation rate;

β is the empiric coefficient that defines the angle of inclination of the Phillips curve and the sensibility of cyclical unemployment to inflation rate;
 u is the actual unemployment rate;
 u^* is the natural unemployment rate.

Entering the input data in formula (6.2), we obtain:

$$\pi = 6 \% - 0.25 \cdot (10 \% - 8 \%) = 5.5 \%$$

Task 3. Calculate the inflation rate for each year using the data given in Table 6.2.

Table 6.2

Years	Consumer price index, %
2017	124.08
2018	132.06
2019	115.89
2020	108.05

Task 4. Suppose country Z produces only two goods: A and B. Calculate the Laspeyres price index, the Paasche price index and the Fisher ideal index taking into account that 2019 is the base period (Table 6.3).

Table 6.3

Good	Years			
	2019		2020	
	Price of good A	Quantity of good A	Price of good B	Quantity of good B
A	18	5	23	7
B	44	15	39	10

Task 5. Using the Phillips equation, calculate the actual inflation rate caused by negative perturbation in aggregate supply, if the coefficient that defines the angle of inclination of the Phillips curve and the sensibility of cyclical unemployment to inflation rate is 0.3, the natural unemployment rate is 4 %, the actual unemployment rate is 7 %, the expected inflation rate is 5.5 %.

Recommended literature: [1, p. 240; 2, p. 107, 183–184, 225–256; 4, p. 101–102].

3. Analytical tasks

Task 1. Analyze the peculiarities of the Oliver – Tanzi effect in developing countries.

Guidelines for doing task 1

In order to do this task, students have to choose a developing economy that is facing with the inflation problem and gather real statistics related to the inflation rate. They should take into account that inflation negatively impacts the interests of the state. For that reason, taxes are paid to the state budget later than they are charged, that is, already depreciated money is paid to the budget. It is a so-called Oliver – Tanzi effect or inflationary taxation. To calculate the inflation tax, students should use the formula:

$$IT = B \cdot (M / P), \quad (6.3)$$

where IT is the inflation tax;

B is the inflation growth rate in the year;

(M / P) is the level of real cash balances.

Task 2. Analyze the effectiveness of macroeconomic policy to fight inflation in the most miserable economies.

Guidelines for doing task 2

In order to do this task, students have to choose a country that is experiencing high inflation and severe unemployment. According to the World Data Atlas [10], the list of these countries includes the following: Venezuela, Yemen, the Democratic Republic of Congo, Mozambique, South Africa, Kosovo, Argentina, Nigeria, Egypt and Angola. One of the most representative indicators characterizing miserable economies is the poverty (or misery) index. It is calculated as:

$$i_P = u_A + \pi_A, \quad (6.4)$$

where i_P is the poverty index;

u_A is the actual unemployment rate;

π_A is the actual inflation rate.

So students need to gather some statistics related to the inflation rate and the unemployment rate, analyze them and draw conclusions.

4. Presentations

1. The experience of hyperinflation in the world economic history.
2. Variation of the inflation rate in the post-socialist economies (1990 – 2020).
3. The relationship between unemployment and inflation in Ukraine.

Content module 2. Analysis and structure of the components of economic policy

Theme 7. Households' consumption

1. Questions for self-study

1. Modern theories and hypothesis of consumption.
2. Income inequality and measurement of income inequality. The Lorenz curve.

Recommended literature: [3; 5, p. 147–148; 6, p. 110–114; 8, p. 124–149; 9, p. 142–149, 236–238].

Guidelines for self-study on theme 7

Students should begin self-study on theme 7 with the consideration of theories and hypothesis of consumption. In particular, students have to consider independently the following hypothesis: permanent income hypothesis, life cycle hypothesis, absolute income hypothesis and relative income hypothesis. In order to deepen the knowledge about modern theories of consumption, students have to write an essay on one of the offered topics.

After that students should proceed to learning the indicators that characterize consumption in a closed private economy. These indicators are average propensity to consume (APC), marginal propensity to consume (MPC), average propensity to save (APS), marginal propensity to save (MPS). For this purpose, students should do the computing tasks (tasks for self-study 1 – 4). The necessary formulas and terms are given in the textbooks [1, p. 84–85; 2, p. 228–291, 319–320; 4, p. 135–137, 140, 150].

In order to successfully complete self-study on theme 7, students should study the causes of income inequality and analyze the relationship between consumption and disposable income in Ukraine (analytical task 1).

2. Tasks for self-study

Task 1. Study the consumption schedule given in Table 7.1.

Table 7.1

Yd	C	S
1	2	3
600		
800		

Table 7.1 (the end)

1	2	3
1000		
1200		
1400		

Do the following:

- 1) calculate consumption and saving if the consumption function is described as $C = 250 + 0.5 \cdot Y_d$;
- 2) plot a consumption curve;
- 3) plot a saving curve.

Guidelines for doing task 1

1. Calculate consumption and saving.

a) calculate the size of consumption entering the values of disposable income in the consumption function:

$$C_1 = 250 + 0.5 \cdot 600 = 550;$$

$$C_2 = 250 + 0.5 \cdot 800 = 650;$$

$$C_3 = 250 + 0.5 \cdot 1000 = 750;$$

$$C_4 = 250 + 0.5 \cdot 1200 = 850;$$

$$C_5 = 250 + 0.5 \cdot 1400 = 950.$$

b) calculate the size of saving using the formula:

$$S = Y_d - C, \quad (7.1)$$

where S is saving;

Y_d is disposable income;

C is consumption.

We obtain:

$$S_1 = 600 - 550 = 50;$$

$$S_2 = 800 - 650 = 150;$$

$$S_3 = 1000 - 750 = 250;$$

$$S_4 = 1200 - 850 = 350;$$

$$S_5 = 1400 - 950 = 450.$$

Now we can fill in the table:

Y_d	C	S
1	2	3
600	550	50

1	2	3
800	650	150
1000	750	250
1200	850	350
1400	950	450

2. Plot a consumption curve (Fig. 7.1).

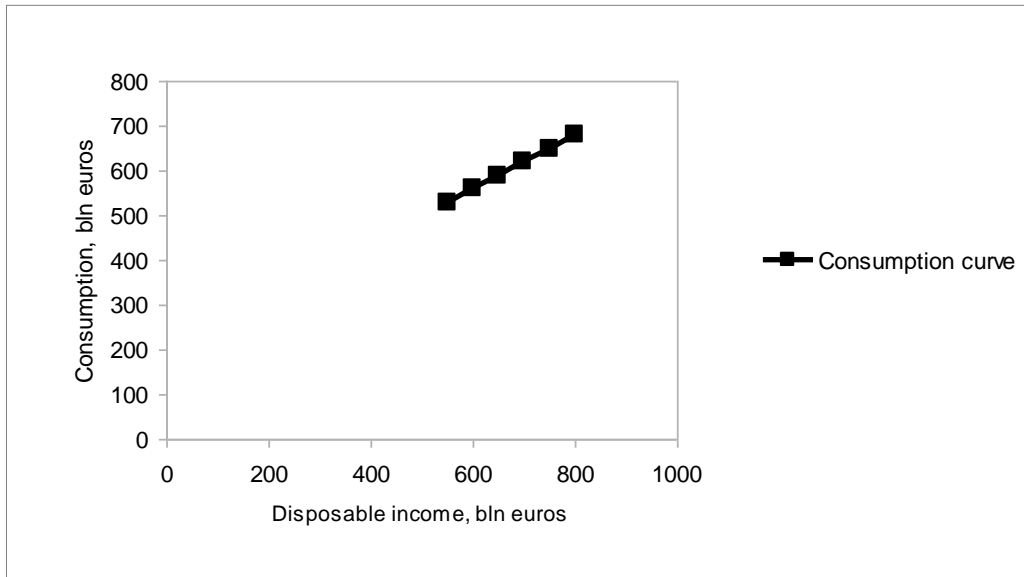


Fig. 7.1. The consumption curve

3. Plot a saving curve (Fig. 7.2).

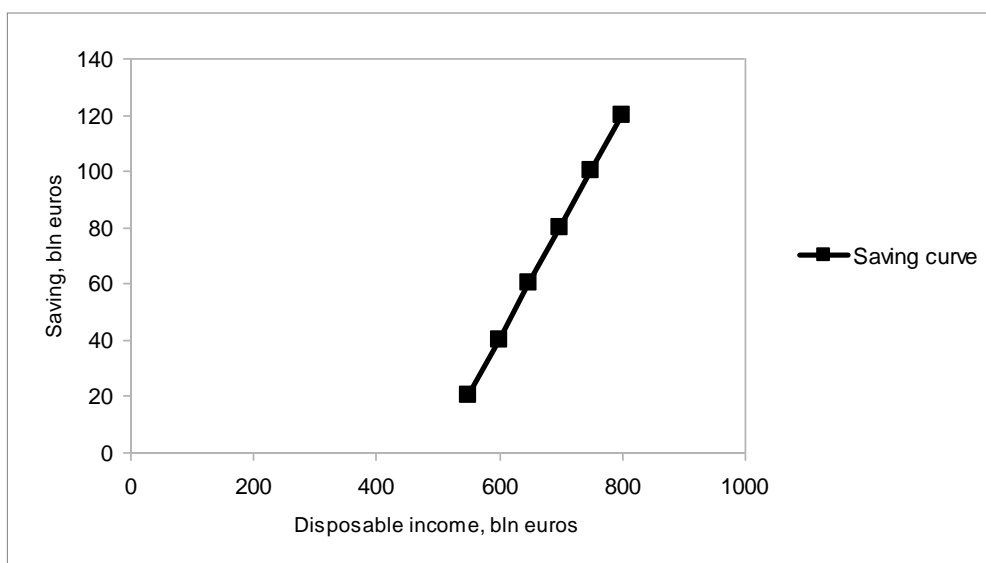


Fig. 7.2. The saving curve

Task 2. Fill in Table 7.2.

Table 7.2

Y_d , bln euros	C, bln euros	S, bln euros	APC	APS	MPC	MPS
550	530					
600	560					
650	590					
700	620					
750	650					
800	680					

Guidelines for doing task 2

1. Calculate the size of saving using the formula:

$$Y_d = C + S.$$

Hence $S = Y_d - C$.

$$S_1 = 550 - 530 = 20.$$

$$S_2 = 600 - 560 = 40.$$

$$S_3 = 650 - 590 = 60.$$

$$S_4 = 700 - 620 = 80.$$

$$S_5 = 750 - 650 = 100.$$

$$S_6 = 800 - 680 = 120.$$

2. Calculate the average propensity to consume using the formula:

$$APC = \frac{C}{Y_d}, \quad (7.2)$$

where APC is the average propensity to consume.

We obtain:

$$APC_1 = \frac{530}{550} = 0.96.$$

$$APC_2 = \frac{560}{600} = 0.93.$$

$$APC_3 = \frac{590}{650} = 0.91.$$

$$APC_4 = \frac{620}{700} = 0.89.$$

$$APC_5 = \frac{650}{750} = 0.87.$$

$$APC_6 = \frac{680}{800} = 0.85.$$

3. Calculate the average propensity to save using the following formula:

$$APS = 1 - APC, \quad (7.3)$$

where APS is the average propensity to save.

We obtain:

$$APS_1 = 1 - APC = 1 - 0.96 = 0.04.$$

$$APS_2 = 1 - APC = 1 - 0.93 = 0.07.$$

$$APS_3 = 1 - APC = 1 - 0.91 = 0.09.$$

$$APS_4 = 1 - APC = 1 - 0.89 = 0.11.$$

$$APS_5 = 1 - APC = 1 - 0.87 = 0.13.$$

$$APS_6 = 1 - APC = 1 - 0.85 = 0.15.$$

4. Calculate the marginal propensity to consume using the formula:

$$MPC = c' = \frac{\Delta C}{\Delta Y_d}, \quad (7.4)$$

where MPC is marginal propensity to consume;

ΔC is a change in consumption;

ΔY_d is a change in disposable income.

We obtain:

$$MPC = \frac{20 \text{ bln euros}}{50 \text{ bln euros}} = 0.6.$$

5. Calculate the marginal propensity to save using the formula:

$$MPS = 1 - 0.6 = 0.4.$$

Thus, Table 7.2, when completed, looks as follows:

Y _d , bln euros	C, bln euros	S, bln euros	APC	APS	MPC	MPS
550	530	20	0.96	0.04	0.6	0.4
600	560	40	0.93	0.07		
650	590	60	0.91	0.09		
700	620	80	0.89	0.11		
750	650	100	0.87	0.13		
800	680	120	0.85	0.15		

Task 3. Study the consumption schedule given in Table 7.3.

Table 7.3

Y _d	C	S
500		
600		
700		
800		
900		

Do the following:

- calculate consumption and saving if the consumption function is described as $C = 120 + 0.75 \cdot Y_d$;
- plot a consumption curve;
- plot a saving curve.

Task 4. Fill in Table 7.4.

Table 7.4

Y _d , bln pesos	C, bln pesos	S, bln pesos	APC	APS	MPC	MPS
300	220					
350	240					
400	260					
450	320					
500	390					
550	410					

Recommended literature: [1, p. 70; 2, p. 287–288; 4, p. 125–130].

3. Analytical tasks

Task 1. Analyze the dynamics and transitions in households' consumption in Ukraine.

Guidelines for doing task 1

In order to do this task, students should gather the necessary statistics covering five or six years, build a consumption schedule plotting the changes in consumption on the vertical axis and changes in disposable income on the horizontal axis, calculate the indicators characterizing consumption in a market economy using formulas (7.2 – 7.3), fill in Table 7.5 and draw conclusions.

Table 7.5

The dynamics of consumption in Ukraine

Indicator	Years					
Saving, bln UAH	2015	2016	2017	2018	2019	2020
Disposable income, bln UAH						
Average propensity to save						
Marginal propensity to save						

Task 2. Analyze the peculiarities of the Lorenz curve in European economies.

Guidelines for doing task 2

In order to do this task, students have to choose a European country to be analyzed, gather real statistics covering at least four years, build a Lorenz curve plotting the total percentage of the population (for example, families) with the highest incomes on the vertical axis and the total percentage of the population with the lowest incomes on the horizontal axis. Students should also draw conclusions taking into account that complete equality will be represented by a straight line that goes between the axes at an angle of 45° , and the degree of deviation from 45° represents the degree of inequality in the distribution of income.

4. Essays

1. Conflict between the demand-side and supply-side roles of consumption and saving.

2. Comparative analysis of the relationship between consumption and disposable income in Ukraine and other post-socialist economies.

Theme 8. Private saving

1. Questions for self-study

1. The Keynesian and neoclassical investment functions.
2. The Classical and Keynesian mechanisms of the equilibrium between saving and investment.

Recommended literature: [3; 6, p. 126–127; 9, p. 229–230].

Guidelines for self-study on theme 8

Students should begin self-study on theme 8 with defining the investment function, paying close attention to the Keynesian and classical approaches to mathematical description of the investment schedule. To deepen the knowledge in this sphere, students should do the computing tasks (tasks for self-study 1, 10).

After that students should proceed to learning the equilibrium between saving and investment focusing on the classical and Keynesian models of setting a macroeconomic equilibrium. For this purpose, students should do the computing tasks (2, 3, 8 – 10). Besides, it is important to consider independently the essence and dynamics of the investment multiplier in a market economy, so students should do the analytical tasks and write an essay on one of the offered themes devoted to the variation of the investment multiplier in post-socialist countries.

In order to successfully complete self-study on theme 8, students should learn how to determine the profitability of projects, paying close attention to the net present value approach. In this regard, it is useful to consider the example how to choose the right project to invest money and do a similar task (task 14) independently.

2. Tasks for self-study

Task 1. Calculate the equilibrium disposable income in the country A if its economy is characterized by the following data: autonomous investment is 250 bln dollars and the saving function is described as: $S = -120 + 0.1 \cdot Y_d$.

Guidelines for doing task 1

To calculate the equilibrium disposable income, use the equation: $S = I$. Equating the saving function and the size of autonomous investment, obtain:

$$-120 + 0.1 \cdot Y_d = 250 \text{ bln dollars;}$$

$$0.1 \cdot Y_d = 270 \text{ bln dollars};$$

$$Y_d = 2700 \text{ bln dollars}.$$

Task 2. Calculate the size of saving in the country A if its economy is characterized by the following data: disposable income is 350 bln euros and the saving function is described as: $S = 100 + 0.2 \cdot Y_d$.

Guidelines for doing task 2

To calculate the size of saving in this economy, put the initial data in the function above and obtain:

$$S = 100 + 0.2 \cdot Y_d;$$

$$S = 100 + 0.2 \cdot 350 \text{ bln euros} = 170 \text{ bln euros}.$$

Task 3. The consumption function is $C = 50 + 0,75 \cdot Y_d$. Write down the saving function.

Guidelines for doing task 3

We know that $Y_d = C + S$.

Hence $S = Y_d - C$.

Entering the data in the formula above, we obtain:

$$S = Y_d - (50 + 0.75 \cdot Y_d) = -50 + 0.25 \cdot Y_d.$$

Task 4. Disposable income in the economy is 360 bln dollars. Calculate the average propensity to consume if consumption is 380 bln dollars and autonomous consumption is 59 bln dollars.

Guidelines for doing task 4

In order to solve this task, use the consumption function:

$$C = C_0 + c' \cdot (Y - T + TR), \quad (8.1)$$

$$\text{or } C = C_0 + c' \cdot Y_d, \quad (8.2)$$

where C is consumption;

C_0 is autonomous consumption;

c' is the average propensity to consume;

Y is income;

T is taxes;

TR is transfers;

ΔY_d is disposable income.

$$\text{Hence } c = \frac{C - C_0}{Y}.$$

Entering the data in formula (8.2), we obtain:

$$c = \frac{380 \text{ bln dollars} - 59 \text{ bln dollars}}{360 \text{ bln dollars}} = 0.89.$$

Task 5. Kate is planning to run a business in Mexico. Now she has five possibilities to make money investing in one of the following projects:

Indicators	Project 1	Project 2	Project 3	Project 4	Project 5
Investment, mln pesos	20	20	20	20	20
Net profit, mln pesos	5	3.5	4	2.8	1.5

Advise Kate how to choose the right project to invest money.

Guidelines for doing task 5

To choose the right project to invest money, calculate the net profit rate of each project using the formula:

$$\text{NPI} = \frac{\text{NP}}{I} \cdot 100, \tag{8.3}$$

where NPI is the net profit rate;

NP is the net profit.

Entering the data in formula (8.3), we obtain:

$$\text{NPI}(1) = \frac{5 \text{ mln pesos}}{20 \text{ mln pesos}} \cdot 100 = 25.$$

$$\text{NPI}(2) = \frac{3.5 \text{ mln pesos}}{20 \text{ mln pesos}} \cdot 100 = 17.5.$$

$$\text{NPI}(3) = \frac{4 \text{ mln pesos}}{20 \text{ mln pesos}} \cdot 100 = 20.$$

$$\text{NPI}(4) = \frac{2.8 \text{ mln pesos}}{20 \text{ mln pesos}} \cdot 100 = 14.$$

$$\text{NPI}(5) = \frac{1.5 \text{ mln pesos}}{20 \text{ mln pesos}} \cdot 100 = 7.5.$$

Task 6. The consumption function is described as $C = 100 + 0.9 \cdot Y_d$. Calculate: a) the investment multiplier; b) the investment accelerator.

Task 7. Suppose marginal propensity to save in the economy is 0.75. How must investment change if: a) the government aims to increase GDP by 200 bln dollars; b) the government aims to increase GDP by 290 bln dollars?

Task 8. In 2020 GDP of the country A was 200 bln euros and marginal propensity to save was 0.5. How must investment change if the government increases GDP to 300 bln dollars in 2021?

Task 9. In 2020 GDP of the country Z was 300 bln dollars and marginal propensity to consume was 0.6. 1) How will GDP change in 2021 if the government increases investment by 60 bln dollars? 2) Calculate the investment accelerator.

Task 10. The investment function is $I = 40 + 0.4 \cdot Y$, the saving function is $S = -20 + 0.6 \cdot Y$, where Y is national income, bln euros. Calculate the equilibrium national income.

Task 11. The saving function is $S = -30 + 0.1 \cdot Y$, where Y is national income, investment is 125 bln euros. Calculate the equilibrium national income.

Task 12. Assume that marginal propensity to save is 0.4. Calculate how national income will increase if investments increase by 30 bln bolivars.

Task 13. The economy of a country is characterized by the following data, bln dollars: $C = 200 + 0.2 \cdot Y$, $I = 500$. Calculate: a) the equilibrium national income; b) the equilibrium national income if investment increases by 100 bln euros; c) the investment multiplier.

Task 14. Alex is planning to run a business in Argentina. Now he has five possibilities to make money investing in one of the following projects:

Indicators	Project 1	Project 2	Project 3	Project 4	Project 5
Investment, mln pesos	80	80	80	80	80
Net profit, mln pesos	5	3.5	4	2.8	1.5

Advise Alex how to choose the right project to invest money.

Recommended literature: [1, p. 84–85; 2, p. 228–291, 319–320; 4, p. 135–137, 140, 150].

3. Analytical tasks

Task 1. Analyze the dynamics of the investment multiplier in post-socialist economies.

Guidelines for doing task 1

In order to do this task, students should choose a country to be analyzed, gather real statistics covering at least three years and present it in the form of a table (Table 8.1).

Table 8.1

The dynamics of the investment multiplier in ... (the country)

Indicators	Years		
	2018	2019	2020
Real GDP at the beginning of the year, bln dollars			
Real GDP at the end of the year, bln dollars			
Capital investment at the beginning of the year, bln dollars			
Capital investment at the end of the year, bln dollars			
Investment multiplier			

The value of the investment multiplier should be calculated with the use of the formula:

$$m_I = \frac{GDP_E - GDP_B}{I_E - I_B}, \quad (8.4)$$

where GDP_B is real GDP at the beginning of the year;

GDP_E is real GDP at the end of the year;

I_B is capital investment at the beginning of the year;

I_E is capital investment at the end of the year.

Task 2. Analyze the transitions in households' saving in Ukraine.

Guidelines for doing task 2

In order to do this task, students should gather the necessary statistics covering four or five years, build a saving schedule plotting the changes in saving on the vertical axis and changes in disposable income on the horizontal axis, calculate the indicators characterizing saving in a market economy using formula (8.2), fill in Table 8.2 and draw conclusions.

Table 8.2

The dynamics of saving in Ukraine

Indicator	Years				
	2016	2017	2018	2019	2020
Saving, bln UAH					
Disposable income, bln UAH					
Average propensity to save					
Marginal propensity to save					

4. Essays

1. The investment multiplier effect and its interaction with the simple accelerator model in the closed private economy.
2. The effect of the paradox of thrift in the Ukrainian economy.

Theme 9. Aggregate expenditure and GDP

1. Questions for self-study

1. The Keynesian cross model.
 2. The multiplier effect and its graphical interpretation.
 3. The accelerator effect and its graphical interpretation.
- Recommended literature: [3; 6, p. 144–152; 8; 9, p. 230].

Guidelines for self-study on theme 9

Students should begin self-study on theme 9 with the learning of the models of macroeconomic equilibrium, namely, the aggregate expenditure – output model, the Keynesian cross model, the leakages – injections model and the saving – investment model. For this purpose, students proceed to the analysis of the role of stocks and lending in providing macroeconomic equilibrium in the short and long run. In this regard, they should write an essay on one of the offered themes.

In order to successfully complete self-study on theme 9, students should consider independently the essence and dynamics of the investment accelerator as well the graphical interpretation of the accelerator effect in a market economy. So students should do computing tasks for self-study (tasks for self-study 1 – 5) related to these issues using the formulas given in the textbooks [1, p. 119–120; 4, p. 172–173].

2. Tasks for self-study

Task 1. During a year disposable income of a country increased by 50 bln euros and consumption increased by 35 bln euros. Calculate the marginal propensity to save.

Guidelines for doing task 1

1. Calculate the marginal propensity to consume using the following formula:

$$\text{MPC} = c' = \frac{\Delta C}{\Delta Y_d}, \quad (9.1)$$

where MPC is the average propensity to consume;

ΔC is a change in consumption;

ΔY_d is a change in disposable income.

Entering the data in formula (9.1), we obtain:

$$\text{MPC} = 35 \text{ bln euros} / 50 \text{ bln euros} = 0.7.$$

2. Calculate the marginal propensity to save using the following formula:

$$\text{MPC} + \text{MPS} = 1, \quad (9.2)$$

where MPS is the marginal propensity to save.

Hence $\text{MPS} = 1 - \text{MPC}$.

Entering the data in formula (9.2), we obtain:

$$\text{MPS} = 1 - 0.7 = 0.3.$$

Task 2. The consumption function is described as $C = 100 + 0.25 \cdot Y_d$. Calculate: 1) the investment multiplier; 2) the investment accelerator.

Guidelines for doing task 2

1. Calculate the value of the investment multiplier using the following formula:

$$m_i = \frac{\Delta Y}{\Delta I} = \frac{1}{\text{MPS}} = \frac{1}{1 - \text{MPC}}, \quad (9.3)$$

where m_i is the investment multiplier;

ΔY is a change in GDP;

ΔI is a change in investment;

MPS is the marginal propensity to save;
MPC is the marginal propensity to consume.

We know that the general form of the consumption function is described as $C = C_0 + MPC \cdot Y$. So in our task the marginal propensity to consume is 0.25.

Entering the data in formula (9.3), we obtain:

$$m_1 = \frac{1}{1-0.25} = 1.33.$$

2. Calculate the value of the investment accelerator using the formula:

$$a_1 = \frac{\Delta Y}{\Delta I}, \quad (9.4)$$

where a_1 is the investment accelerator.

Entering the data in formula (9.4), we obtain:

$$a_1 = \frac{1}{1.33} = 0.75.$$

Task 3. The economy of the country A is characterized by the following data: $C = 100$ bln euros + $0.15 \cdot Y$, $I = 450$ bln euros. Calculate: 1) the equilibrium GDP; 2) the equilibrium GDP if investments increase by 150 bln euros; 3) the multiplier of investment.

Guidelines for doing task 3

1. As we know, there are only two macroeconomic agents in a closed private economy: households and enterprises. So GDP will be described as:

$$Y = C + I.$$

Entering the initial data in the formula, we obtain:

$$Y = 100 \text{ bln euros} + 0.15 \cdot Y + 450 \text{ bln euros};$$

$$Y - 0.15 \cdot Y = 550 \text{ bln euros};$$

$$0.85 \cdot Y = 550 \text{ bln euros};$$

$$Y = 647.06 \text{ bln euros}.$$

Thus, the initial equilibrium GDP is 647.06 bln euros.

2. If investments increase by 150 bln euros, they will be 600 bln euros (or $I = 450 + 150 = 600$ bln euros):

$$Y = C + I;$$

$$Y = 100 + 0.15 \cdot Y + 600;$$

$$0.85 \cdot Y = 700;$$

$$Y = 823.53 \text{ bln euros.}$$

3. In order to calculate the value of the investment multiplier, use formula (9.3). Entering the data in formula (9.3), we obtain:

$$m_i = \frac{176.47 \text{ bln euros}}{150 \text{ bln euros}} = 1.18.$$

Task 4. The consumption function is described as $C = 80 + 0.9 \cdot Y_d$. Calculate: a) the investment multiplier; b) the investment accelerator.

Task 5. The economy of the country A is characterized by the following data: $C = 120 \text{ bln euros} + 0.85 \cdot Y_d$, $I = 400 \text{ bln euros}$. Calculate: a) the equilibrium GDP; b) the equilibrium GDP if investments increase by 100 bln euros; c) the investment multiplier.

Task 6. The economy of the country A is characterized by the following data: $C = 100 \text{ bln euros} + 0.75 \cdot Y_d$, $I = 420 \text{ bln euros}$. Calculate: a) the equilibrium GDP; b) the investment accelerator if investments increase by 120 bln euros.

Recommended literature: [1, p. 119–120; 2, p. 290, 320–321; 4, p. 172–173].

3. Essays

1. The role of stocks in achieving a macroeconomic equilibrium in the short and long run.

2. The role of the lending market in providing an equilibrium between saving and investment in Ukraine.

3. The dynamics of the aggregate expenditure and potential GDP in Ukraine (or in another country).

Theme 10. The dynamics of the economy

1. Questions for self-study

1. Economic growth in the AD – AS model and the production possibilities curve.

2. The Solow growth model. The "Solow rest".

3. The theories explaining the causes of economic cycles.

Recommended literature: [3; 9, p. 108–112, 172–175, 412–418].

Guidelines for self-study on theme 10

Students should begin self-study on theme 10 with the consideration of the sources of economic growth, paying close attention to intensive factors for acceleration of economic growth in advanced economies.

After that students should proceed to learning the growth models, focusing on the Solow model and conclusions to it. In this regard, it is necessary to do the computing tasks (tasks for self-study 1 – 6). The formulas for calculation of the real GDP growth from the Keynesian and neoclassical viewpoints are given in the textbooks [1, p. 174–175; 2, p. 435–438; 4, p. 179–185].

In order to successfully complete self-study on theme 10, students should cover the essence, types and structure of economic cycles as well as theories explaining the causes of these cycles. To do this, students have to write an essay on one of the proposed themes. Besides, it is very useful and helpful to prove (or refute) the statement that any economy fluctuates (cyclically develops): sometimes real GDP rises, sometimes real GDP falls (analytical task 2).

2. Tasks for self-study

Task 1. Using the Domar model, calculate the economic growth in the conditions of a general equilibrium and full employment if the marginal productivity of capital in the country A is 0.3 and the marginal propensity to save is 0.2.

Guidelines for doing task 1

To calculate the economic growth rate, use the Domar model that is mathematically presented as the equation:

$$\frac{\Delta Y}{Y} = \alpha \cdot s, \quad (10.1)$$

where α is the marginal productivity of capital;
 s (MPS) is the marginal propensity to save.

Entering the data in the formula, we obtain:

$$\Delta Y = 0.3 \cdot 0.2 = 0.06 \text{ or } 6 \%$$

Task 2. Using the Harrod – Domar model, calculate the economic growth rate if marginal propensity to consume is 0.7, the ratio between the increase in capital and the increase in real GDP is 3.5.

Guidelines for doing task 2

1. Calculate the marginal propensity to save using the formula:

$$\text{MPC} + \text{MPS} = 1. \quad (10.2)$$

Hence $\text{MPS} = 1 - \text{MPC}$.

Entering the data in the formula, we obtain:

$$\text{MPS} = 1 - 0.7 = 0.3.$$

2. Calculate the economic growth rate. Use the Harrod – Domar model that is mathematically presented as the equation:

$$\frac{\Delta Y}{Y} = \frac{s'}{k'}, \quad (10.3)$$

where $\frac{\Delta Y}{Y}$ is the economic growth rate;

s' (MPS) is the marginal propensity to save;

k' is the ratio between the increase in capital and the increase in real GDP.

Entering the data in the formula, we obtain:

$$\frac{\Delta Y}{Y} = \frac{0.3}{3.5} = 0.0857 \quad (\text{or } 8.57 \%).$$

Task 3. The economy of the country A is described by the following function: $Y = A \cdot K^{0.7} \cdot L^{0.3}$. Using the Cobb – Douglas production function, calculate the real GDP growth if the increase in capital is 3 %, the increase in population is 2 %, the total productivity of production factors is 2.5 %.

Guidelines for doing task 3

To calculate the total productivity of production factors, use the Cobb – Douglas production function that is mathematically presented as the equation:

$$Y = A \cdot K^\alpha \cdot L^{1-\alpha}, \quad (10.4)$$

$$\text{or } \frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1-\alpha) \frac{\Delta L}{L}, \quad (10.5)$$

where Y is the real GDP growth;

A is the total productivity of production factors;

K is an increase in capital;

L is an increase in population.

Entering the data in the formula, we obtain:

$$\Delta Y / Y = 2.5 \% + 0.7 \cdot 3 \% + 0.3 \cdot 2 \% = 5.2 \%$$

Task 4. Calculate the economic growth rate in the following countries using the Harrod – Domar model:

Indicator	Country A	Country B
The ratio between the increase in capital and the increase in real GDP	2.4	3.5
Marginal propensity to save	0.18	0.22

Task 5. The economy of the country A is described by the following function: $Y = A \cdot K^{0.8} \cdot L^{0.2}$. Using the Cobb – Douglas production function, calculate the total productivity of production factors if the increase in population is 1.5 %, real GDP growth is 2.5 % and the increase in capital is 4.2 %.

Task 6. The economy of the country A is described by the following function: $Y = A \cdot K^{0.7} \cdot L^{0.3}$. Using the Cobb – Douglas production function, calculate the real GDP growth if the increase in population is 0.8 %, the increase in capital is 1.5 % and the total productivity of production factors is 3.7 %.

Task 7. The economy of the country A is described by the following function: $Y = A \cdot K^{0.6} \cdot L^{0.4}$. Using the Cobb – Douglas production function, calculate the increase in population, if the total productivity of production factors is 2.5 %, real GDP growth is 3.5 % and the increase in capital is 3.2 %.

Recommended literature: [1, p. 174–175; 2, p. 435–438; 4, p. 179–185; 5, p. 307–309].

3. Analytical tasks

Task 1. Analyze the effect of the Solow growth model in a real economy.

Guidelines for doing task 1

In order to do this task, students have to consider independently the Solow growth model that is mathematically described as:

a) $s \cdot y = d \cdot k,$ (10.6)

where s is the saving rate;
 d is the depreciation rate;
 y (Y / L) is the capital productivity;
 k (K / L) is the labor productivity.

$$b) \quad s \cdot f(k) = (d + n) \cdot k, \quad (10.7)$$

where $f(k)$ is the critical size of investment;
 n is the population growth.

After that students have to find real statistics related to the depreciation rate, the saving rate, population growth and labor productivity in Ukraine and, on the basis of this data, calculate the guaranteed growth rate for the Ukrainian economy.

Task 2. Determine the times of trough, depression, expansion and peak in a real economy.

Guidelines for doing task 2

Using the Internet resources ([10] or [11]), students have to gather statistics related to the dynamics of real GDP in any country during 1990 – 2020 (or during another period of at least 30 years). After that they should fill in Table 10.1 and plot a graph describing the dynamics of real GDP in the programming environment Excel 2016.

Table 10.1

The dynamics of real GDP in ... (a country)

Indicator	Years											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	
GDP _R												

Indicator	Years											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
GDP _R												

Indicator	Years									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	
GDP _R										

Based on the findings, students should prove (or refute) the statement that any economy fluctuates (cyclically develops): sometimes real GDP rises,

sometimes real GDP falls. It is also necessary to determine the times of trough, depression, expansion and peak in the country in the analyzed period.

3. Essays

1. The impact of intensive factors on the acceleration of economic growth in advanced economies.

2. The experience of Kuznets construction cycles in the American economic history during the 19 – 20th centuries.

3. The experience of Kondratiev long waves in the world economic history during the 19 – 20th centuries.

Theme 11. The role of the government in the system of macroeconomic regulation

1. Questions for self-study

1. Modern economic theories of government regulation.

2. The IS – LM model with inflation.

3. Automatic fiscal policy. Net taxes as built-in stabilizers.

4. Fiscal policy and state budget. The impact of fiscal policy and fluctuations on the state budget.

Recommended literature: [3; 6, p. 180–188; 8; 9, p. 316–322].

Guidelines for self-study on theme 11

Students should begin self-study on theme 11 with the consideration of major theories of macroeconomic regulation. These are monetarist economics, rational expectations theory, supply-side theory, institutional economics. They are covered in the textbook [9, p. 295–303].

After that students proceed to the essence, types and instruments of fiscal policy, paying close attention to the automatic fiscal policy and its impact on the national economy under increase and decrease in GDP. For this purpose, students should do the computing tasks (tasks for self-study 1, 5, 8).

In order to successfully complete self-study on theme 11, students should study the structure and types of the budget deficit as well as the balanced budget multiplier. In this regard, it is useful and helpful to do the computing tasks (tasks for self-study 4, 9), write an essay on one of the offered themes and do analytical tasks related to the dynamics of internal and external debt in a real economy.

2. Tasks for self-study

Task 1. The actual GDP of the country X is 440 bln dollars, the potential GDP is 490 bln dollars, the marginal propensity to save is 0.2, the tax rate is 0.15. How should government purchases be changed to equilibrate the economy of this country?

Guidelines for doing task 1

1. Calculate the change in GDP:

$$\Delta Y = Y_2 - Y_1, \quad (11.1)$$

where ΔY is the change in GDP;

Y_2 is the potential GDP;

Y_1 is the actual GDP.

Entering the data in the formula, we obtain:

$$\Delta Y = 490 \text{ bln dollars} - 440 \text{ bln dollars} = 50 \text{ bln dollars.}$$

2. Calculate the value of the multiplier of government purchases using the formula:

$$m_G = \frac{1}{1 - \text{MPC}(1 - t)}, \quad (11.2)$$

where m_G is the multiplier of government purchases;

MPC is the marginal propensity to consume;

t is the tax rate.

$$\text{MPC} = 1 - 0.2 = 0.8.$$

Entering the data in formula (11.2), we obtain:

$$m_G = \frac{1}{1 - 0.8(1 - 0.15)} = 3.13.$$

3. Calculate how government purchases should be changed to equilibrate the economy of this country. Use the following formula:

$$m_G = \frac{\Delta Y}{\Delta G}, \quad (11.3)$$

where ΔY is the change in GDP;

ΔG is the change in government purchases of goods and services.

$$\text{Hence } \Delta G = \frac{\Delta Y}{m_G}.$$

Entering the data in the formula, we obtain:

$$\Delta G = \frac{50 \text{ bln dollars}}{3.13} = 15.98 \text{ bln dollars.}$$

Task 2. The actual GDP of the country Alfa is 3700 bln euros. The government of this country is planning to increase GDP to 4200 bln euros in order to equilibrate the national economy in the next year. The marginal propensity to consume is 0.5. The tax rate is 0.2.

1. How should government purchases be increased to equilibrate the economy of this country?

2. How should taxes be decreased to equilibrate the economy of this country?

Guidelines for doing task 2

1. To answer the first question:

a) calculate a change in GDP:

$$\Delta Y = 4200 \text{ bln euros} - 3700 \text{ bln euros} = 500 \text{ bln dollars};$$

b) calculate the value of the multiplier of government purchases, using formula (11.2):

$$m_G = \frac{1}{1 - 0.5(1 - 0.2)} = 1.67.$$

c) calculate how government purchases should be increased to equilibrate the economy of this country. Use the formula:

$$m_G = \frac{\Delta Y}{\Delta G}, \tag{11.4}$$

$$\text{Hence } \Delta G = \frac{\Delta Y}{m_G}.$$

Entering the data in the formula, we obtain:

$$\Delta G = \frac{500 \text{ bln euros}}{1.67} = 299.4 \text{ bln euros.}$$

2. To answer the second question:

a) calculate the value of the tax multiplier, using the following formula:

$$m_T = \frac{MPC}{1 - MPC(1 - t)}, \quad (11.5)$$

where m_T is the tax multiplier.

Entering the data in the formula, we obtain:

$$m_T = \frac{0.5}{1 - 0.5(1 - 0.2)} = 0.83.$$

b) calculate how taxes should be decreased to equilibrate the economy of this country. Use the formula:

$$m_T = \frac{\Delta Y}{\Delta T}, \quad (11.6)$$

Entering the data in the formula, we obtain:

$$\Delta T = \frac{500 \text{ bln euros}}{0.83} = 602.41 \text{ bln euros.}$$

Task 3. The economy of the country X is characterized by the following indicators (bln euros): $C = 100 + 0.7 \cdot (Y - T)$; $I = 200 + 0.1 \cdot Y$; $G = 350$, $NE = 20$; $t = 0.2$. Calculate: 1) the equilibrium GDP; 2) the multiplier of government purchases; 3) the tax multiplier.

Guidelines for doing task 3

1. Calculate the equilibrium GDP, using the equation:

$$Y = C + I + G + NE.$$

Entering the data in this equation, we obtain:

$$Y = 100 + 0.7 \cdot (Y - T) + 200 + 0.1 \cdot Y + 350 + 20;$$

$$Y = 100 + 0.7 \cdot (Y - 0.2 \cdot Y) + 200 + 0.1 \cdot Y + 350 + 20 \text{ bln euros};$$

$$0.06 \cdot Y = 670;$$

$$Y = 11\,166.67 \text{ bln euros.}$$

2. Calculate the value of the multiplier of government purchases. We know that the general form of the consumption function is described as $C = C_0 + MPC \cdot Y_d = C_0 + MPC \cdot (Y - T + TR)$. So in our task, marginal propensity to consume is 0.7. Entering the data in the formula (11.2), we obtain:

$$m_G = \frac{1}{1 - 0.7(1 - 0.22)} = 2.27.$$

3. Calculate the value of the tax multiplier, using formula (11.5):

$$m_T = \frac{0.7}{1 - 0.7(1 - 0.2)} = 1.59.$$

Task 4. The economy of the country Alfa is characterized by the following data: potential GDP is 220 bln dollars, actual GDP is 180 bln dollars, government purchases of goods and services are 25 bln dollars, tax rate is 0.35. Calculate the size of the cyclical deficit in this country.

Guidelines for doing task 4

1. Calculate the size of the actual deficit, using the formula:

$$BS_A = Y \cdot t - G, \quad (11.7)$$

where BS is the size of the actual deficit;

Y is the real GDP;

t is the tax rate;

G is the government purchases of goods and services.

Entering the initial data in this formula, obtain:

$$BS = (180 \text{ bln dollars} \cdot 0.35) - 25 \text{ bln dollars} = 38 \text{ bln dollars}.$$

2. Calculate the size of the structural deficit:

$$BS_S = (220 \text{ bln dollars} \cdot 0.35) - 25 \text{ bln dollars} = 52 \text{ bln dollars}.$$

3. Calculate the size of the cyclical deficit:

$$BS_C = 38 \text{ bln dollars} - 52 \text{ bln dollars} = -14 \text{ bln dollars}.$$

Task 5. The actual GDP of the country X is 300 bln dollars, the potential GDP is 330 bln dollars, the marginal propensity to consume is 0.8. How should government purchases be changed to equilibrate the economy of this country?

Task 6. The actual GDP of the country Alfa in the base period is 380 bln euros. The government of this country is planning to increase GDP to 430 bln euros in order to equilibrate the national economy. The marginal propensity to consume is 0.78. 1. How should government purchases be increased to equilibrate the economy of this country? 2. How should taxes be decreased to equilibrate the economy of this country?

Task 7. The economy of the country X is characterized by the following indicators (bln euros): $C = 150 + 0.3 \cdot (Y - T)$; $I = 200 + 0.2 \cdot Y$; $G = 360$; $NE = 10$; $t = 0.3$. Calculate: a) the equilibrium GDP; b) the multiplier of government purchases; c) the tax multiplier.

Task 8. The economy of the country X is characterized by the following data (bln euros): $C = 250 + 0.78(Y - T)$; $I = 200 + 0.15 \cdot Y$; $G = 45$, $NE = 25$; $T = 0.3$. Calculate: a) the multiplier of government purchases; b) the tax multiplier.

Task 9. The economy of the country Z is characterized by the following data: potential GDP is 240 bln dollars, actual GDP is 190 bln dollars, government purchases of goods and services are 40 bln dollars, tax rate is 0.25. Calculate the size of the cyclical deficit in this country.

Recommended literature: [1, p. 95–96; 2, p. 476–478, 481; 4, p. 200–202, 207–208; 8, p. 502–525].

3. Analytical tasks

Task 1. Analyze the dynamics and structure of the public debt in a market economy.

Guidelines for doing task 1

Using Internet resources, students have to gather statistics related to the dynamics and structure of the public debt in any country during 2008 – 2020 (or during another period of at least 10 years). Fill in Table 11.1, analyze the initial data and draw conclusions.

Table 11.1

The structure of the public debt of ... (the country)

Indicator	Years									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Internal public debt, bln dollars										
Internal public debt, %										
External public debt, bln dollars										
External public debt, %										
Public debt, bln dollars										
GDP, bln dollars										
The ratio between public debt and GDP, %										

Task 2. Analyze the peculiarities of the Laffer curve in developing countries.

Guidelines for doing task 2

In order to do this task, students have to choose a developing country to be analyzed, gather the real statistics covering at least five years, build a Laffer curve plotting the tax rate on the vertical axis and budget revenues from taxes on the horizontal axis. Students should also determine the zones on the Laffer curve in which an increase in tax rates provides an increase in budget revenues (zone 1) and an increase in tax rates leads to a decrease in incentives for further development of production (zone 2).

4. Essays

1. The crowding-out effect of fiscal policy in developing countries.
2. The causes of increase in the external public debt in Ukraine.
3. The causes of increase in the external public debt in the United States.
4. Seigniorage in Ukraine: the revenue of the government from printing money.

Theme 12. Foreign trade policy

1. Questions for self-study

1. The development of the international monetary system. The role of the International Monetary Fund (IMF) in the world financial system.
2. The main models of setting a macroeconomic equilibrium in an open economy.

Recommended literature: [3; 6, p. 208–212; 9, p. 455–467, 640].

Guidelines for self-study on theme 12

Students should begin self-study on theme 12 with learning the main models of setting a macroeconomic equilibrium in an open economy, paying close attention to the Mundell – Fleming model. These questions are covered in the textbooks [5, p. 577–587; 9, p. 636–642].

After that students should consider independently the types and forms of exchange rates as well as the factors influencing the demand and supply. To deepen the knowledge in this sphere, students have to write an essay on one of the offered themes.

In order to successfully complete self-study on theme 12, students should study questions related to the structure and dynamics of the international balance of payment. For this purpose, it is useful and helpful to

regard an example of formation of the balance of payment in an open economy (task for self-study 2) and do a similar task (task for self-study 4) independently.

2. Tasks for self-study

Task 1. The open economy of the country Beta is characterized by the following data: marginal propensity to consume is 0.7, marginal propensity to import is 0.15, tax rate is 0.22. Calculate how GDP will change if government purchases increase by 40 bln euros.

Guidelines for doing task 1

1. Calculate the value of the multiplier in the open economy of the country Beta, using the formula:

$$m_E = \frac{1}{1 - (MPC - MPI) \cdot (1 - t)}, \quad (12.1)$$

where m_E is the multiplier of government spending in an open economy;
MPC is the marginal propensity to consume;
MPI is the marginal propensity to import;
t is the tax rate.

Entering the initial data in formula (12.1), obtain:

$$m_E = \frac{1}{1 - (0.7 - 0.15)(1 - 0.22)} = 1.94.$$

2. Calculate how GDP will change if government purchases increase. Use the formula:

$$m_E = \frac{\Delta Y}{\Delta G}. \quad (12.2)$$

Hence $\Delta Y = m_E \cdot \Delta G$.

Entering the data in formula (12.2) obtain:

$$m_E = 1.94 \cdot 40 \text{ bln euros} = 77.6 \text{ bln euros}.$$

Task 2. Draw up the balance of payments of the country X if its economy is characterized by the following trade operations: buying of bonds of foreign enterprises by the residents of the country is 70 bln pesos, imports of goods and services to the country make 120 bln pesos, exports of goods and services

from the country amount to 140 bln pesos, money transactions to the country are 50 bln pesos, selling of bonds of national enterprises by foreigners is 80 bln pesos, imports of gold to the country are 80 bln pesos.

Guidelines for doing task 2

It is known that the balance of payments of any country consists of debits and credits, so we have to divide the initial data into two groups:

Indicators	Debit	Credit
Buying of bonds of foreign enterprises by the residents of the country, bln pesos	70	
Selling of bonds of national enterprises by foreigners, bln pesos	120	80
Imports of goods and services to the country, bln pesos		
Imports of gold to the country, bln pesos	80	
Exports of goods and services from the country, bln pesos		140
Money transactions to the country, bln pesos		50
Total, bln pesos	270	270

Task 3. The open economy of the country Delta is characterized by the following data: marginal propensity to consume is 0.85, marginal propensity to import is 0.2, tax rate is 0.18. Calculate how GDP will change, if government purchases increase by 150 bln rupees.

Task 4. Draw up the balance of payments of the country Z if its economy is characterized by the following trade operations: buying of bonds of foreign enterprises by the residents of the country is 105 bln francs, import of goods and services to the country is 180 bln francs, export of goods and services from the country is 121 bln francs, money transactions to the country make 75 bln francs, selling of bonds of national enterprises by foreigners is 120 bln francs, imports of gold to the country is 120 bln francs.

Task 5. The value of the consumer basket is 2100 forints in Hungary and the value of the same consumer basket is 2500 lari in Georgia. Calculate the purchasing power parity between the Hungarian forint and the Georgian lari if the inflation rate is 1.05 % in Hungary and 3.5 % in Georgia.

Recommended literature: [1, p. 227; 2, p. 322, 510–511, 554–555; 4, p. 225–226].

3. Essays

1. Application of the tools of trade policy to the Ukrainian economy.
2. Analysis of the impact of net export on the GDP in Ukraine.
3. The causes of variation of the real exchange rate in Ukraine.

Recommended literature

Main

1. Гронтковська Г. Е. Макроекономіка : навчальний посібник / Г. Е. Гронтковська, І. Ф. Косик. – Київ : ЦУЛ, 2019. – 672 с.
2. Калініченко О. В. Макроекономіка. Практикум : навчальний посібник / О. В. Калініченко, О. Д. Плотник. – Київ : Центр учбової літератури, 2017. – 656 с.
3. Макроекономіка : мультимедійний навчальний посібник / М. С. Бріль, О. М. Кліменко, М. А. Мащенко та ін. – Харків : ХНЕУ ім. С. Кузнеця, 2019. – 705 с.
4. Macroeconomics : textbook / M. Bril, O. Klimenko, I. Lisna et al. – Kharkiv : S. Kuznets KhNUE, 2020. – 236 p.
5. McConell C. R. Economics: principles, problems, and policies / C. R. McConell, S. L. Brue. – Boston : McGraw-Hill Irwin, 2015. – 818 p.

Additional

6. Клименко Е. Н. Макроэкономика : учебное пособие для самостоятельного изучения дисциплины / Е. Н. Клименко, О. Н. Крюкова, М. С. Бріль. – Харьков : ХНЭУ им. С. Кузнеця, 2015. – 244 с.
7. Макроекономіка : методичні рекомендації до практичних та самостійних робіт для студентів усіх спеціальностей першого (бакалаврського) рівня / М. А. Мащенко, М. С. Бріль, І. В. Пивавар, О. О. Пономаренко. – Харків : ХНЕУ ім. С. Кузнеця, 2020. – 64 с.
8. Evans M. K. Macroeconomics for managers / M. K. Evans. – London : Blackwell Publishing, 2016. – 838 p.
9. Garin J. Intermediate Macroeconomics / J. Garin, R. Lester, E. Sims. – S. l. : s. n., 2018. – 1018 p.

Information resources

10. Мировой атлас данных [Электронный ресурс]. – Режим доступа : www.knoema.ru.
11. Global No. 1. Business Data Platform [Electronic resource]. – Access mode : www.statista.com.

Methodological support

12. Cherkashyna T. S. Personal Education System on the Academic Discipline "Macroeconomics" [Electronic resource] / T. S. Cherkashyna. – Access mode : <https://pns.hneu.edu.ua/course/view.php?id=3534>.

Contents

Introduction	3
Content module 1. Analysis of the main markets of the economy	4
Theme 1. Macroeconomics as a science	4
Theme 2. Macroeconomic indicators in the system of national accounts	6
Theme 3. The labor market	10
Theme 4. The goods market	14
Theme 5. The money market	17
Theme 6. The inflation mechanism	20
Content module 2. Analysis and structure of the components of economic policy	24
Theme 7. Households' consumption	24
Theme 8. Private saving	31
Theme 9. Aggregate expenditure and GDP	36
Theme 10. The dynamics of the economy	39
Theme 11. The role of the government in the system of macroeconomic regulation	44
Theme 12. Foreign trade policy	50
Recommended literature	53
Main	53
Additional	53
Information resources	53
Methodological support	53

НАВЧАЛЬНЕ ВИДАННЯ

МАКРОЕКОНОМІКА

**Методичні рекомендації
до самостійної роботи студентів
усіх спеціальностей
першого (бакалаврського) рівня
(англ. мовою)**

Самостійне електронне текстове мережеве видання

Укладач **Черкашина Тетяна Сергіївна**

Відповідальний за видання *М. А. Мащенко*

Редактор *З. В. Зобова*

Коректор *З. В. Зобова*

Подано значний перелік розрахункових та аналітичних завдань, тем презентацій і есе до самостійної роботи студентів відповідно до тем робочої програми навчальної дисципліни, а також методичні рекомендації до їх виконання, що сприятимуть набуттю майбутніми фахівцями професійних компетентностей для вирішення актуальних макроекономічних проблем.

Рекомендовано для студентів усіх спеціальностей першого (бакалаврського) рівня.

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*Свідоцтво про внесення суб'єкта видавничої справи до Державного реєстру
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