

**Ministry of Education of Ukraine
Private higher educational establishment-institute
“Ukrainian – American Concordia University”**



Approved
Rector

O. Romanovskii

March 30, 2023

**PROGRAMME
for entrance exam on
PhD programme in Economics**

Approved on meeting of
introductory commission of the
Institute

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Meeting minutes № 4

Kyiv - 2023

The program of entrance exam on subjects for obtaining a PhD programme in Economics is based on the curricula of the UACU.

Program developer:

The program was approved at the meeting of the Department of International Economic Relations, Business and Management on March 28, 2023, Minutes No. 2.

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INTRODUCTION

The program of entrance exam on macroeconomics in accordance with the requirements of the standard of higher education. The program contains the main directions, components and tasks of basic economic disciplines.

To ensure the effective implementation of the tasks of the educational and professional training of the PhD in the competitive selection of students to the PhD are put forward requirements for their abilities and preparedness in accordance with the test of system knowledge, skills and abilities defined by the programs of normative disciplines.

An introductory test consists of a test check of knowledge that forms the competencies that a masters must possess.

MACROECONOMICS

Macroeconomics is a branch of the economics that studies how the aggregate economy behaves. In macroeconomics, a variety of economy-wide phenomena is thoroughly examined such as inflation, price levels, rate of growth, national income, gross domestic product (GDP) and changes in unemployment.

The Study of Macroeconomics. Those working in the field of macroeconomics study aggregated indicators such as unemployment rates, GDP and price indices, and then analyze how different sectors of the economy relate to one another to understand how the economy functions.

Macroeconomists develop models explaining relationships between a variety of factors such as consumption, inflation, savings, investments, international trade and finance, national income and output. Such macroeconomic models, and what the models forecast, are used by government entities to aid in the construction and evaluation of economic policy.

Specific Areas of Research. Macroeconomics is a rather broad field, but two specific areas of research are representative of this discipline. One area involves the process of understanding the causation and consequences of short-term fluctuations in national income, also known as the business cycle. The other area involves the process by which macroeconomics attempts to understand the factors that determine long-term economic growth, or increases in the national income.

History of Macroeconomics. Macroeconomics, as it is in its modern form, started with John Maynard Keynes and the publication of his book "The General Theory of Employment, Interest and Money" in 1936. Keynes offered an explanation for fallout from the Great Depression, when goods remained unsold and workers unemployed, a feat that left classical economists stumped. Keynes' theory explained why markets may not clear. This theory evolved throughout the 20th century, diverting into several macroeconomic schools of thought known as Keynesian economics, often referred to as Keynesian theory or Keynesianism.

There is a list of main topics:

- **The Measurement and Structure of the National Economy:** Definitions & Description of important terms like GDP, CPI, PPI, BOP, etc. Short video on

composition of national economies.

- **Global Economy and Globalization** - Class discussion on aspects of globalization.
- **Productivity, Output, and Employment:** conceptualization, comprehension and application of above concepts in Macroeconomics & national economies. Discussion on current status of Ukrainian economy.
- **Consumption, Saving, and Investment:** salient aspects, application as potential Macroeconomic factors to stimulate & boost economic growth
- **GDP, National Income, Business Cycles:** Detailed comprehension of macroeconomic environment and tools to develop economy. Interactive question & answer session. Group exercises
- **Inflation and Unemployment:** impact of macroeconomic indicators on the national economy-causes, conclusions & recommendations
- **Fiscal Policy** – Conceptualization & Application of Fiscal policy as a measure of regulating & revitalizing the national economy
- **Monetary Policy** – Description and understanding of monetary policy as a potent tool and process to boost, stimulate and inject liquidity in the national economy
- **Drivers of Growth:** Technology, Policy, and Institutions: Analysis of Macroeconomic indicators of various countries & discussing growth factors in context of external factors.

10 principles of economics:

How people make decisions.

1. People face tradeoffs.
2. The cost of something is what you give up to get it.
3. Rational people think at the margin.
4. People respond to incentives.

How people interact with each other.

5. Trade can make everyone better off.
6. Markets are usually a good way to organize economic activity.
7. Governments can sometimes improve economic outcomes.

The forces and trends that affect how the economy as a whole works.

8. The standard of living depends on a country's production.
9. Prices rise when the government prints too much money.
10. Society faces a short-run tradeoff between inflation and unemployment.

Key terms

Inflation is an increase in the overall price level.

Hyperinflation is a period of very rapid increases in the overall price level.

Hyperinflations are rare, but have been used to study the costs and consequences of even moderate inflation.

Deflation is a decrease in the overall price level. Prolonged periods of deflation can be just as damaging for the economy as sustained inflation.

The business cycle is the cycle of short-term ups and downs in the economy.

Aggregate output is the total quantity of goods and services produced in an economy in a given period

Aggregate demand is the total demand for goods and services in an economy.

Aggregate supply is the total supply of goods and services in an economy.

Stagflation occurs when the overall price level rises rapidly (inflation) during periods of recession or high and persistent unemployment (stagnation).

Business Cycle

Peak: at the peak of the business cycle, Real GDP is at a temporary high.

Contraction: A decline in the real GDP. If it falls for two consecutive quarters, it is said the economy to be in a recession.

Trough: The Low Point of the GDP, just before it begins to turn up.

Recovery: When the GDP is rising from the trough.

Expansion: when the real GDP expands beyond the recovery

Recession: two consecutive quarter declines in Real DP

National Income Accounting

The national income accounts is an accounting framework used in measuring current economic activity.

- The product approach measures the amount of output produced, excluding output used up in intermediate stages of production.
- The income approach measures the incomes received by the producers of output
- The expenditure approach measures the amount of spending by the ultimate purchasers of output

The fundamental identity of national income accounting:

$$\text{Total production} = \text{Total income} = \text{Total expenditure}$$

GDP (gross domestic product) is the market value of final goods and services newly produced within a nation during a fixed period of time

GNP (Gross National Product) = output produced by domestically owned factors of production

$$\text{GDP} = \text{GNP} - \text{NFP}$$

NFP – Net Factor Payments from abroad (Payments to domestically owned factors located abroad - Payments to foreign factors located domestically)

GNI (Gross National Income) – measures income received by a country both domestically and from overseas.

$$\text{GNI} = \text{Value added by all producers who are residents in a nation} + \text{Product taxes (minus subsidies) not included in output} + \text{Income received from abroad (employee compensation and property income)}$$

The expenditure approach to measuring GDP

Measures total spending on final goods and services produced within a nation during a specified period of time

Four main categories of spending: consumption (C), investment (I), Government purchases of goods and services (G), and net exports (NX)

$$Y = C + I + G + NX$$

The income approach to measuring GDP. Adds up income generated by production (including profits and taxes paid to the government)

National Income = (compensation of employees (including benefits) + (proprietors' income) + (rental income of persons) + (corporate profits) + (net interest) + (taxes on production and imports) + (business current transfer payments) + (current surplus of government enterprises)

National Income + statistical discrepancy = Net National Product

Net National Product + Depreciation (the value of capital that wears out in the period) = Gross National Product (GNP)

$$GNP - \text{Net Factor Payments (NFP)} = \text{GDP}$$

Private sector and government sector income

$$\text{Private Disposable Income} = \text{Income of the Private Sector} = Y + \text{NFP} + \text{TR} + \text{INT} - \text{T}$$

Y or GDP – private sector income earned at home

NFP – net factor payments from abroad

TR – payments from the government sector (transfers)

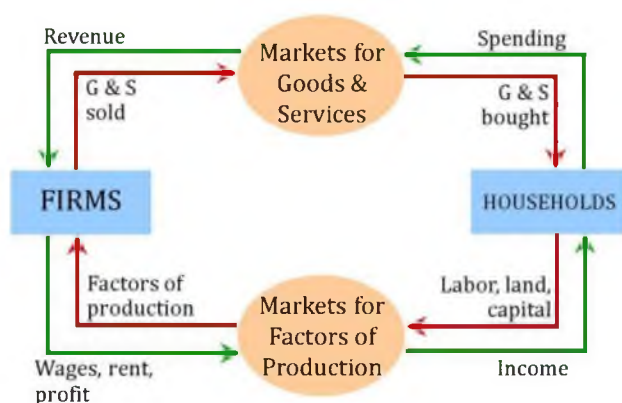
INT – interest on government debt

T – taxes paid to government

$$\text{Government's net income} = \text{Taxes} - \text{TRansfers} - \text{INTerest payments} = \text{T} - \text{TR} - \text{INT}$$

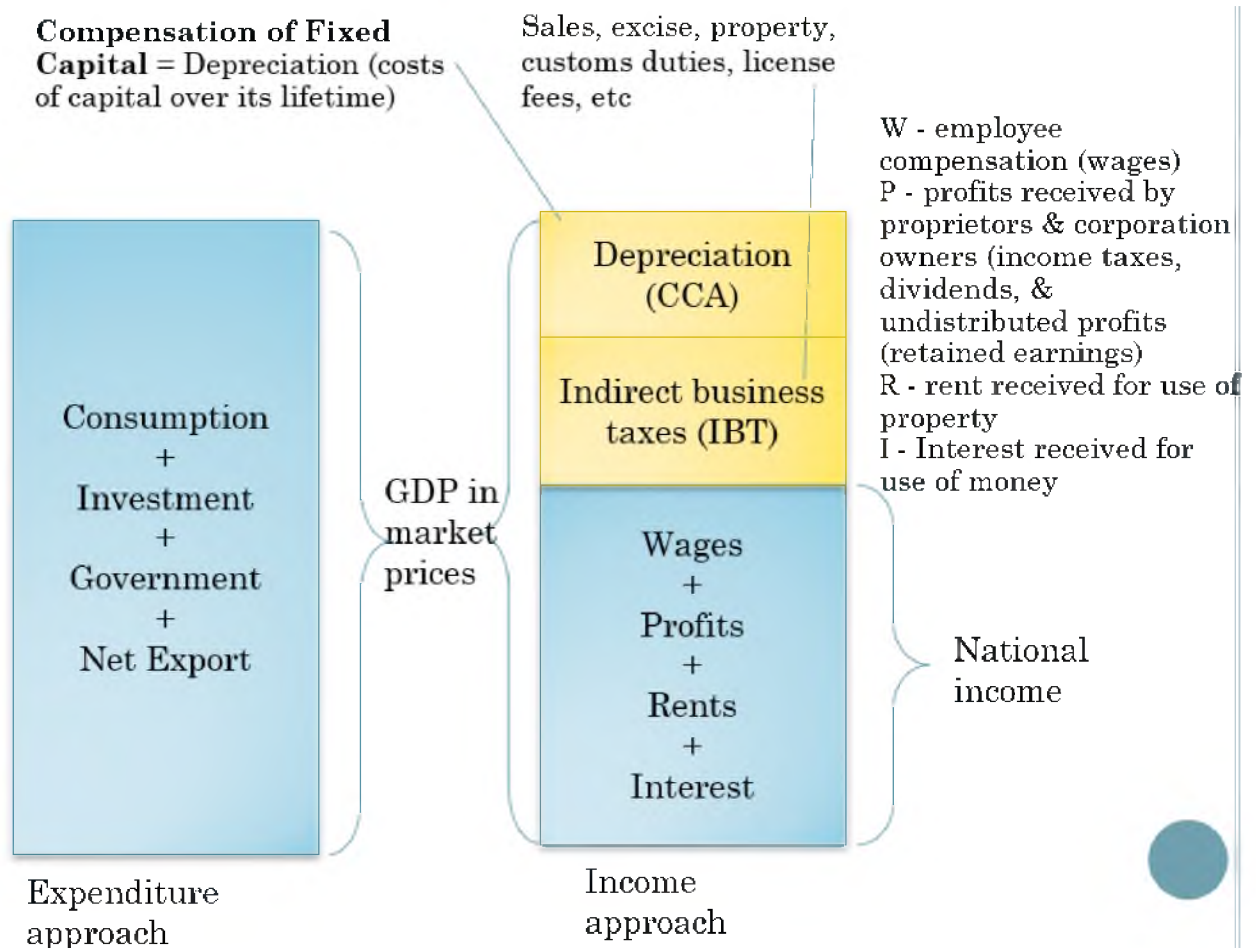
$$\text{Private disposable income} + \text{government's net income} = \text{GDP} + \text{NFP} = \text{GNP}$$

GDP calculation



$$(I - S) + (G - T) + (X - M) = 0$$

Investment (I) – Saving (S)
Government purchases (G) – Taxes (T)
Exports (X) – Imports (M)



Globalization. Globalization is defined as a process that, based on international strategies, aims to expand business operations on a worldwide level, and was precipitated by the facilitation of global communications due to technological advancements, and socioeconomic, political and environmental developments.

- economic globalization
- cultural globalization
- political globalization

In 2000, the International Monetary Fund (IMF) identified four basic aspects of globalization:

- trade and transactions,
- capital and investment movements,
- migration and movement of people,
- the dissemination of knowledge.

There are two types of globalization:

Consumption: The nation in which a product was made becomes independent of the nationality of the consumer

Production: The nationality of the owner and controller of productive assets is independent of the nation housing them

Pros and Cons of Globalization

1. Free trade is supposed to reduce barriers such as tariffs, value added taxes, subsidies, and other barriers between nations. This is not true. There are still many

barriers to free trade. The Washington Post story says “the problem is that the big G20 countries added more than 1,200 restrictive export and import measures since 2008

2. The proponents say globalization represents free trade which promotes global economic growth; creates jobs, makes companies more competitive, and lowers prices for consumers.

3. Competition between countries is supposed to drive prices down. In many cases this is not working because countries manipulate their currency to get a price advantage.

4. It also provides poor countries, through infusions of foreign capital and technology, with the chance to develop economically and by spreading prosperity, creates the conditions in which democracy and respect for human rights may flourish. This is an ethereal goal which hasn't been achieved in most countries

5. According to supporters of globalization and democracy should go hand in hand. It should be pure business with no colonialist designs.

6. There is now a worldwide market for companies and consumers who have access to products of different countries.

7. Gradually there is a world power that is being created instead of compartmentalized power sectors. Politics is merging and decisions that are being taken are actually beneficial for people all over the world. This is simply a romanticized view of what is actually happening.

8. There is more influx of information between two countries, which do not have anything in common between them.

9. There is cultural intermingling and each country is learning more about other cultures.

10. Since we share financial interests, corporations and governments are trying to sort out ecological problems for each other.

Productivity, Output & Employment. Factors affecting productivity

- Technology
- Inputs (Labor / Capital / Land / Raw materials / Machinery / Power)
- Time period

The production function. There are several main issues: The quantity of inputs does not completely determine the amount of output produced; How effectively the factors of production are used is also important; The effectiveness with which factors of production are used may be expressed by a relationship called the production function.

Mathematically, we express production function as-

$$Y = A f(K, N, L, \dots)$$

Where, Y stands for output, A - number that indicated productivity, K - capital, N – number of labor employed, L - land. Other factors could be, machinery, energy, building etc.

The symbol “A” in the equation above captures the overall effectiveness of the

factors of production. It is called the “total factor productivity”

Studies show that the relationship between outputs and inputs in the US economy is described reasonably well by the following production function:

$$Y = A \cdot K^{1-\alpha} \cdot N^{\alpha} \quad (R^2 \geq 0.94)$$

This type of production function is called the Cobb-Douglas production function. Historical GDP data of US for the period 1899 – 1922 showed that the production function for US followed the form:

$$Y = A \cdot K^{0.30} \cdot N^{0.70}$$

Marginal Productivity of Capital: means additional output produced by each additional unit of capital.

Marginal Productivity of Labor: means additional output produced by each additional unit of labor.

Because of diminishing marginal productivity for both labor and capital the slope of production function becomes flatter from left to right.

If the marginal productivity were increasing, slope of the production function would become steeper from left to right.

If the marginal productivity were constant, the slope would be constant and the shape of the curve of production function would be a straight line.

The production function does not remain fixed over time. It may change.

Economists use the term “supply shock” or “productivity shock” to refer to change in an economy’s production function.

A positive supply shock raises the amount of output, and a negative supply shock reduces the amount of output.

Sources of supply shock: natural calamities, changes in governmental regulation, innovations etc.

Unemployment:

Full-employment level implies that all the workers who are willing to work at the equilibrium wage rate will find a job.

All workers in real life do not find jobs even if they want to. When workers are unemployed for a long time the sum of all such workers constitute structural unemployment

If workers are unemployed for a brief period (for example: the brief period in which they search for a suitable job) we call it frictional unemployment.

The rate of unemployment that prevails when output and unemployment rate the full-employment level, we call it natural rate of unemployment.

The difference between actual unemployment rate and natural unemployment rate is called cyclical unemployment.

If workers are not willing to work, this will not constitute unemployment. We shall consider these workers as out of work force.

Productivity / GDP per capita & GDP (PPP). The per capita GDP is especially useful when comparing one country to another, because it shows the relative performance of the countries. A rise in per capita GDP signals growth in the economy and tends to reflect an increase in productivity.

GDP per capita = GDP / Population (number of people in the country)

GDP per capita sometimes used as an indicator of standard of living, with higher per capita GDP equating to a higher standard of living.

A standard of living is the level of wealth, comfort, material goods and necessities available to a certain socioeconomic class or a certain geographic area. The standard of living includes factors such as income, gross domestic product, national economic growth, economic and political stability, political and religious freedom, environmental quality, climate, and safety. The standard of living is closely related to quality of life.

GDP per capita can also be used to measure the productivity of a country's workforce, as it measures the total output of goods and services per each member of the workforce in a given nation.

Productivity is calculated by dividing each country's GDP by the average number of hours worked annually by all employed citizens. Hours worked include full-time and part-time workers, excluding holidays and vacation time.

Labor productivity is defined as real gross domestic product (GDP) per hour worked.

This captures the use of labor inputs better than just output per employee, with labor input defined as total hours worked by all persons involved.

The data are derived as average hours worked multiplied by the corresponding and consistent measure of employment for each particular country. Forecast is based on an assessment of the economic climate in individual countries and the world economy, using a combination of model-based analyses and expert judgement. This indicator is measured as an index with 2010=1.

Multifactor productivity (MFP) reflects the overall efficiency with which labor and capital inputs are used together in the production process. Changes in MFP reflect the effects of changes in management practices, brand names, organizational change, general knowledge, network effects, spillovers from production factors, adjustment costs, economies of scale, the effects of imperfect competition and measurement errors.

Growth in MFP is measured as a residual, i.e. that part of GDP growth that cannot be explained by changes in labor and capital inputs. In simple terms therefore, if labor and capital inputs remained unchanged between two periods, any changes in output would reflect changes in MFP. This indicator is measured as an index and in annual growth rates.

Purchasing Power Parity (PPP) is an economic theory that compares different countries' currencies through a market "basket of goods" approach. According to this concept, two currencies are in equilibrium or at par when a market basket of goods (taking into account the exchange rate) is priced the same in both countries

$$S = P_1/P_2$$

Where:

S represents exchange rate of currency 1 to currency 2

P_1 represents the cost of good "x" in currency 1

P_2 represents the cost of good "x" in currency

PPP calculation

Problem: To make a comparison of prices across countries that holds any type of meaning, a wide range of goods and services must be considered. The amount of data that must be collected, and the complexity of drawing comparisons makes this process difficult.

Solution: To facilitate this, the International Comparisons Program (ICP) (established in 1968 by the University of Pennsylvania and UN). Purchasing power parities generated by the ICP are based on a worldwide price survey that compares the prices of hundreds of various goods. This data, in turn, helps international macroeconomists come up with estimates of global productivity and growth.

Correction & Updating: Every three years, the World Bank constructs and releases a report that compares various countries in terms of PPP and U.S. dollars.

Usage: Both the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD) use weights based on PPP metrics to make predictions and recommend economic policy.

Consumption, Savings & Investment. Consumption can be defined in different ways, but is usually best described as the final purchase of goods and services by individuals. It is also often referred to as consumer spending

Every time you purchase food at the drive-thru or pull out your debit or credit card or cash to buy something, you are adding to consumption.

Consumption is one of the biggest concepts in economics and is extremely important because it helps determine the growth and success of the economy.

Businesses can open up and offer all kinds of great products, but if we don't purchase or consume their products, they won't stay in business very long

Theories of consumption

Relative Income Theory of Consumption. Consumption expenditure depends on income of an individual relative to incomes of others rather than the absolute size of his own income

Life Cycle Theory of Consumption. Individual plans his even consumption profile in his lifetime which depends not so much on his current income but on his expectations of income in the whole lifetime

Permanent Income Theory of Consumption. Consumption of an individual depends on permanent income rather than current level of income.

Real income VS nominal income. The term 'real' that is used in describing income refers to how your income is affected by inflation, or the natural rise in prices of goods and services. So, to elaborate, if your income went up 5% in a year, but the

price of goods or inflation went up 5% also, your real income remained flat. You can't really buy or consume any more goods than you could before.

Savings. Savings, according to Keynesian economics, consists of the amount left over when the cost of a person's consumer expenditure is subtracted from the amount of disposable income he earns in a given period of time. For those who are financially prudent, the amount of money left over after personal expenses have been met can be positive; for those who tend to rely on credit and loans to make ends meet, there is no money left for savings.

Saving involves income that is not consumed

Savings can be turned into further increased income through investing in different investment vehicles.

Saving is often confused with investing, but they are not the same.

Although most people think of purchases of stocks and bonds as investments, economists use the term "investment" to mean additions to the real stock of capital: plants, factories, equipment, and so on

Types of savings

Personal savings. What people save, avoiding to consume all their income, is called "personal savings". These savings can remain on the bank accounts for future use or be actively invested in houses, real estate, bonds, shares and other financial instruments

National savings. National savings = personal savings + the business savings + public savings. Business savings can be measured by the value of undistributed corporate profits. Public savings are basically tax revenues less public expenditure.

Investments - money committed or property acquired for future income.

An investment is an asset or item that is purchased with the hope that it will generate income or will appreciate in the future. In an economic sense, an investment is the purchase of goods that are not consumed today but are used in the future to create wealth. In finance, an investment is a monetary asset purchased with the idea that the asset will provide income in the future or will be sold at a higher price for a profit.

Types of investments:

Traditional investments. In finance, the notion of traditional investments refers to putting money into well-known assets (such as bonds, cash, real estate, and shares) with the expectation of capital appreciation, dividends, and interest earnings

Alternative investment. Alternative investments include hedge funds, managed futures, real estate, commodities and properties.

GDP / Business Cycle / Unemployment

Business cycle terms:

As the economy fluctuates around the trend, the economy is experiencing business cycles.

When economy is moving from a peak level to trough level, the economy is in a contractionary phase.

When economy is moving from trough to peak, the economy is in an expansionary phase.

When economy is moving from peak to trough the economy is in a contractionary phase.

Business Cycles & Sub-Categories. Different sub-categories of GDP tend to co-move with business cycles though to different degree. Business cycles tend to co-move across countries though not as strongly as within countries

Expenditure. Consumption and Investment co-move with output. Investment is more volatile than consumption. Consumer durables are most volatile part of consumption.

Production – Production sectors co-move with business cycles. Manufacturing & Construction most volatile. Services least volatile.

Income – Worker Compensation & Capital Income are both pro-cyclical. Capital Income tends to be more volatile.

Unemployment. is defined by the International Labor Organization (ILO) as a situation in which people are without jobs and they have actively looked for a job for the past four weeks. According to this definition, people who do not look for a job will not be considered unemployed

Types of Unemployment:

Cyclical unemployment - Unemployment associated with business cycles. When demand falls, demand for labor falls. Workers may not be at first willing to work at new market wage rate and may sit idle

Structural unemployment - When specific demands for workers (location or skills) does not match the characteristics of the workforce. Restrictions on job conditions may make it difficult for firms to find workers that match their needs under given conditions. Minimum wage means only high skill workers may be hired. Firing costs may mean that jobs for young or difficult to evaluate workers may not appear.

Frictional unemployment - Unemployment that occurs as a part of the movement in and out of the workforce. Very frequently when a worker changes their employment situation there is some period of unemployment.

Disguised unemployment exists where part of the labor force is either left without work or is working in a redundant manner where worker productivity is essentially zero. It is unemployment that does not affect aggregate output. An economy demonstrates disguised unemployment when productivity is low and too many workers are filling too few jobs.

Aggregated supply and demand.

Aggregate demand is the total demand for goods and services is an economic measurement of the sum of all final goods and services produced in an economy,

expressed as the total amount of money exchanged for those goods and services.

$AD = \text{total spending on goods and services} = \text{Real GDP}$

$$AD = C + I + G + NX$$

C - Consumer spending on goods and services

I - Private investment and corporate spending for non-final capital goods (factories, equipment, etc.)

G - Government spending for public goods and social services (infrastructure, Medicare, etc.)

NX = Net exports (exports minus imports)

Aggregate supply - (or total output) is the total supply of goods and services produced within an economy at a given overall price level in a given time period.

Elements of AS:

Consumer goods. Private consumer goods and services, such as motor vehicles, computers, clothes and entertainment, are supplied by the private sector, and consumed by households.

Capital goods. Capital goods, such as machinery, equipment, and plant, are supplied to other firms.

Public and merit goods. Goods and services produced by private firms for use by central or local government, such as education and healthcare, are also a significant component of aggregate supply.

Traded goods. Goods and services for export, such as chemicals, entertainment, and financial services are also a key component of aggregate supply.

The aggregate demand/aggregate supply model is a model that shows what determines total supply or total demand for the economy and how total demand and total supply interact at the macroeconomic level.

Movements of either the aggregate supply or aggregate demand curve in an AD/AS diagram will result in a different equilibrium output and price level.

The aggregate supply curve shifts to the right as productivity increases or the price of key inputs falls, making a combination of lower inflation, higher output, and lower unemployment possible. The aggregate supply curve shifts to the left as the price of key inputs rises, making a combination of lower output, higher unemployment, and higher inflation possible. When an economy experiences stagnant growth and high inflation at the same time it is referred to as stagflation.

The aggregate demand curve shifts to the right as the components of aggregate demand—consumption spending, investment spending, government spending, and spending on exports minus imports—rise. The AD curve will shift back to the left as these components fall. AD components can change because of different personal choices—like those resulting from consumer or business confidence—or from policy choices like changes in government spending and taxes. If the AD curve shifts to the right, then the equilibrium quantity of output and the price level will rise. If the AD curve shifts to the left, then the equilibrium quantity of output and the price level will fall.

Whether equilibrium output changes relatively more than the price level or whether the price level changes relatively more than output is determined by where the AD curve intersects with the AS curve.

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Additional reading material

David C Colander, "Macroeconomics" McGraw-Hill Education Learning, Eight edition - ISBN: 0077247175

*Karl E. Case, Ray C. Fair, **Principles of Macroeconomics**, Seventh Edition, Pearson/Prentice Hall*

On-line Resources:

<https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=33>

<http://crl.du.ac.in/Social%20Science%20Resources/Online%20Macroeconomics%20Textbook.htm>

<https://www.thoughtco.com/online-macroeconomics-textbook-resources-1147693>

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