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Master's Thesis

The Determinants Of Foreign Trade Development In Ukraine

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DIPLOMA THESIS ASSIGNMENT

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Thesis title

The determinants of foreign trade development in Ukraine

Objectives of thesis

The main aim of the submitted Diploma thesis is to identify the determinants of foreign trade development in Ukraine, the second-largest country in Europe after Russia. After 200% devaluation of national currency (Ukrainian hryvnia) in 2014–2015 Ukrainian goods and services became cheaper and consequently more competitive. In this light it becomes interesting to investigate the developmental trends in Ukrainian foreign over the last 20 years and its contribution to domestic economic growth. To achieve the formulated main goal the following partial research questions will be stated and gradually answered:

1. Which countries were the main trade partners for Ukraine in the beginning of the analyzed period and which of them became key partners at the end (both importers and exporters)?
2. What goods constitute the bulk of foreign trade turnover in Ukraine?
3. Trade in what items had demonstrated a revealed comparative advantage over the analyzed period?
4. What is the dynamics of associated macroeconomic indicators in Ukraine?
5. What are other factors that play an important role in economic development of Ukraine?

Methodology

The theoretical part of the Diploma thesis will be mainly based on a relevant literature review (represented by printed literature, scientific articles, surveys, web sources) and the research of similar studies, using methods such as abstraction, inductive reasoning, analysis, synthesis, and deduction.

The practical part will contain descriptive statistical analysis and qualitative thematic synthesis of the main economic indicators and selected for the analysis variables. Own research work will be mainly based on RCA indices analysis (Balassa, Vollrath and Lafay) and regression analysis along with comparative techniques and statistical inference.

The results of the conducted analysis will be discussed and complemented with the author's corresponding recommendations.

The proposed extent of the thesis

60-80 pages

Keywords

Ukraine, Foreign trade, Economic growth, Regression analysis

Recommended information sources

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Prague on 07. 11. 2022

Declaration

I declare that I have worked on my master's thesis titled "The Determinants Of Foreign Trade Development In Ukraine" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 30.11.2022 _____

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The Determinants Of Foreign Trade Development In Ukraine

Abstract

The Diploma Thesis is devoted to the development and improvement of information and analytical support for the implementation of calculations in the statistics of foreign trade of Ukraine, and in particular, the identification of the main factors affecting exports and imports in the country. Based on updated statistical information, the trends in international trade are considered and the place of Ukraine in the world trade space is determined. The modern problems of international trade in the context of the economic development of Ukraine are defined. The impact of the most important variables on international trade is examined employing a correlation-regression investigation. In this way, it is appeared that basically crude materials (cereals, metals, ferrous metals) are traded from Ukraine, the trade volumes of which are influenced by the normal trade cost and generation volumes, as well as the volume of capital ventures contributed in it. industry. It is decided that basically wrapped-up products (mechanical machines and arrive vehicles) and mineral powers are imported, the consequence volumes of which are basically affected by the normal purport cost and the official dollar/hryvnia trade rate (remote exchange measurements are ordinarily in US dollars).

Keywords: Ukraine, International trade, export, import, statistical indicators, regression analysis, structure, Balassa index, Vollrath index

Determinanty vývoje zahraničního obchodu na Ukrajině

Abstrakt

Diplomová práce je věnována rozvoji a zdokonalování informační a analytické podpory pro implementaci výpočtů do statistiky zahraničního obchodu Ukrajiny a zejména identifikaci hlavních faktorů ovlivňujících export a import v zemi. Na základě aktualizovaných statistických informací jsou zvažovány trendy mezinárodního obchodu a stanoveno místo Ukrajiny ve světovém obchodním prostoru. Jsou definovány moderní problémy mezinárodního obchodu v kontextu ekonomického rozvoje Ukrajiny. Dopad nejdůležitějších proměnných na mezinárodní obchod je zkoumán pomocí korelačně-regresního šetření. Tímto způsobem se zdá, že se z Ukrajiny obchoduje v zásadě se surovými materiály (obiloviny, kovy, železné kovy), jejichž objemy obchodu jsou ovlivněny běžnými obchodními náklady a objemy výroby, jakož i objemem kapitálových investic vložených do to. průmysl. Je rozhodnuto, že se dovážejí v zásadě zabalené produkty (mechanické stroje a příletová vozidla) a nerostné síly, jejichž výsledné objemy jsou v zásadě ovlivněny běžnými údajnými náklady a oficiálním obchodním kurzem dolar/hřivny (měření na dálku jsou obvykle v Americké dolary).

Klíčová slova: Ukrajina, Mezinárodní obchod, export, import, statistické ukazatele, regresní analýza, struktura, Balassův index, Vollrathův index

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1 Introduction

The current deepening of the globalization process increases the level of economic interdependence of countries and expands the openness of national markets. Under these conditions, the volumes and structure of international flows of goods and services are rapidly changing, which requires the improvement of tools for regulating foreign economic activity and increasing the level of efficiency of foreign trade relations. In recent years, these challenges have acquired signs of special relevance for Ukraine, whose economy is open, dependent on foreign markets, with a high level of imbalance in foreign trade in goods and services.

Ukraine's high dependence on foreign economic relations, low indicators of competitiveness of export goods are characteristic features of the current stage of the country's economic development. In this context, the study of the influence of factors and the determination of prospects for the development of foreign trade as a segment of the Ukrainian economy becomes important.

In recent years, the economy of Ukraine has maintained a significant imbalance of export-import flows and a negative balance of foreign trade in goods and services. Changes in the geopolitical situation at the time of independence and modern transformational processes practically did not increase the export potential and the ability to produce goods and services that are competitive in foreign markets.

An important role in the context of studying the state and dynamics of export-import flows of goods and services is played by the reliability of information on foreign trade, which is achieved by comparability of data. This will make it possible to more accurately assess the balance in the market of foreign trade in goods and services and ensure an optimal balance between production capabilities and consumer preferences.

International trade as a form of international economic relations is a component of the balanced economic development of society, contributes to strengthening the competitiveness of the national economy, raises the standard of living of the population and ensures the most complete satisfaction of its needs. Given the high level of influence of exogenous factors on the economy of Ukraine, foreign economic activity under modern conditions is undergoing negative transformations, which actualizes the need to study its condition.

The need for a statistical approach to the analysis of changes in the volume of foreign trade is due to the fact that it occurs under the complex influence of many systematic and

random factors. The application of the statistical approach allows comparing the values of individual and general indicators of the state and development of Ukraine's foreign trade, assessing the degree of changes, connections and interdependencies, and therefore tracing and analyzing the natural relationship between the quantitative and qualitative aspects of the development of the phenomenon under study.

Despite numerous scientific developments, the issues of static assessment of foreign economic activity, determination of its quantitative and qualitative characteristics remain largely debatable and unresolved. First of all, this concerns the issue of developing and improving the methodological foundations of statistical analysis, bringing regulatory acts and production standards into compliance with the requirements of the European Union, analyzing the characteristic features of indicators due to differences in the relevant methodological provisions of different countries, forecasting export/import volumes in the short term. In addition, the statistical assessment of foreign trade and its impact on the economy of Ukraine requires constant improvement and harmonization of methods and methodologies of statistical research, including in the aspect of data comparisons and their dynamic comparisons, in order to develop recommendations for reducing the negative consequences of problematic phenomena in the field of international trade

The relevance of the issues of foreign economic research and the insufficient study of this issue at the theoretical and practical levels determine the choice of the topic of the dissertation, its purpose, structure and main tasks.

2 Objectives and Methodology

2.1 Objectives

The main aim of the submitted Diploma thesis is to identify the determinants of foreign trade development in Ukraine, the second-largest country in Europe after Russia. After 200% devaluation of national currency (Ukrainian hryvnia) in 2014–2015 Ukrainian goods and services became cheaper and consequently more competitive. In this light it becomes interesting to investigate the developmental trends in Ukrainian foreign over the 20 years (2001 – 2020) and its contribution to domestic economic growth. To achieve the formulated main goal the following partial research questions will be stated and gradually answered:

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The practical part will contain descriptive statistical analysis and qualitative thematic synthesis of the main economic indicators and selected for the analysis variables. Own research work will be mainly based on RCA indices analysis (Balassa, Vollrath) and regression analysis along with comparative techniques and statistical inference on the period of 20 years (2001 – 2020).

The results of the conducted analysis will be discussed and complemented with the author's corresponding recommendations.

Macroeconomic indicators, "*also known as fundamental data releases, are statistics or readings that reflect the production or output of an economy, government, or sector"* (*Macroeconomic indicators* 2022). Macroeconomic indicators include gross domestic product (GDP), decisions on interest rates announcements, purchasing power parity, aggregate supply and demand, consumer price index (CPI), employment indicators, retail sales, industrial production, etc.

Gross domestic product is one of the underlying macroeconomic values and generally represents the economic situation of the whole country. Gross domestic product, in monetary units, expresses the amount of final production generated in a given period (usually one a year) by factors of production operating in the territory of the country (regardless of nationality, i.e. without consideration for ownership or origin of capital). There are two primary methods or formulae by which GDP can be identified (CFI Team, 2022):

Expenditure Approach

The expenditure approach is the most commonly used methodology to estimate GDP, which is based on the idea to count money volumes spent by various groups that participate in the economy.

$$GDP = C + G + I + NX \quad (1)$$

Where „C" means the total consumption of the consumers in the country and whole economy when they buy the long-term products (with the life of three and more years) and the short-term products (with the life less than three years) and services.

„G" in this formula means the government expenses, including different items like the payrolls of the government staff, public sector as the road construction or planned.

„I" covers the total amount of the investments made by the country for the capital equipment, housing and the investment to the different types of inventories.

„NX" is basically the difference between the total exports and total imports and calculated as the net balance of the country.

Income Approach

This GDP formula takes the total income generated by the goods and services produced:

GDP = Total National Income + Sales Taxes + Depreciation + Net Foreign Factor Income (2)

„Total National Income“ in this formula means the total amount calculated wages, profits gained within the country, rental fees and the paid interest.

„Sales“ here cover the additional taxes directed to the different types of consumers by the government during the purchase of goods and services.

„Depreciation“ in this formula covers all costs settled the tangible assets during their life of usage.

„Net Foreign Factor Income“ is the figure which is calculated as the difference between the total income of the citizens and appropriate companies of the country by having their activity in the other countries, and the total income of the citizens and appropriate companies of the other countries that have their activities in the local market. So, basically, it is the difference between the income of locals abroad and the local foreigners.

The most common methods of measuring GDP include (CFI Team, 2022):

Nominal GDP – the total value of all goods and services produced at current market prices. This includes all the changes in market prices during the current year due to inflation or deflation.

Real GDP – the sum of all goods and services produced at constant prices. The prices used in determining the GDP are based on a certain base year or the previous year. This provides a more accurate account of economic growth, as it is already an inflation-adjusted measurement, meaning the effects of inflation are taken out.

Actual GDP – real-time measurement of all outputs at any interval or any given time. It demonstrates the existing state of business of the economy.

Potential GDP – ideal economic condition with 100 % employment across all sectors, steady currency, and stable product prices.

Inflation is usually seen as a recurrence of most prices in an economy. This is a weakening of the fair value (i.e. purchasing power) of a given currency against goods and services that the consumer buys. In practice, consumer price inflation is measured as an increase in the so-called consumer price index.

The Consumer Price Index (CPI) is a measure of the overall price level in the economy. CPI currencies are used to evaluate price changes related to the cost of living. The CPI examines the weighted average prices of a basket of consumer goods and services. The CPI is one of the most commonly used statistics for identifying periods of inflation or deflation. The CPI formula is following (CFI Team, 2022):

$$\frac{\text{Cost of the Market Basket in Given Year}}{\text{Cost of the Market in Base Year}} \text{ x } 100\ \% \qquad (3)$$

The CPI expresses the change in the current prices of the market basket of goods in the period compared to the base period. The CPI is usually calculated monthly or quarterly.

The market basket is based on detailed expenditure information. Governments spend heavily (money and time) to accurately measure expenditure information. Sources of information include surveys on individuals, households and businesses (CFI Team, 2022).

A government budget deficit is a situation where budget expenditure is higher than revenue. A significant budget deficit results in a rise in the national debt, which in turn increases inflation. A budget deficit may be triggered by too little revenue or too much spending.

Too low a deficit means either too much tax or too little budget spending, most often reduced at the expense of social programs or defence industry financing. A low budget deficit leads to low inflation, which will mean lower interest rates. The slight budget deficit shows the effectiveness of the state's economic policy. The ideal deficit would be one based on a moderate inflation rate when all stakeholders' needs are in balance.

The **balance of trade** means the difference between the sum of exports of goods and services and the sum of imports of goods and services.

It directly affects exchange rates. On the international market, it reveals the competitiveness of goods and services produced in a given country. A favourable trade balance (a situation where there is a surplus of exports over imports) means an inflow of capital into the country, the development of production. Overall, it has a positive effect on the economy (Calvo et al., 1996).

Conversely, the trade deficit (i.e. a situation where imports are in surplus of imports) signals a low development of production, a lack of competitiveness of national goods and is generally a negative factor for the country. It leads to a rise in sovereign debt and also

negative impacts on the exchange rate of the national currency, as its supply increases due to the need to buy more of the currency of the exporting state. Trade balance data are published at both nominal and fixed prices.

For a generalized analysis of changes in the structure of the population over time or for measuring spatial differences in two compared levels, various generalizing indicators of structural shifts are used.

In international statistical practice, the **linear coefficient of absolute structural shifts** and **the quadratic coefficient of absolute structural shifts** are most often calculated. In this thesis, the second coefficient will be used to avoid mutual cancellation of changes in shares of different signs during aggregation.

$$S_\sigma = \sqrt{\frac{\sum(d_1 - d_0)^2}{n}} \quad (4)$$

where d1, d0 are the proportions (in%) of individual elements of the population in the considered and previous period; n - the number of selected elements of the complex.

The linear and quadratic coefficients of absolute structural shifts show how many percentage points the compared shares deviate from each other on average. In the absence of shifts in the structure of the population, these indicators are equal to 0. The coefficients do not have an upper limit of change: the greater the change in the structure, the higher the values of the coefficients. The use of a quadratic coefficient is preferable, since it is more sensitive to strong fluctuations in the structure.

Revealed Comparative Advantage Index (RCA) - is calculated as the ratio of the share of exports of products of a certain type in the country's total exports to the share of the same type of products in world exports.

The index was proposed by B. Balassa in 1965 in order to identify ideas about the country's trade advantages in relation to prom. products, which, in his opinion, most fully corresponds to the comparative advantages available in countries: its volumes are formed under the influence of both price and non-price factors, about 75% of world trade is accounted for by industrial. finished products, bargaining. this group of goods is the most liberalized, while bargaining. Raw materials are largely regulated by quotas, subsidies, tariff and non-tariff restrictions, etc. (Balassa, Bela Trade Liberalization and Revealed Comparative Advantage. Manchester School of Economics and Social Studies, 1965).

$$RCA = \frac{\text{Xij}/\text{Xr}j}{\text{Xiw}/\text{Xr}w} \quad (5)$$

where RCA – index of revealed comparative advantage; xij – export of the i-goods of the country j; xrj – total export of the country j ; xiw – world exports of the i-goods; xrw – total world exports.

The Balassa index's economic content consists of calculating the relationship between the percentage of a particular industry's exports (a particular type of goods) that make up the total exports of the country being studied and the percentage of that industry's exports (a different type of goods) that make up the total volume of exports globally. When an index value for a specific industry (or product category) is higher than 1, it denotes a comparative advantage that has been discovered.

Table 1. Interpretation of the Balassa index

Value of RCA	Content of the range of restrictions
(0;1]	Lack of comparative advantage in the export of industry products
(1;2]	Weak comparative advantage in the export of industry products
(2;4]	Significant comparative advantage in the export of industry products
> 4	Strong comparative advantage in the export of industry products

Source: Lagodiienko & Lagodiienko, 2019

T. Vollrath developed alternative indices for calculating the revealed comparative advantage of the country, later called revealed competitiveness (revealed competitiveness, RC) and revealed trade advantage (revealed trade advantage, RTA), which are calculated using the Vollrath indices of revealed export advantage (RXA), (equivalent to index (1)), and Revealed Import Advantage (RMA).

$$RXA = \frac{\text{Xij}/\text{Xi}t}{\text{Xnj}/\text{Xnt}} \quad (6)$$

$$RMA = \frac{\text{Mij}/\text{Mit}}{\text{Mnj}/\text{Mnt}} \quad (7)$$

$$RC = ln\ RXA - ln\ RMA \quad (8)$$

where X and M - export and import, respectively; i is the country under study; j - product (industry); t is a group of goods (industries); n is a group of countries.

3 Literature Review

3.1 Foreign trade definitions and theories

"Foreign trade is historically the oldest and still important part of the external economic relationships. Their impact on the economic development of the individual countries has deepened considerably […]" (Jeníčenk & Krepl, 2009).

Primitive trade was made through the exchange of one item for another, so-called compensation - barter. With the development of the international barters gradually became a drag, and the insistence on buying some goods (which often the seller did not need at all) gradually became more of an obstacle. Traders needed a "general equivalent" for the exchange of goods.

Initially, goods in persistent demand, relatively low volume and highly priced rare metals, particularly gold and silver, elephant bone or, in Central Europe, amber, served as the general equivalent. Changes in international trade have brought new requirements for a universal equivalent - metal money made of gold and silver has come into use. But this form turned out to be impractical, wealthy people began to collect gold and silver coins, and even for various reasons, coins became scarce. It hampered the development of international trade, and its needs triggered the emergence of paper money, later bills of exchange.

Overseas discoveries at the beginning of the modern age, the industrial revolution, the expansion of the textile industry, the discovery of electricity, advances in infrastructure building, especially roads, the modernisation of ports and ships and the introduction of railways, were very significant stimuli for the development of international trade.

Both world wars led to the decline and distortion of international trade. Participants in the wartime conflict concentrated on obtaining weapons and ammunition and, of course, food. Soon after the end of World War II began a period known as the Science and Technology Revolution. The revolution accelerated not only the development of international cooperation but also global competition in economic, military or political terms. For this period are typical cosmic discoveries, the use of nuclear energy for peaceful and war purposes, the development of telecommunications, etc.

At present, the globalisation of economic and social processes is typical, based on the widespread use of information and communication technologies in practice.

3.1.1 Internal vs External trade

The term "trade" usually refers to the exchange of goods between people. Trade can be internal or external. **Internal trade** (or domestic trade) means transactions carried out within the geographical boundaries of a state or region. **External trade** (or Foreign Trade) can be divided into the following three groups:

1. **Import** trade refers to the purchase of goods or services by one country from another country.
2. **Expor**t trade refers to the sale of goods by one country to another country.
3. **Re-export** refers to the purchase of goods from one country and then selling them to another country after some processing operations.

Jeníček and Krepl (2009) define Foreign Trade as "*the expression of economic relations between different economies, representing the part foreign relations of the country, which includes the trade exchange of part of the production".* From a simple balance point of view, assumes that the object of the exchange is the part of the product that exceeds the domestic consumption demand; or, conversely, it is the part of the domestic demand that is not covered by the domestic production (and therefore imports are necessary). In reality, however, the process is significantly more complex because of a variety of reasons (price, trade, political, etc.) often leads to the export of even those products that would be possible given the level of purchasable demand implement on the domestic market and, conversely, imports include products competing with domestic products for most products; ensures a more diverse range of offerings.

Terms such as foreign or international trade are used in the thesis. At first glance, they may seem synonymous with trade across a country's political borders but, there is a slight nuance between these attributes.

Foreign trade, unlike international trade, is the process of exchanging goods of one state, whereas international trade is the process of exchanging goods of entire states.
Foreign trade is considered as a set of studies and commercial transactions expressed in the legislation of a particular country and is conducted by the state or government.
However, as can be seen from the Table 1 in practice, the characteristics of foreign and international trade blend.

Table 2: The advantages and disadvantages of foreign trade

Positive consequences	Negative consequences
• Maximum use of natural resources; • Availability of goods through imports; • Specialization in the production of goods; • Production of goods on a large scale; • Price stability; • Better job opportunities; • Benefits for developing countries (importation of equipment, know-how from developed countries); • Benefits for consumers (access to goods not produced in their country); • The ability to deal with natural disasters (the affected country can import missing goods); • Development of means of communication and transport; • Prevents the creation of monopolies in the country; • International cooperation; • Growth in education.	• New industries have no chance to compete with imports of goods from abroad; • Economic exploitation (very high prices for the use of technology); • Threatens the independence of developing countries; • Depletion of natural resources; • Import of harmful goods; • War conflicts; • Trade and customs agreements promoting market liberalization in developing countries.

Source: author compilation, based on Daniels, 2020

International trade occupies a significant position in economic theory. The importance of international trade lies both in its substance and, above all, in its effects affecting national economies.

Over time, economists have developed theories to explain the mechanisms of global trade. The main historical theories are called classical and are based on a country/state perspective. In the mid-twentieth century, theories began to change to explain trade from the perspective of the functioning of a commercial society rather than from the perspective of the state. These theories are described as modern. Both these categories, classical and modern, consist of several international theories (What Is International Trade Theory, 2020).

In practice, governments and companies use a combination of international theories both to interpret trends and to develop a strategy. Just as these theories have evolved over the last five hundred years, they will continue to change and adapt as new factors influence international trade. This chapter will present a kind of international trade evolution built on these theories.

3.1.2 Cameralism

Since the end of 16th century, a Central European stream of mercantilism, so-called cameralism. Unlike mercantilists, they focused on affairs related to governance (finance, accounting, administrative law, etc.) and put far greater emphasis on population growth (Rothbard, 2006).

Rothbard mentions that Cameralism was virulent, a form of absolutist mercantilism that blossomed in German-speaking countries in the seventeenth and eighteenth centuries. Unlike Western European Mercantilists, Cameralists were not considered economists at all - they were more technical advisers to rulers, especially on how to create the power of the sovereign over the economy. Their task was, therefore, not to analyse market processes (Rothbard, 2006). Moreover, they considered precious metals not the wealth of the country, but production and agriculture. They saw the active balance as a means of increasing the employment of the economy, which they explained by the fact that exports increase domestic demand for goods and thus labour demand. On the contrary, importing foreign goods displaces domestic goods and reduces labour demand and employment.

3.1.3 David Hume

David Hume was the most prominent representative of so-called formative economics, which gave the basis to classical economics. This economist has been a great critic of mercantilism, particularly on the question of determining the country's wealth, which he believes was due to the amount of work in the country. He also rejected an active trade balance, which Hume said makes no sense because it accumulates quantities of precious metals, thereby raising the price level and making the economy less competitive internationally. That results in lower country exports and higher imports. Hume also argued that a country that is barren in foreign trade is mainly harming itself. He thus understood the importance of the international division of labour and indirectly formulated the theory of absolute advantages (Rothbard, 2006).

3.1.4 Classical theories of international trade

The creators of classic international trade theories were the prominent critics of mercantilism, namely Adam Smith and David Ricardo. Both built on the opinion that foreign trade was a source of wealth growth for both countries involved in the exchange. Wealth growth occurs because trading enables more productive use of production factors on a global scale and thus increases production, which is the source of growth in national wealth. Classical theories of international trade include the Theory of Absolute Advantage and the Theory of Comparative Advantage (Stirati & Hall, 1994).

3.1.5 Adam Smith and the Theory of Absolute Advantages

"If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry, employed in a way in which we have some advantage." /Adam Smith, Wealth of Nations, Book IV, Chapter II./ (Samuelson, 1969)

Smith assumes that the country should specialise in producing those commodities that it can make more cheaply or with less or higher labour productivity. For this model, only labour determines costs, i.e. it is based on the working theory of value, which states that the value of goods is determined by the amount of work involved in their production. So the absolute advantage is the economy, which costs per unit of farm-produced are lower than costs in the other economy or has higher labour productivity.

According to the theory of absolute advantages, international trade is a source of wealth growth since it allows more efficient use of production factors on a global scale and thus allows the growth of production, which is a source of wealth growth.

But absolute advantage theory explains only part of the causes of world trade, such as international trade between developed and developing countries. Most of the current world trade (especially among developed countries) is based on comparative advantages.

3.1.6 David Ricardo and the Theory of Comparative Advantages

The theory of comparative advantage, referred to as the one-factor model, is the most significant concept of international trade theory. Robert Torrens was the first who described the principle of this theory and who denied the correctness of the theory of absolute advantages in the example of the mutual trade of England and Poland in wheat. In 1817,

David Ricardo formalized the principles of comparative advantage theory using the mathematical apparatus and thus was recognized by its author (Torrens, 1815).

The principle of comparative advantage arises from the relative differences in labour costs for individual products. A less efficient country with absolute labour costs higher for all products will specialise in the production and export of those products where its absolute disadvantage is least has a comparative advantage in the manufacture of this product. Conversely, a country with absolutely lower costs for all products will specialise in producing and exporting those products where its advantage in lower costs is relatively greatest. It is fair to say that if the advanced countries with the greatest absolute advantage specialise in certain goods and leave the latter to a less advanced trading partner, greater global production can be achieved for the latter commodity, even if its production has shifted to less favourable conditions (Rothbard, 2006).

In practice, however, this theory has proved to be disadvantageous in the long run for developing economies for which it can produce only a short-term effect. Specialisation in

In practice, however, this theory has proved to be disadvantageous in the long run for developing economies for which it can produce only a short-term effect. Specialisation in the production and export of "comparatively beneficial" goods does not allow the development of those industries that are necessary for the development of the economy and thus exacerbates their economic backwardness.

3.1.7 John Stuart Mill and The Reciprocal Demand Theory

Mill is the last representative of the English classical school. While Ricardo was content to determine the mutual advantage of international trade, Mill took his theory further, dealing with the issue of determining the exchange rate of goods between countries (or setting the so-called world price) and then sharing the benefits of international trade. He created the theory of international value or The Theory of Reciprocal Demand (Theory of Reciprocal Demand (With Criticisms), 2015).

Mill found that the international value of goods ranges within the boundaries determined by national labour costs, and the specific value of goods set by the mutual demand of the two countries for the goods on offer. It thus indirectly defined the international value of goods determined by cost (actually supply) and demand. This value is expressed by the international exchange ratio, and the limits are the national exchange ratios (Theory of Reciprocal Demand (With Criticisms), 2015).

Mill's theory of reciprocal demand implies an overall benefit from international trade:

1. The economy gains a larger share of international trade the closer the international exchange rate is of its trading partner.
2. If two countries trade (one large and the other small, in economic terms), the small one always takes a higher share of the advantage from international trade.

A graphical elaboration of the theory of reciprocal demand was carried out by the neoclassical economist Alfred Marshall. Using reciprocal demand curves or supply curves, the latter expressed the equilibrium international exchange ratio. The curvature of these curves indicates less and less willingness to give ever smaller quantities of goods produced by domestic producers as an additional unit of imported goods.

3.1.8 The Neoclassical Theory and alternative theory of International Trade

The Neoclassical theory differs from Classical theory in that it does not only work with one production factor but also considers other production factors, which it then incorporates into the model. As a rule, it's capital that is included in the Neoclassical theories. In particular, the Heckscher and Ohlin models can be considered the most significant neoclassical theories, Stolper-Samuelson's theorem, the Factor-Price Equalization theorem, and then the Rybczynski theorem (Opp et al., 2009).

3.1.9 Heckscher-Ohlin Theory

In the 1930's, the economists Heckscher and Ohlin developed a mathematical model for international trade. The primary sense of the Heckscher-Ohlin (also called H-O model or 2x2x2 model) model is that traded commodities are bonds of factors. In other words, indirectly the exchange of the range of commodities on the international level became the kind of factor arbitrage when there is the tendency of transferring of the immobile factors of production from one location where they are fulfilled to the different location with the less occupancy. This kind of indirect arbitrage within some period of time can be transformed to the factor-price based differences between these locations. As the consequence of this, the Heckscher-Ohlin model can be followed by the most important argument that within the exchange of commodities the sell factor services can reincarnate the local market to the more global one, especially taking into the account the factor services and their impact. As the

consequence of that, the demand for the input resources in general becomes more elastic and more resembled by comparing the different countries (Leamer, 1995).

3.1.10 Factor Price Equalisation Theorem

The Factor Price Equalisation theory is a significant consequence of the Heckscher-Ohlin factor-proportions analysis. This theorem assumes that if factors of production are freely mobile among countries, then factor prices would be the same in all countries. The factor price equalisation theorem means, if the prices of the output goods are equalised between countries engaged in free trade, then the input factors price will also be equalised between countries. It implies that the wages and rents will converge across the countries with free trade, or in other words, trade in goods is a perfect substitute for trade in factors (Lam, 2016).

3.1.11 Rybczynski Theorem

Like the Stolper-Samuelson theorem, the Rybczynski theorem describes the relationship between endowments and outputs by assuming a small open economy engaged in free trade. It demonstrates how changes in an endowment affect the output of the goods when full employment is maintained. This theorem states that an increase in the endowment of the factor will increase the output of the industry using it intensively and decrease the output of the other industry (Lam, 2016).

In addition to these mainstream theories, there are other so-called alternative theories, which are mostly at odds with previous theories. Alternative theories note in particular the real failure to meet most of the strong assumptions on which mainstream theories are built. These theories include the Product Life-Cycle Theory, the Country Similarity Theory, the Theory of Economies of Scale.

3.1.12 New trade theory

A remarkable contribution titled "is free trade passé?" was publicized by Paul Krugman in 1987. His query was based on the appearance of the new trade theory in the early 1980s. Krugman highlighted the significance of economies of scale and market shortfall, such as imperfect competition and externalities, as a prime mover behind the trade. The theory involves a substantiation for industrial policy. For that reason, in its 1987 article,

he came to an end that free trade is still "a reasonable rule of thumb" but that it "can no longer be claimed by economic theory as unique and correct" (Krugman, 1987).

3.2 International trade policies and tools

Over the past 2 decades, technological developments, the liberalization of the services trade, and rising shares of services in most economies have resulted in the increasing globalization of services.

Globalization has contributed to the shrinking of the world in terms of space and time. Under space is understood "*a geographical arrangement*" that determines the territorial structure, but also the so-called "*economic area"* is defined by the economic links between the entities, regardless of their geographical location. The shrinkage of the world in the spatial layout is due to the enormous increase in infrastructure equipment in terms of transport of goods and information, the improvement of logistics practices at a general world level. In terms of time, all processes occurring in the economy are accelerated. Product development is taking place over an increasingly short period, as technologies are constantly evolving, and procedures in force (in manufacturing, design, distribution or marketing) may not apply at present. Even consumer preferences are changing very rapidly (Ristovska & Ristovska, 2014). This chapter lists the underlying factors contributing to the modern and efficient realization of foreign trade – exports and imports.

3.2.1 Foreign policy

The foreign-trade policy is part of the nation's trade policy, with the distinction between trade policy and foreign-trade policy with the gradual liberalisation of international trade and globalisation trends.

Jeníček and Krepl (2006) define foreign policy as a body of rules, principles and arrangements through which country government institutions regulate their economic relations with other states. The authors' definition further specifies and clarifies two main guidelines: free trade as a gradual abolishment of tariff and non-tariff barriers to trade and protectionism as a type of trade policy that seeks to protect a country´s production from foreign competition.

3.2.2 Liberalism (free trade)

Liberalism is seen in trade policy as removing trade barriers, opening up all sectors of the internal market to foreign competition and eliminating pro-export direct and indirect support to the state in all areas of the economy. The aim is to achieve free foreign-trade exchanges without state intervention, resulting in a proliferation of foreign influences on domestic production, a change in product structure, increased competition on the domestic market, growth in the specialization of the economy, the possibility of the higher realization of comparative advantages from foreign-trade exchanges, lower consumer prices, to some extent also to eliminate inflation and price stability, to reduce wages, but also to increase the price of imports (Pettinger, 2019).

Protectionism is seen in trade policy as a direction defending the domestic economy from external influences. In general, protectionist measures can have a positive effect in the short term. An extreme case of protectionism is autarky, in which the domestic market is closed to imports, and export is prevented. Another form of protectionism is the localisation of markets (Pettinger, 2019), focused mainly on agriculture. It consists of restricting exports of agricultural production to increase supply to the domestic market. The stumbling block of autarky and localisation of the market is the non-use of absolute and comparative advantages from international exchange.

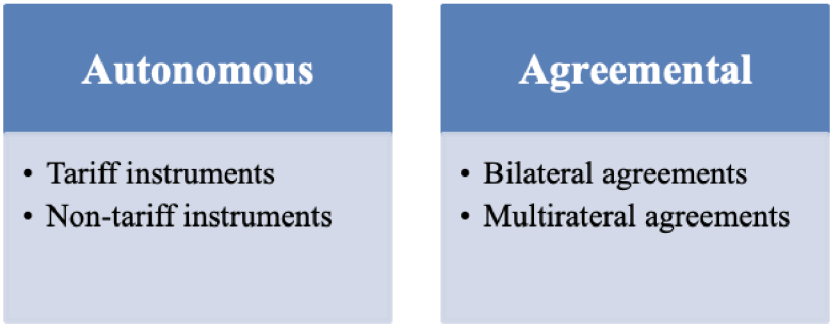
However, this categorization is theoretical. In practice, these two directions are almost absent in their pure form. States' foreign-trade policies are always a trade-off between opening up the economy to external competitive influences, pro-export support, and protecting the domestic economy and employment. The degree of the ratio between liberalism and protectionism (rather liberal trade policy, or rather protectionist trade policy) depends on several factors and their historical manifestations. Both approaches are both beneficial and disadvantageous to the economy, so the short- and long-term impacts, not only in the economic sphere but also in the social sphere, must be considered when pursuing them.

3.2.3 Instruments to protect the internal market and promote exports

Instruments enabling the enforcement of state intentions affecting commercial relations with foreign countries or the creation of a business environment within the state, in general, can be broken down from several points of view, whether by their legal or

substantive nature, objectives or creation. The following categorisation (shown in Figure 1) may be considered as the basic breakdown and may be combined.

Figure 1: Instruments serving foreign trade



Source: Jeníček and Krepl, 2009

Autonomous foreign trade policy instruments are the different and opportune governmental measures that are being undertaken within the one way direction to streamline and adjust the import and the export of the country (Jeníček and Krepl, 2008). It is broken down into tariff (customs) and non-tariff instruments.

Tariff instruments were largely applied in the past, but their importance has declined throughout history (the post-World War II period). It was a result of the progressive liberalisation of trade, and also it turned up the fact that trade regulation only through tariffs was not effective. Tariff measurements in trade policy have been replaced by non-tariff instruments. Their general function is to be able to specifically filter adverse effects from foreign trade on domestic production and the market. The purpose of their use is primarily to control the quantities of imported goods and their prices for reasons affecting domestic production and its competitiveness, to defend against unfair practices such as dumped prices, subsidised imports and the eclipsing of the origin of goods, to retaliate against barriers in the partner markets, to protect consumers in terms of quality, safety, to protect natural assets, to label imported goods and to take extreme measures such as a ban or a substantial import restriction.

Tariff tools

Tariff instruments are customs duties, which are charges levied on goods when crossing a customs border. Jeníček and Krepl (2008) argue that tariffs represent the oldest tolls of trade policy, and their importance is currently receding in favour of new, less visible and less controllable forms of import prevention. The duty evolved from various trade and

transport charges using roads, bridges, ports, marketplaces, but also to protect merchants. Tariffs in their current form developed in the United Kingdom, with customs unification in European countries from the end of the 18th to the middle of the 19th century.

Tariffs are a highly differentiated tool of foreign trade policy. Customs duties are divided into different groups according to specific aspects, such as:

Categorization of duties by a purpose:

- **Fiscal duties.** Their principal purpose is to obtain income for the state budget. At present, they are particularly typical of developing countries.
- **Protection duties.** It is a typical means of protectionist politics, including customs duties like Preferential, Differential, Levelling, Anti-dumping, Compensation duties, and Reciprocal duties.

Categorization by direction of commodity movement:

- **export duties,** designed to prevent undesired exports of a commodity (usually for political reasons)
- **import duties**, their task is to regulate the import of goods into the country (their purpose is protectionist)
- **transit duties**, their purpose is fiscal, i.e. to charge for transit through the country (currently, these duties are replaced by other forms of transit charges).

Categorization of duties by computation:

- **Ad valorem**, (means – according to value) set as a certain percentage of the article price (from the invoice value). This type of tariff is often used to store expensive products. An example is the sale of computing technology. It is much more advantageous to use the customs value of a computer as a basis for taxation than its weight or number of pieces.
- **Specific,** using fixed sum per physical unit (ton, barrel, hectolitre etc). These are simple but their weakness is that they burden, with regard to their volume and weight, more the gross and cheaper items, and in regard to the increase of the abroad price, they become less effective: the higher is the abroad price, the lower is the customs duty.
- **Combined, fluctuating.** They represent combination of the ad valorem and specific customs duties. Their aim is to remove the impact of the fluctuating foreign prices on the internal prices. Customs burden is changing in the reverse rate to price changes (Jeníček & Krepl, 2008).

Non-tariff measures

Any measure (except customs duties) that may affect trade in some way is touted as a non-tariff barrier. The list of non-tariff trade measures is very comprehensive and is constantly changing as new measures with an indirect impact on trade continue to arrive. [45]

UNCTAD defines non-tariff measures (NTMs) as some governmental measures in the framework of their policies other than the usual custom tariffs, that can be observed as the economic impact to the global international trade of the country, which has the goods,

trade activity. This could be happened by either changing the quantities of goods to be traded or their prices, and in some cases, it also could be linked with both. That is why the more detailed classification of the impact and measures is critical because of necessity of the clear identification the different forms of NTMs (UNCTAD, 2019).

According to the UNCTAD classification, the non-tariff measures were grouped as:

3. Para-tariff measures (tariff surcharges, additional taxes, etc.)
4. Financial measures (administrative pricing etc.)
5. Automatic licensing measures (import monitoring)
6. Monopolistic measures (designation of a single import organisation, compulsory use of national services in insurance, transport, etc.)
7. Technical, sanitary and phytosanitary measures
8. Measures to control production and exports (production and export subsidies) (UNCTAD, 2019)

Agreement tools

Contractual instruments may be applied by the country concerned in agreement with another country (bilateral) or a group of countries (multilateral). Countries concluded **bilateral trade agreements** that also reflected their power-political interests to secure foreign trade. The prevailing doctrine, mercantilism or free trade, gave access to trade for individual countries. However, it is only the establishment of a **multilateral treaty system** and an international trade institution that constitutes a genuine international trade policy, and the foreign trade policy of the signatory states is based on it (S, S. et al., 2021).

Bilateral Trade Agreements

The Trade Treaty constitutes a framework arrangement between two countries, containing general principles for the mutual treatment of the Contracting Parties in the economic relations field. Trade agreements are concluded at the highest level (of heads of

state) and are long-term. They contain arrangements on the conditions of import and export of goods, customs, tax and fee issues. These provisions tend to be laid down in the form of a clause. The most significant clauses include (Jeníček & Krepl, 2008):

- **Reciprocal clause.** It means a direct contractual arrangement as the scope of rights and obligations derives directly from the contract. The reciprocal clause obliges partners to provide the same or equal benefits to each other. However, this clause is problematic in the economic inequality of partner countries. This is why a new agreement, the so-called effective reciprocity, was enforced in the 1960s, thanks specifically to the renowned Argentine economist Raul Prebisch. The underlying objective of the new international agreement was the political decision of developed countries to assist less developed countries more effectively.
- **The parity clause** (national regime, equal treatment) is an agreement on equal treatment of citizens and commodities of the other State as they provide to their citizens and goods. GATT amends the clause in Article III: National Treatment on Internal Taxation and Regulation, especially that the members consequently may not use any internal measures that may create the impact or support the trade of dometic goods in comparison with the discrimination of the import of the same goods from the members. It means that the imports of the same goods from the members according to the statement above is covered by the National Treatment (Robert Read, 2018).
- **A most-favoured-nation (MFN**) clause represents the most significant clause in international trade. Its application has contributed to the liberalisation of world trade. The use of the clause is binding on all GATT/WTO Member States. Its essence is that a country allows all privileges, concessions or licence granted to one State in a trade agreement to all other members of the WTO.

A trade agreement (also called a goods agreement) is based on a commercial contract and gives concrete expression to commercial agreements for a given period (generally one year). They regulate trade relations, set the scope and the religious structure of the exchange of goods. The annex contains deeds of worship which are either contiguous (containing fixed quantities of individual commodities) or non-contiguous, which are only indicative and indicate which items may be traded.

A payment agreement is concluded where the payment issue is not addressed in the commercial contract. It is an agreement between the States or also between the issuance banks on how to settle claims and liabilities arising from mutual relations. The agreement

specifies the currency in which it will be charged, the number of accounts, payment titles, interest payments, marginal credit, etc. There are two types of payment agreement: free currency reimbursement agreement or clearing currency reimbursement agreement. The clearing is undertaken when the currency of one or both countries is not freely convertible. For clearing agreements, payments do not cross national borders, and the exporters in both countries send payments to the clearing bank in their own countries and importers got paid their claims from the same bank in their currency. Among the mandated banks, only after a certain period (usually at the end of the year) does the balance settle in an agreed manner.

Jeníček and Krepl (2008) state, a higher number of countries may also sign trade acts and agreements (instruments of multilateral trade policy agreement). It includes some international organisations or institutions that represent an agreement signed between interested countries - such as the GATT or some integration associations. Integration associations have a significant influence on international trade governance.

The simplest form of integration - a free trade area - eliminates tariffs in mutual trade between countries (i.e. mutual trade between the Member States is favoured to the detriment of trade with third countries). A higher form of integration is the customs union, with member countries creating a common customs tariff for external countries in addition to the free movement of commodities within associations. At the same time, part of the decision-making on trade policy issues is transferred to the supranational level.

Multilateral treaty system

The General Agreement on Tariffs and Trade (GATT), signed by 23 countries in 1947, is an essential instrument of international trade policy. Its task was to ensure that there would be no repeat of the crisis caused by the tariff war in the 1930s. The basis of GATT enforcement was so-called negotiating rounds that resulted in tariff reductions and the removal of other obstacles (see Table 2). The expansion of the number of GATT signatories to include developing countries in particular and the burdensome resolution of disputed issues have created the conditions for the creation of the WTO (Unger, 2017).

Table 3: GATT/WTO negotiating rounds

Period	Name of the Location or Round	No. of Countries Participating	Negotiated Areas
1947	Geneva (Switzerland)	23	Custom rates. 45,000 tariff cuts - average 35 percent cuts
1949	Annency (France)	13	Custom rates
1951	Torquay (Great Britain)	38	Custom rates
1956	Geneva (Switzerland)	26	Custom rates
1960 – 1961	Geneva (Switzerland) Dillon Round	26	Custom rates.
1964 – 1967	Geneva (Switzerland) Kennedy Round	62	Custom rates. 35 percent average cut on industrial goods; commitments on use of anti-dumping laws
1973 – 1979	Geneva (Switzerland) Tokyo Round	102	34 percent average cut on industrial goods; commitments on non-tariff measures
1986 – 1994	Geneva (Switzerland) Uruguay Round	123	WTO creation, tariffs, non-tariff measures, intellectual property, trade dispute resolution, services, agriculture, etc.
2001 - present	Doha Round (Qatar)	157 (in 2019)	Tariff rates, services, investment government procurement, environment, development, etc.

Source: Unger, 2017

Table 2 displays the growing number of GATT signatories and WTO members respectively (and the widening of the thematic scope of the rounds) the number of years of negotiations needed to successfully conclude negotiations has increased. The current round of negotiations began in November 2001 at the ministerial conference in Doha. Initially, a

very ambitious plan for liberalisation under the Doha Development Agenda (DDA) covered issues of liberalisation of trade in goods and services, issues related to investment, government procurement, the environment, competition, etc. was gradually narrowed at other conferences.

Development of Technology

Globalisation is directly contingent on the development of technology and would not be conceivable without the specific direction of current technological development and scientific progress. In particular, the significant capital of the moment is the correct information and knowledge base, which enables data to be turned into details and further into knowledge, permanently stored and used to achieve corporate goals. Good information support implies both a competitive advantage and also a necessary condition for maintaining a market. The main trends that enable a company to remain competitive are flexibility and, to some extent, standardisation of processes for which it is necessary to constantly seek out suitable combinations (Technology and Globalization, 2013).

Current IT trends

Miniaturization. The current dimensions of integrated circuits allow them to be used where, until a few years ago, they would not have been thinkers at all (supermarket labels). In the context of miniaturization, the trend appears below.

Sensors. Special miniaturization in the form of sensors is at a very high level in the field of production and development, and in prototypes, it approaches the microscopic limit. For example, sensors placed on shipping containers help detect problems arising during the transportation of perishable goods.

Interconnection. Communication between the different articles of the information base. Units are merged into interconnected networks through which data is transmitted as needed, distributed and far away.

Wireless communication. Given the increasing trend in the use of electronic devices, wireless communication is the only way to transmit data.

Containerized Shipping

The change in transport can be dated to 1955. The American road carrier Malcom McLean achieved a more efficient way of transporting goods. He had the body of the lorry separated from the driving cab, and it was easier to load onto the ship without the need to

manipulate the dockworkers on the individual goods (Who Made America? Malcom McLean).

This method soon prompted the use of metal containers detachable from the truck chassis. In addition, it was possible to stack the containers on top of each other.

The "Ideal-X" oil tanker was the first McLean´s ship to sail its maiden voyage from New York to Houston in 1956, with truck trailers on board. In 1965, ships with containers on board began sailing for the Atlantic.

Ports were forced to adapt to this new trend in transport. Narrow piers in the city centre have been replaced by large docks on their outskirts, along with areas for loading thousands of containers. The ships were loaded with only a few dozen dockworkers, compared with hundreds previously (Who Made America? Malcom McLean).

The invention of the container crane made it possible to load and unload containers without capsizing the ship. The adoption of a standard of container sizes allowed almost any object to be transported on any ship (The Shipping Container, 2022).

The use of containers has had significant consequences for world trade. The most obvious was the sudden drop in transport costs, reducing theft. Wooden boxes serving as the protection of individual goods were no longer necessary, which allowed the transport of consumer goods almost globally. The shipping container transformed shipping into a very efficient, highly competitive business. International traffic volumes thus increased.

Deregulation of state control

Another part of the transportation revolution was the abolishing of state control. Almost everywhere, transport rates were set by civil servants. New companies could enter the shipping sector only with great difficulty and severe restrictions.

The situation began to change in the mid-1970s, when the US started to dismantle state regulation of the transportation sector - first aviation, then roads and railways. The "what, where and how much can be transported" restriction has been abolished. Trucks could carry goods on the way back. The railways did not have to maintain for-profit connections but could focus on transporting large volumes over large distances (Wood, 2018).

Ten years later, the transportation revolution accelerated as the abandonment of state control and new technologies broke the boundaries between different modes of transport. Rail companies have begun building tracks to ports to transport containers directly from ship to train. Multimodality has supported the growth of companies such as FedEx and UPS,

which are engaged in using air and road transport links for the rapid delivery of a package (Murray, 2019).

3.3 International organizations in the field of international trade

3.3.1 Intergovernmental (IGOs) or non-governmental (NGOs) organizations

International institutions include **intergovernmental (IGOs) or non-governmental (NGOs) organizations**. They affect international trade by creating rules and conditions for the execution of international trade transactions. International trade organisations bring together states or non-governmental entities to promote international commerce, facilitate its procedures and make liberal trade flows. Membership of organisations is voluntary. With their membership, members commit to implementing the conclusions of the organizations' meetings.

Intergovernmental Organizations (IGOs). An intergovernmental organisation is an international organisation composed of sovereign states by international treaties. Intergovernmental organisations serve to cooperate at the international level. The specific tasks of the intergovernmental organisation derive from the founding treaties (Intergovernmental Organizations (IGOs), 2022).

Another definition according to Union of International Associations (UIA) sounds *"an IGO is an organization composed primarily of sovereign states, or of other intergovernmental organizations. IGOs are established by treaty or other agreement that acts as a charter creating the group"* (Erturk, 2015). Through membership and activities in international intergovernmental countries, states promote the intentions of their foreign trade policy. The negotiations conclusion then forms the basis of concrete instruments and measures of the country's trade policy.

A **non-governmental organization (NGO)**, basically, is officially the non-profit organization that has its activity and cooperation absolutely independently on any governmental entity in the country where it functions. This type of organizations usually organized the community either locally in the country of the main activity or on the international level by creating the representatives and branches in the different countries. Thus NGOs in some ways are called as the civil societies that have the social or political activities on the local or international level as the main target to promote their interests like humanitarian assistance, the environment protection and etc.

Table 4: Overview of International Organizations in the field of International Trade

Intergovernmental Organizations	Non-governmental organizations
WTO - World Trade Organization	ICC - International Chamber of Commerce
OECD - Organisation for Economic Co-operation and Development	WTPF - World Trade Point Federation
WCOOMD - World Customs Organization	ActionAid International
UNCTAD - United Nations Conference on Trade and Development	Care International
INTRACEN - International Trade Centre	Consumers International
UNECE - United Nations Economic Commission for Europe	Consumers Union
UNCITRAL - United Nations Commission On International Trade Law	Fairtrade Labelling Organizations International - FLO
UNIDROIT - International Institute for the Unification of Private Law	WWF International
BIS - Bank for International Settlements	
The Bretton Woods Institutions	
IMF - International Monetary Fund	
WBG - World Bank Group	
Regional Development Banks	
other international organizations	

Source: author compilation, based on Archer, 2001

3.3.2 Other International Organizations

Some other international organizations also have an impact on international trade, whether operating in or outside the UN system (mainly specialized agencies). The UN's specialized agencies belong to the UN Economic and Social Council. They operate independently but can make use of UN structures (e.g. audit system, loans, information systems, etc.). Depending on their subject matter, these organizations affect international trade as follows:

1. create programmes to engage developing countries in the world economy,
2. develop contractual standards, standards and rules in areas that create an international business environment for exporters, importers and investors,
3. create business opportunities within projects and investments.

These include (Erturk, 2015):

- **United Nations Development Program - UNDP.** It aims to promote changes that would help improve living conditions in developing countries.
- **United Nations Industrial Development - UNIDO**. A UN dedicated agency tasked with promoting economic development and cooperation.
- **United Nations Environmental Program - UNEP**. It is the United Nations' main environmental authority.
- **World Intellectual Property Organization - WIPO**. It manages many international agreements in the field of protection of intellectual property and negotiates the negotiation of others. These arrangements help to create certainties for exporters and investors who base their business activities on copyrights, patents, trademarks, geographical indications, designs and trade secrets.
- **International Telecommunication Union - ITU**. It solves problems related to communication and information technology. The content of its activities evolves with technological advances.
- **International Maritime Organization - IMO**. It deals with the safety of maritime transport and the cleanliness of the awards.

4 Practical Part

4.1 Macroeconomic situation in Ukraine 2001 - 2020

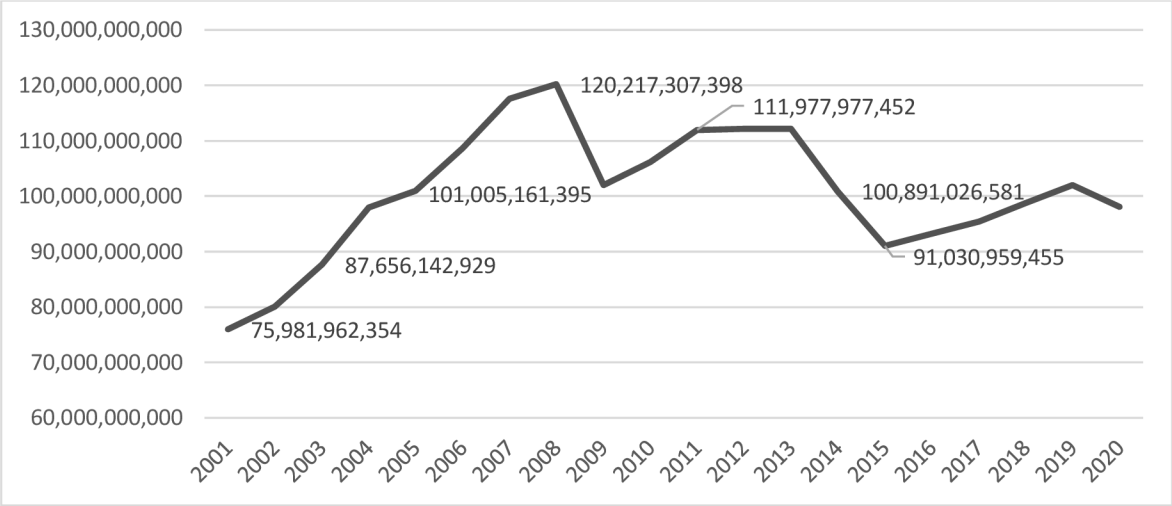
Numerous crisis phenomena of the Ukrainian economy throughout the years of its independence testify to the urgent issue of reforming its (economy) structure. Disproportions of Ukraine's economic development are visualized in the dynamics of its GDP, which is extremely volatile. The negative trends in the economic development of Ukraine are reflected in the assessment of its creditworthiness by world credit agencies. Thus, according to OECD (2009) the Ukrainian economy is risky with a high proportion of speculative transactions. The above facts testify to the relevance of the analysis of the Ukrainian economy at the present stage and the development of recommendations for its reform.

The size of the economy of any state is characterized by the volume of GDP, i.e., the total value of all goods produced, and services rendered over a specified period of time. According to this criterion, the national economy of Ukraine in 2021 ranked 53rd in the world in terms of GDP of 200.09 billion USD (current prices), 112th in terms of GDP per capita ($4,828) and 55th - in terms of real GDP growth (3.4%) (Economics in Ukraine compared to the EU, 2020).

Ukraine can be classified as a country with a post-industrial society according to the specific contribution of sectors economy in the formation of GDP. As of In 2021, Ukraine had the following employment structure: services - 60%, industry - 24.7%, agriculture - 15.3% (Danish Trade Union Development Agency, 2022). In turn, the specific contribution of the above sectors of the economy to the total GDP in 2021 was represented by the following ratio: the service sector - 59.7%, industry - 26.3%, agriculture - 14% (Danish Trade Union Development Agency, 2022).

Inflation in Ukraine was in 2020 at around 2.73%. Within the EU, the average in the same year was 2.55%. In the United States, it was most recently 4.70% (Economics in Ukraine compared to the EU, 2020).

Figure 2. Ukraine GDP (constant 2015 US$) 2001-2020



Source: author compilation, based on GDP (constant 2015 US$) - Ukraine

As it's well seen from the Figure 2, Ukrainian GDP is not stable in the observed period. In the scarce and hungry 1990s, 90% of the population of Ukraine called themselves poor. In the more stable 2000s, the Ukrainian economy gradually got back on its feet, people were finally able to buy basic equipment or send their children to university.

Then - the rapid growth of the economy, which even economists did not predict. But it is also short-lived. In 2008, the country plunged into crisis again.

Domestic production went to the bottom in the 1990s. Because of its annual contraction in the first nine years of independence, Ukraine lost almost 60% of GDP. This decline was twice the depth of the decline of the American economy during the Great Depression. The domestic economy, in fact, never recovered from the said shock. Neither quantitatively nor qualitatively.

Hope flashed in 2000, when the domestic GDP grew for the first time - by 5.9%. But the next 14 years showed its extreme instability. Even in prosperous years, Ukraine was at fever pitch, and its GDP growth rate jumped from 12.1% (2004) to 2.7% (2005). With the onset of the global recession, it again turned out to be the weakest in the world: in 2009, the Ukrainian economy topped the list of global losers, falling by 14.8%.

Since the end of 2008, domestic GDP has decreased in 23 out of 48 quarters. Against this background, a continuous series of bankruptcies, currency fever and devaluation of the hryvnia do not look strange. After all, these are all features of the lagging growth model: after 1999, the domestic economy de facto grew, but the average rates of this growth are so low that every year Ukraine lags behind its more dynamic partners and competitors.

For 14 years, from 2000 to 2013, domestic GDP increased by 69.8%. This is the worst result among all republics of the former Union. After Ukraine, the minimum increase in GDP was shown by Estonia (75.7%), and the maximum by Tajikistan (GDP increased by 2.9 times), Turkmenistan (by 3.1 times) and Azerbaijan (by 4.8 times).

The situation somewhat stabilized in 2017.

" 2017 was a way out of another crisis for the standard of living. From January 1, the minimum wage was doubled. This was unheard of for Ukraine, because we had very shameful income indicators. There was no one to compare us with, Moldova and I had the lowest wages, and in some places we even started lagging behind Moldova. When the minimum wage was raised, income from employment immediately jumped," - researcher Lyudmila Cherenko recalls ().

But then the world economy is shaken by a still unknown virus. The economies of all countries are suffering, and Ukraine is no exception. First of all, Covid-19 affected small and medium-sized businesses, companies were closed for quarantine.

Decline in offline trade, aviation, restaurant and travel business. In quarantine, people either sat with bare salaries or were sent on forced vacations.

Wages fell slightly, but as soon as the quarantine was eased, they returned to their previous levels. People postpone expensive purchases and save money. At the same time, prices and tariffs for utility services are rising.

4.2 Foreign trade of Ukraine

In the context of the Diploma Thesis study of prospects for the development of foreign trade, it will be logical and expedient to start with an analysis of its balance.

Thus, even at the beginning of Ukraine's independence, the national statistics of foreign trade did not pay enough attention to the analysis of foreign economic activity, but at the same time, the newest methods of creating a database were thoroughly studied. For these reasons, the analysis of the dynamics and structure of foreign trade operations on the foreign market of goods and services remains relevant today.

As practice shows, the main problem in Ukraine is a negative trade balance. This means that the volumes of imports exceed the volumes of exports, which mainly affects the volumes of gold and foreign exchange reserves, since operations on the foreign market are conducted in foreign currency. In other words, the preponderance of exports over imports is a net inflow of currency into the country. The inflow of foreign currency has a positive effect on the strengthening of the national currency, the amount of public debt and the size of direct

foreign investments invested in the country's economy. Also, based on this, it can be said that imported goods are cheaper on the national market than domestically produced goods.

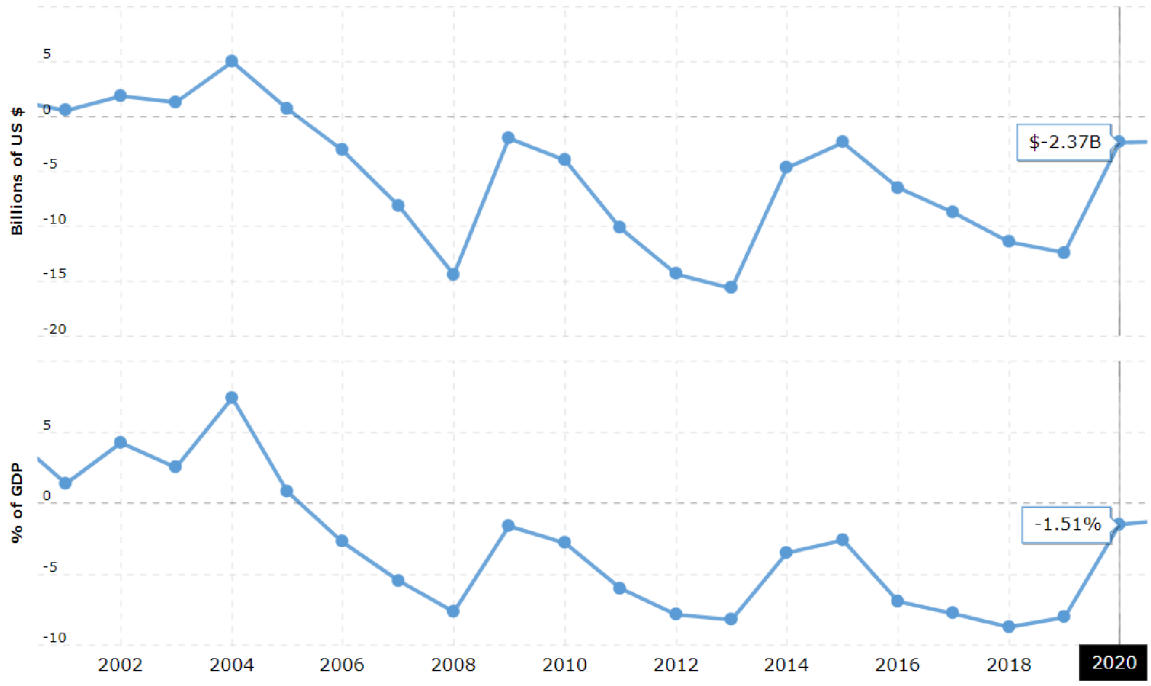
During the analysis of the system of criteria for the state of foreign trade turnover in goods and services, it is visible that information about changes in the phenomenon over time should be presented in the form of dynamic series (time series), which always consist of two elements: the interval (moments) of time and the values of the indicator (levels of the series). The assessment of the intensity of the development of the phenomenon takes place by comparing the levels of the dynamic series.

Due to the fact that the balance of payments most accurately reflects the foreign economic activity of a particular country with other countries, the benefits and losses of the national economy from participation in international trade and capital flows, it is important from a scientific point of view to analyze the possible impact of the crisis in the main international partner countries on stability of the Ukrainian economy. Given the fact that the main channel for the spread of crises, according to the theory of international contagion, is trade, it is the current account in general and the trade balance in particular that deserve special attention. Favorable conditions in export markets, high prices for products of the main export-oriented sectors of the economy (chemical industry, metallurgy, engineering, agriculture) ensured a positive foreign trade balance until 2004. However, high consumer and investment demand, increased prices for raw materials and energy resources became a catalyst for increasing imports and, in the future deficit (Figure 3).

Figure 4 shows the development of the trade balance of goods in Ukraine from 2001 to 2020. It indicates that clear negative trends began in 2004 and that a trade deficit appeared the following year, in 2005. Furthermore, this situation wasn't effectively handled until 2020, the conclusion of the studied time.

In this regard it becomes relevant to mention that during the whole studied period Ukraine experienced series of political conflicts, which characterizes all subsequent years by the destabilization of the situation in the country and the aggravation of the geopolitical struggle around Ukraine. Thus, the aggravation of this struggle resulted in the revolution of 2004 and the turn of Ukraine towards the West.

Figure 3. Ukraine: Trade balance of goods from 2001 to 2020 (in billion U.S. dollars)



Source: Ukraine Trade Balance 1989-2022, MacroTrends.

The high growth rates of the Ukrainian economy, outlined back in 2003, were eventually maintained until the end of 2004 - in fact, the trend of accelerating the monthly growth rate of Ukrainian GDP, which developed after July 2003, continued until December 2004. The volume of industrial production following the results of 2004 in Ukraine increased by 12.5%. It should be noted that last year, in terms of industries, growth looks more balanced than a year earlier - the main part of industries showed growth rates at the level of 15%-30%, which indicates the end of the period of extensive growth in industry. In 2004, the growth leaders were engineering, woodworking and pulp and paper industry, and construction.

The main role in maintaining high growth rates of industrial output throughout 2004 was played by the exceptionally favourable external situation in the main exported commodity groups - products of the metallurgical and chemical industries, as well as mechanical engineering. Prices for these products remained exceptionally high throughout the year, which allowed the largest Ukrainian enterprises to increase production volumes due to growing export orders, while simultaneously raising prices for the domestic market.

However, Ukraine failed to maintain a positive picture and the events of political upheavals were reflected in the trade balance in 2005-2006. The sharp increase in the trade

balance deficit in the first half of 2006 was also provoked by an increase in gas prices for Ukraine.

In 2006, the negative balance of Ukraine's foreign trade in goods in January-February 2006 reached $1 billion, that is, more than half of the trade balance deficit for the entire last year. It is noteworthy that in February, exports to African countries decreased by a quarter, which had been constantly growing throughout 2005. The positive trade balance was offset by worsening market conditions for traditional Ukrainian exports, improved state control over exports, growth in imports, as well as an increase in consumer spending within the country.

As the Figure 4 shows, in 2008, the subsequent negative high was reached. After a brief period of modest recovery from 2008 to 2009, one can also notice a deteriorating trend that widened the trade deficit and increased trade imbalance values to their greatest levels in 2013.

This can be explained due to the fact that in 2008, Ukraine changed course again, returning to rapprochement with Russia.

The main reason for the sharp increase in the trade balance in 2008 was the deterioration of the terms of trade for Ukrainian producers. This is due to the increase in prices in the domestic market, which led to a revaluation of the real settlement exchange rate by 9.17%.

Despite a noticeable increase in gas prices since the beginning of the year (38%), its share in the structure of imports decreased by 3.9 percentage points. up to 12.4%. Despite the hryvnia revaluation by 4% in May 2008, which made Ukrainian products somewhat more expensive and imports cheaper, so it was expected that the growth of the trade deficit will slow down.

The apotheosis of such a struggle was 2013, when radical forces overthrew the legitimate president through a military coup and a civil war began in the east of the country.

In 2013, the problems worsened, and the use of administrative methods to support domestic producers could not have a positive effect. For example, the introduction of a tax on imported cars, as well as a recycling fee, failed to support the domestic engineering industry, but only caused a negative reaction from economic agents. In addition, the Resolution of the Cabinet of Ministers of Ukraine No. 225 dated March 13, 2013. on quotas for imports of coal and coke had a negative impact on domestic coke, metallurgical and cement industries. It should be noted that these enterprises, against the backdrop of low

prices on world markets for their products and political instability in the main importing countries (for example, the high likelihood of hostilities in Syria in 2013), have already become less profitable than they were in early 2000- X. In the second half of 2013 and at the beginning of 2014, the trade war with Russia (the main partner) led to the losses of the Ukrainian economy, according to official estimates of experts, about 4.2 billion US dollars

Thus, the lack of stability among the main trading partners of Ukraine, trade wars, etc. lead to losses for the Ukrainian economy, which is subsequently reflected in the trade balance.

The next brief rebound that followed this one lasted until 2015. The period of widening trade imbalance is thereafter once more apparent. And after 2018, the third period of recovery began, achieving values in 2020 that were most similar to those of a balanced trade.

There are several key reasons that contributed to this. In 2015, the balance of payments stabilized due to the balancing of imports and exports. During that period, both of these indicators of foreign economic activity collapsed, but imports fell more strongly, since, at the new exchange rate, the consumption of foreign goods in the country fell sharply. Many Ukrainians then forgot the taste of Norwegian salmon.

Subsequently, the imbalance in the foreign trade balance began to gradually intensify, and this process proceeded at about the same rate as the real incomes of households were restored. Even a minimal positive change in the level of well-being of the population was immediately converted into an increase in import deliveries of goods, increasing the trade deficit.

This situation was somewhat mitigated by the relative lull in the financial account of the balance of payments, because in recent years Ukraine has practically not repaid external debts, with the exception of short-term current loans, interest payments and the current debt of the IMF, which, for obvious reasons, was not included in the program of restructuring the state debt portfolio.

Thus, the pause on the debt front allowed the economy to sharply increase imports, while export dynamics were significantly weaker. And it's good if it was just a technological import in the form of deliveries of new equipment and innovative technologies. But the reporting of the State Statistics Service suggests that gadgets and cars beloved by Ukrainians accounted for a significant share of foreign commodity deliveries.

4.3 Commodity structure of Ukrainian foreign trade in 2001 - 2020

For the study of changes in the dynamics of foreign trade in goods, the export quota, which characterizes the export orientation of the country's economy, is also an important indicator.

Analysis of the development of this indicator over time is extremely important for the study of Ukraine's foreign trade in goods and services, since the export quota shows the level of dependence of the Ukrainian economy on exports.

The study of structural changes of certain phenomena is very important for the full characterization and trends of change in the internal environment of a given phenomenon.

In a broad sense, the concept of structure is related to the categories of the whole and its components. Statistical authorities consider the structure as an internal component of a mass phenomenon, which differs in terms of objects and change over time.

The comparative analysis of structures is aimed at assessing the intensity of structural shifts and comparing the similarity of the structure of objects of the same type, analyzing the proportional distribution of a certain phenomenon in a structured population.

A statistical feature of the structure is a share. Analysis of the structure is based on the comparison of shares of different distributions. The difference of particles in the dynamics is characterized by structural shifts. The comparative analysis of structures based on the deviation of fractions is rationally carried out in the analysis of the composition of aggregates that differ in volume and are contained in rows with unequal intervals. Any statistical population has a dynamic structure.

The product structure of exports is based on products, primarily crops, minerals and products with a low level of technological processing.

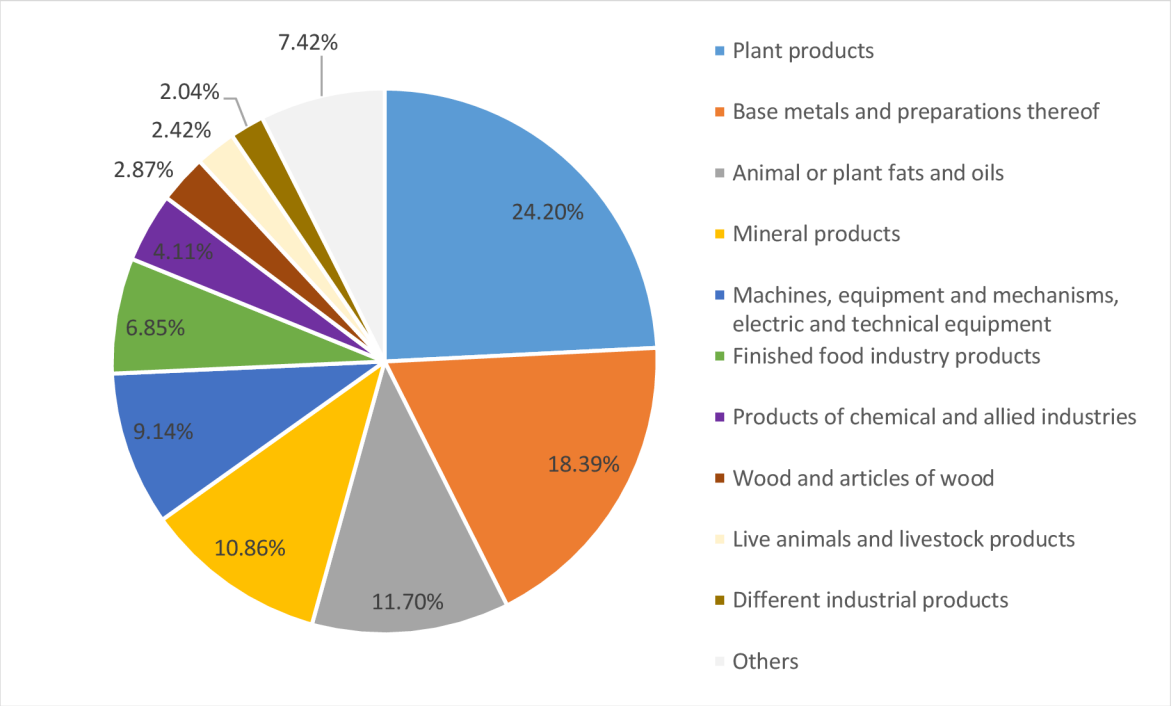
The foreign trade statistics database contains more than one thousand records of the physical volume of foreign trade by geographic and product structure. In this connection, the question arises about the expediency of limiting the object of study in compliance with the principle of representativeness, which will allow making reasonable conclusions about dynamic changes in trade conditions.

Ensuring the fulfilment of the conditions of the principle of representativeness is carried out by means of observation of the main array of data, according to which surveys consist of certain product groups, which account for more than two-thirds of the volume of exports / imports in terms of value.

4.3.1 Commodity structure of Ukrainian exports in 2001 - 2020

In foreign trade statistics, goods are classified according to the Ukrainian classification of goods of foreign economic activity. Therefore, it is appropriate to consider the commodity structure of exports in 2020 for the possibility of further comparisons and understanding of the general situation on the foreign market of Ukraine (Figure 4).

Figure 4. Commodity structure of exports in 2020



Source: author, based on Ukrstat.gov

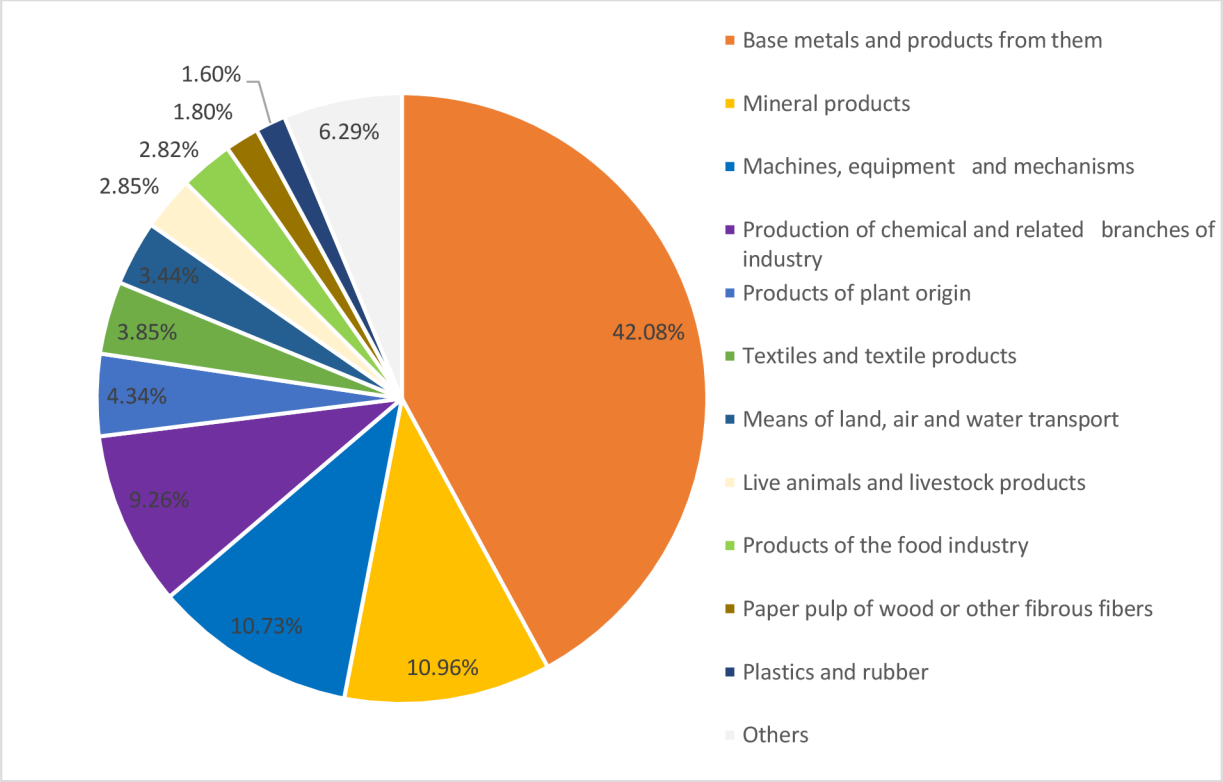
Thus, according to the results presented in Figure 4, it can be concluded that in 2020, the largest share in the structure of exports is occupied by the plant products - 1 188,16$ million. Also, a significant share falls on low-value metals and products from them - 9 029,9$ million. The smallest share belongs to the products of the ground, air and water transport facilities- 756,5$.

As it follows from the Figure 5, in year 2000 the main group in the export was metals which accounted more than 40% of all the exports with the amount of 6720,3$ million and was more than twice higher than in 2020, followed by mineral products of 1749,8$ million, which remain almost on the same level in 2020.

The comparability of structures that differ in the volume of aggregates is an important direction of research of variation series. The basis of this analysis is the difference in distribution shares. In the scientific literature, dynamic and territorial comparisons are distinguished: in dynamic comparisons there is an assessment of the intensity of structural

shifts; in territorial – structural differences. Statistical indicators of the comparative analysis of structural shifts are the coefficient of structural shifts and similarity of structures, the coefficients of localization, concentration, and differentiation.

Figure 5. Commodity structure of exports in 2001



Source: author, based on Ukrstat.gov

Changes in the proportions of individual components indicate structural shifts. The intensity of structural shifts is analysed using linear or quadratic coefficients of structural shifts, the calculation of which is based on particle deviation.

In the scope of this Diploma thesis work, to study changes in the commodity and geographical structure of exports and imports at ten-year intervals, the quadratic coefficient of structural shifts is used, which shows how much the structure of a certain phenomenon changed on average over time and is calculated according to the Formula 4 represented in methodological part.

Dynamic changes in the structure of exports by commodity groups are presented in the form of a number of shares for the possibility of visual analysis of changes (Table 5).

Table 5. Structural changes in the commodity structure of Ukraine's top-5 exports for 2001–2020.

Product group	Changes(pp) 2001 - 2020
Base metals and products from them	-23,7
Mineral products	0,1
Machines, equipment and mechanisms	-1,6
Production of chemical and related branches of industry	-5,1
Products of plant origin	19,9
Quadratic coefficient of structural shifts	4,9

Source: author, based on Ukrstat.gov

According to the results of calculations from the Table 5, it can be concluded that the commodity structure of export of goods has changed a lot in the period under review and from the dominant products of metals began to dominate products of plant origin. In 2020, compared to 2001, its share increased by 19,9pp.

In 2020, compared to 2001, the share of base metals and products from them in the total volume of exports decreased significantly - by 23,7pp. On the other hand, the share mineral products stayed almost on a same level (+ 0,1pp) in the total volume of exports, and the share of the machines and equipment decreased by 1,6pp. compared to the previous period.

The reason for this is a change in geographical structure. Ukraine supplied Russia with engineering products, which was sharply reduced with the escalation of conflicts. Mechanical engineering was under severe threat. They could not sell engineering products to Europe. There was a big risk that some of the enterprises would have to be closed altogether, since heavy industry and mechanical engineering were focused only on the Russian Federation for a long time, agricultural producers and some metallurgists were focused on Europe.

At the same time, there was no real search for partners among third countries. Even within the CIS. If you take Kazakhstan, a lot of opportunities have been lost. Although Kazakhstan is a member of the Customs Union, it is increasingly trying to pursue an independent policy, it has become a member of the WTO, while the products of Ukrainian machine builders and aircraft designers may be of interest to developing countries, which, unlike Europe, have lower requirements for product quality.

It is worth noting the importance of the fact that Asia has opened its markets for Ukrainian agricultural products, but the reorientation to Asian markets has become the reason for the change in the structure of exports from metal products to agriculture.

The global situation and the sufficient agricultural potential of Ukraine demonstrate opportunities for increasing the export of agricultural products and food products. Ukraine has all the capacity to increase the volume of production and export of grain crops, seeds and fruits of oil plants, fats and oils of animal or vegetable origin, and dairy products. According to expert assessments, the high cost of food due to its scarcity in the world may become permanent, which will give an incentive to increase the attractiveness of the agro-industrial complex in terms of the growth of its production volumes. However, the implementation of such actions requires a balanced policy and government support, which will primarily be related to stimulating the development of certain areas of the agro-industrial complex, subsidizing them and partially indemnifying risks.

At the same time, according to the presented results of the quadratic coefficient of structural shifts, on average, the structure of exports changed in 2001–2020 – by 4,9pp.

In modern realities, Ukraine needs national enterprises to produce and promote goods that will meet the requirements of the European market both in terms of technical characteristics and quality, safety and price for the successful integration of the industrial complex of Ukraine into the European economic space. The integration of Ukraine's economy into the global world economy is accompanied by several internal and external factors that somewhat slow down this process.

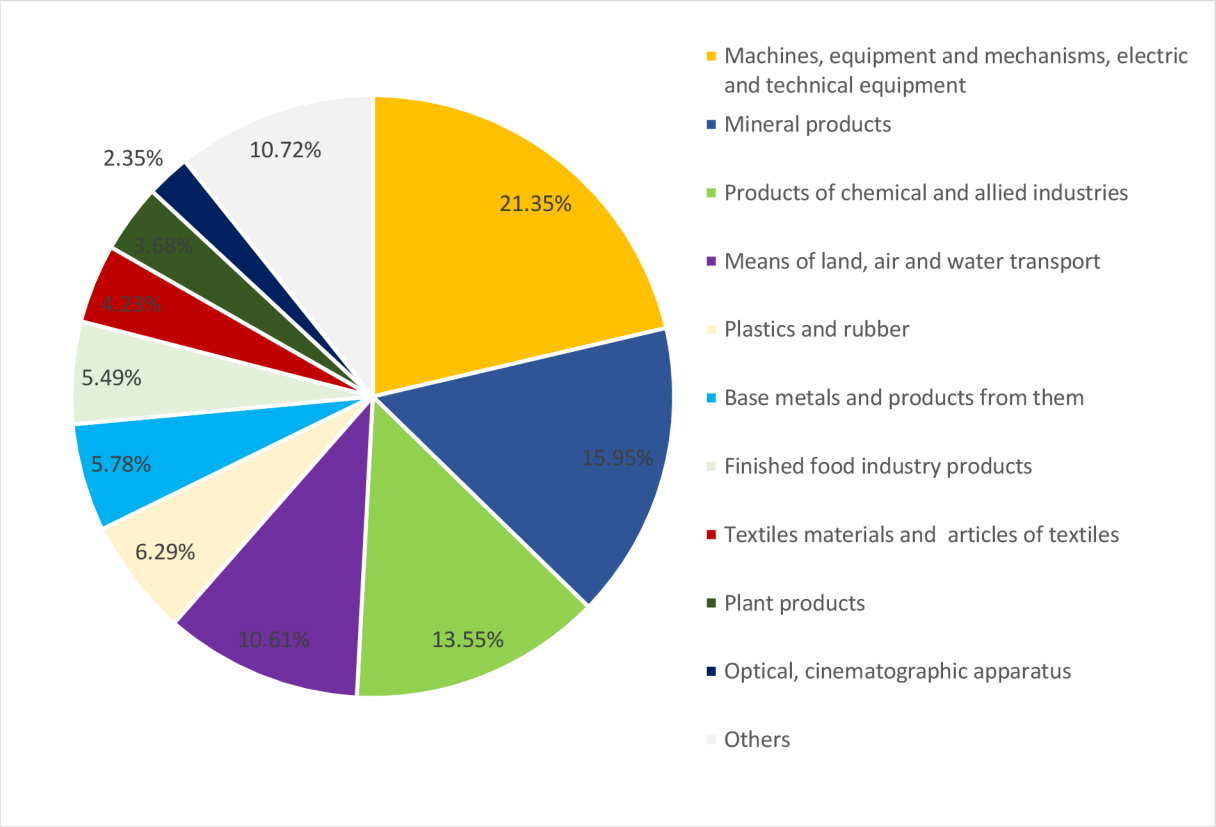
The main exogenous factors that complicate and slow down the process of Ukraine entering the world economy as a full member are:

- increase in the level of competition on international product markets, low competitiveness of domestic products;
- increased consumer demands for product quality; this means that the price factor becomes secondary, and the technology update and quality assurance factor becomes primary;
- application of forms of protectionism and discrimination of domestic producers by counterparties on commodity markets, in particular, complicating the product certification procedure;
- obstacles on the way to joining the world community due to non-compliance with European standards for the protection of intellectual property rights.

4.3.2 Commodity structure of Ukrainian imports in 2001 - 2020

Analysis of the commodity structure of the import of goods in 2020, will provide an opportunity to investigate the needs of domestic consumers in imported goods and the need for changes in domestic production in order to reduce imports by certain groups (Figure 6).

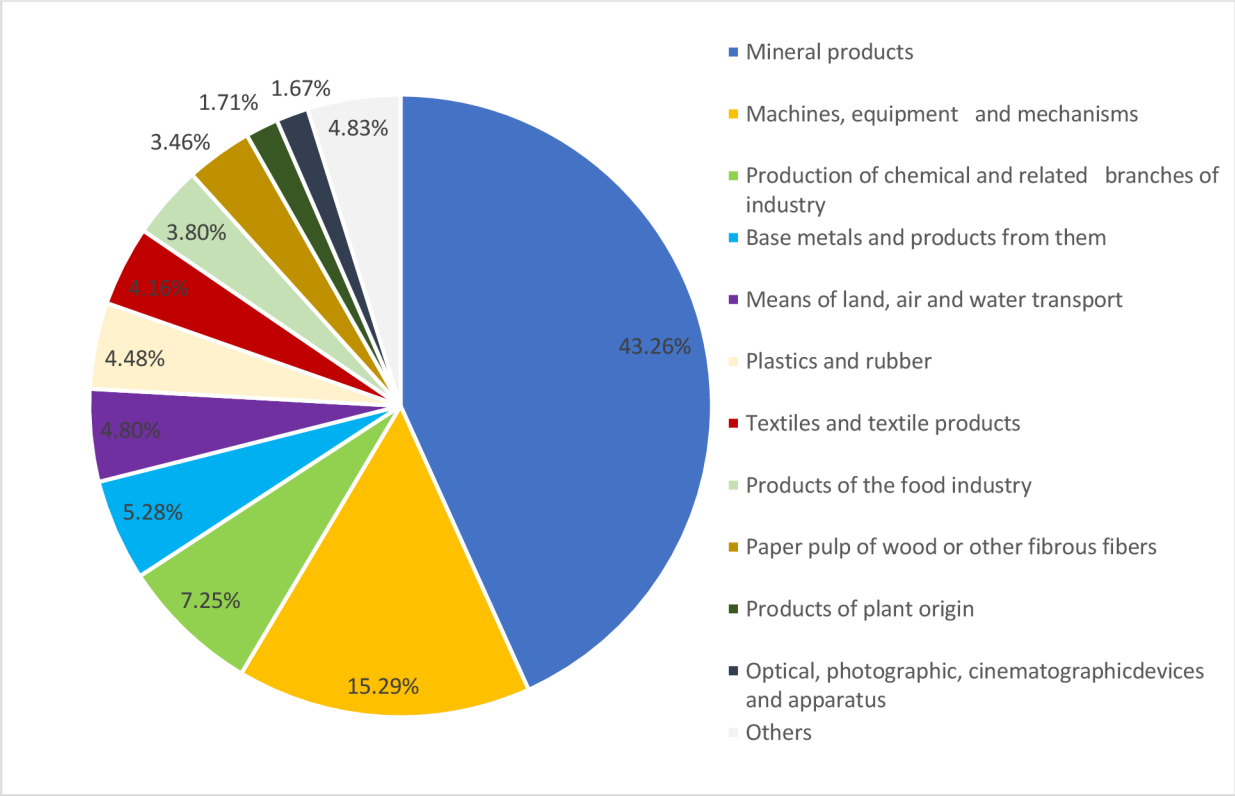
Figure 6. Commodity structure of imports in 2020



Source: author, based on Ukrstat.gov

According to the results of the research presented in Figure 6, it can be concluded that the structure of import of goods in 2020 was dominated by mechanical and electrical machines (11 552,7$ million. A significant share is also occupied by mineral products (8 633,2$ million). The smallest share is occupied by the goods of the live animals and livestock products industry - 1 258,0$ million.

Figure 7. Commodity structure of exports in 2001



Source: author, based on Ukrstat.gov

As it's shown in the Figure 7, the predominant group of imported goods in Ukraine in 2001 were mineral products, they accounted for more than 40% of all imports. The second largest group was equipment and machinery, accounting for more than 15% of all imports.

Regarding the analysis of changes in the commodity structure of the import of goods, the situation shown in the Table 6 is observed.

Table 6. Structural changes in the commodity structure of Ukraine's top-5 imports for 2001–2020.

Product group	Changes (pp) 2001 - 2020
Mineral products	-27,3
Machines, equipment and mechanisms	6,1
Production of chemical and related branches of industry	6,3
Base metals and products from them	0,5
Means of land, air and water transport	5,8
Quadratic coefficient of structural shifts	4,1

Source: author, based on Ukrstat.gov

According to the Table 6 it can be concluded that during the studied period, the structure of the import of goods was dominated by machine-building products: its share increased by 6,1pp. between 2001 and 2020; in the same period, the share of mineral products decreased the most - by 27,3pp within the studied period.

The share of production of chemical and related branches of industry increased within observed period by 6,3pp., the same pattern is for the means of land, air and water transport group, its import increased 5,8pp. At the same time imports of the base metals stayed almost same.

So, summarizing, the conclusion can be made that the structure of the import of goods changed unevenly throughout the studied period.

Based on the results of the calculation of the quadratic coefficient of structural shifts, it can be stated that the structure of goods in imports changed slightly throughout the period by 4,1pp.

The reason for such a strong drop in imports of mineral products is also the reorientation of Ukraine to the European market. The first anti-dumping duty against the dominance of Russian fertilizers in Ukraine was adopted back in 2004. Later, Russia began to introduce mirror restrictions on the import of Russian fertilizers. In response to the sanctions of the Russian Federation, on May 15, the Cabinet of Ministers decided to introduce special duties on Russian goods, including fertilizers, from August 2019.

The agricultural sector is not capable of becoming the locomotive of the economy on its own. Growth and development is provided only by industry and science. In the industrial realm, the potential for technological change is almost limitless. In the agricultural sector, technological change plays a supporting role. They are limited by the basic goal of the agro-industrial complex - the production of the maximum amount of agricultural resources (biomass) in a limited area. Simplified, agricultural production is the process of converting mineral resources into biological resources necessary to provide humanity with food and raw materials.

That is why, despite the explosive growth in the introduction of innovations in the agricultural sector, there are no technologies that allow us to abandon fertilizers and at the same time increase production volumes. Microfertilizers, phytoharmones, nitrogen fixation, fractional nutrition and much more are just a means of optimizing the mineral nutrition of plants. In theory, plants have limited access to only one resource: atmospheric nitrogen. Phosphorus, potassium, sulfur and other elements cannot be synthesized in the soil layer

unless brought from outside. Chemical fertilizers have been and will remain one of the foundations of agricultural production.

After the introduction of the first sanctions on fertilizers in 2018, compared to 2017, the import of ammonia from the Russian Federation to Ukraine decreased by 6.4%, carbamide - by 94%, ammonium sulfate - by 87%. Supplies of nitrogen fertilizers fell by 72%, UAN - by 91%, three-component NPK - by 40%, ammophos - by 68% (Argus, 2022).

In general, with the exception of the phosphorus group, in 2018 our market was able to adapt to these changes. New supply channels were found for such important fertilizer operators as carbamide, ammonium nitrate, UAN. This, to a certain extent, made it possible to compensate for losses due to restrictions on the import of Russian fertilizers (Argus, 2022).

4.4 Geographical structure of Ukrainian foreign trade in 2001- 2020

In the statistics of foreign trade in goods of Ukraine, partner countries are considered: in export - the country of the last known destination of the product, in import - the country of origin of the product. A trading country is considered a partner country when exporting goods, if the country of final destination is unknown at the time of export of goods; the trading country for export is the country where the buyer of the goods is a resident.

When importing goods, the country of departure is considered a partner country, if the country of origin of the goods is unknown at the time of delivery, for reimported goods, for goods included in group works of art, collectibles and antiques, for goods received as humanitarian aid.

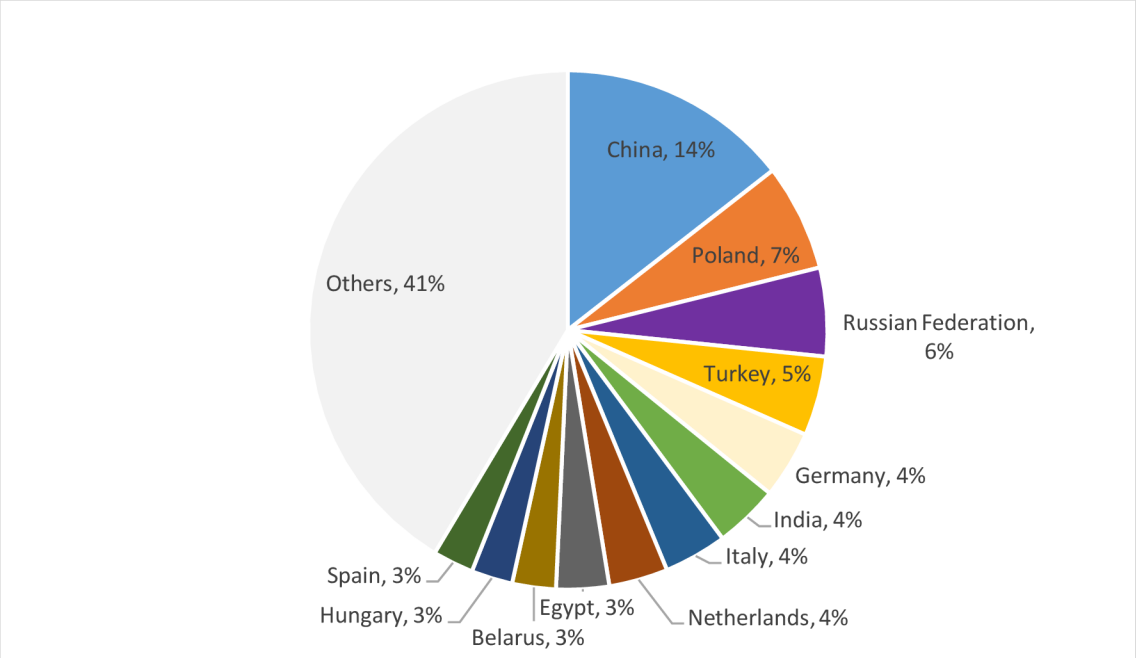
The country of departure is the country from which the goods are sent to the importing country without carrying out any commercial or other transactions with them in intermediate countries, which would change their legal status. If the goods became the subject of commercial or other transactions before the moment of arrival in the importing country, the country of departure is considered to be the country where the above transactions took place.

In the context of the research on trade with external partner countries, it is considered appropriate to conduct an analysis of the share of the main partner countries in the export / import of Ukraine.

4.4.1 Geographical structure of Ukrainian exports in 2001 - 2020

The analysis with the geographical structure of the export of goods with the largest partner countries in 2020 is presented in Figure 8.

Figure 8. Geographical structure of export of goods in 2020



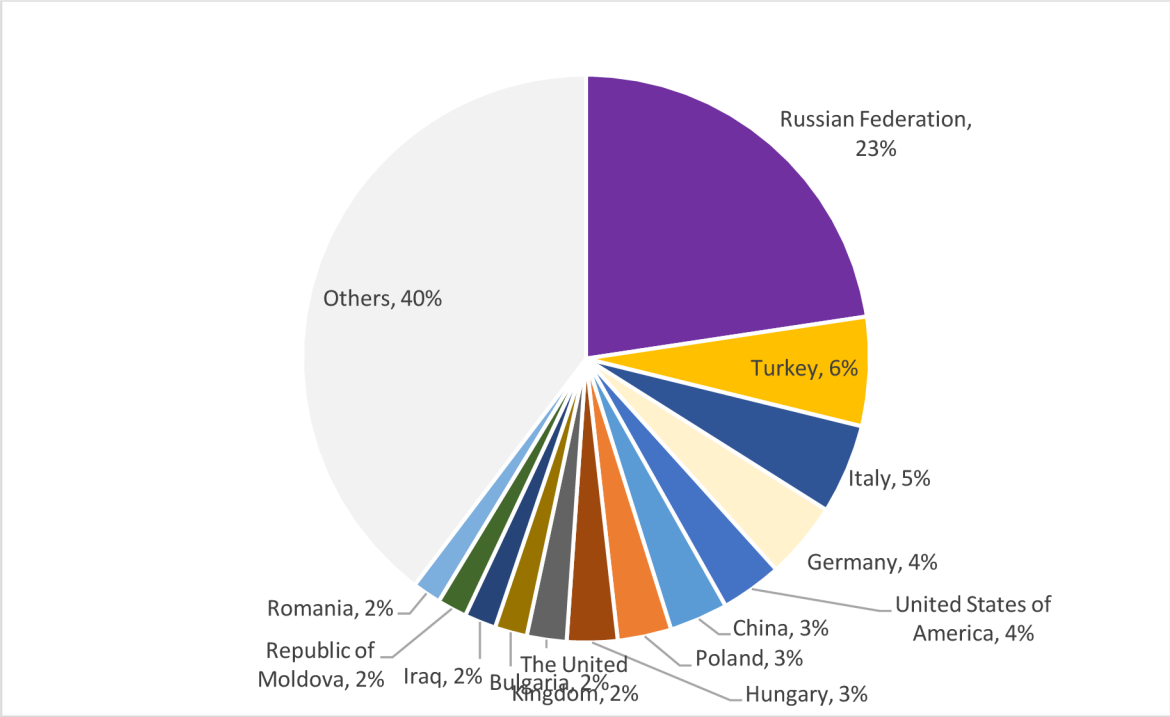
Source: author, based on Ukrstat.gov

According to the results presented in Figure 8, it can be generalized that the export of goods in 2020 was dominated by the goods to China, with the absolute volume of exports - 7 099,9$ million. These are mainly such goods as ores, slag and ash - 32.8% of the total volume of exports, cereals - 23.9% and fats and oils of animal or vegetable origin - 20.6%.

As well a sufficient share of exports falls on Poland - 3 272,7$ million, compared to the previous period, export volumes increased by 3pp. In 2020, mainly ores, slag and ash were exported from Ukraine to Poland - 12.6% of the total volume of exports to Poland, ferrous metals - 11.8% and electric machines - 11.5%.

From the Figure 9 it can be concluded that the main country of export for Ukraine in 2001 was Russian Federation, encountered 23% of exports with the volume of 13 431,8$ million. As it's visible from the 2 pie charts (Figure 9 and Figure 10) export from Russian Federation failed dramatically in the observed period. In exports from Ukraine, the CIS once dominant has only 12.1 percent in 2020 (Russia, respectively – 6%).

Figure 9. Geographical structure of export of goods in 2001



Source: author, based on Ukrstat.gov

The EU is Ukraine's "anchor trading partner" of Ukraine's trade turnover, despite the reduction in both imports and exports. The volume of exports to the countries of the European Union increased, which is connected with the signing of the Ukraine-EU Association Agreement in 2014, which provided for the creation of a full and comprehensive free trade zone. Let's take a closer look at the changes in the geographical structure of exports of goods for 2001–2020.

Table 7. Structural changes in the geographical structure of Ukraine's exports for 2001–2020, top-6 main partners.

Country	Changes (pp.) 2001 - 2020
China	11,6
Poland	4,2
Russian Federation	-17,1
Turkey	-1,1
Italy	-1,2
Germany	0,0
Quadratic coefficient of structural shifts	1,5

Source: author, based on Ukrstat.gov

From the data in the Table 7 it can be stated that in the period 2001–2020, the geographical structure changed dramatically, which is connected with the change of priorities of Ukraine in the international arena and its reorientation to the European market of goods. Also, in this context, it should be emphasized that the share of the Russian Federation is decreasing during the studied period and accounts 17pp drop. At the same time the share of exports of goods to the China increased by more than 11pp.

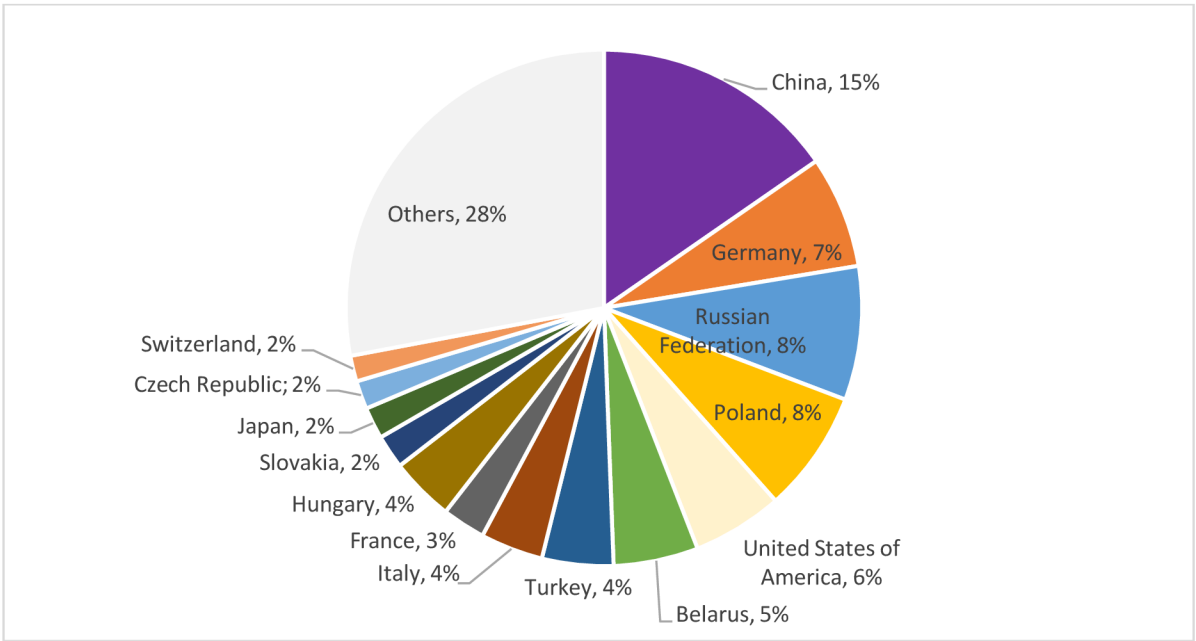
The share of EU countries in the geographical structure of goods exports increased, which is related to the Ukraine-EU Association Agreement, according to which Ukraine began to trade more with European countries due to the reduction of customs tariffs and fees.

Thus, according to the data of the quadratic coefficient of structural shifts, the structure of export of goods changed by an average of 1,5pp. Although domestic products remain uncompetitive on the European market due to low manufacturability and compliance with outdated standards, many reforms and updates are being carried out in this area to improve the situation.

4.4.2 Geographical structure of Ukrainian imports in 2001 - 2020

Similarly, it's necessary consider the geographical structure of the import of goods to understand the countries - suppliers of products to the domestic market of Ukraine in 2020 (Figure 10).

Figure 10. Geographical structure of import of goods in 2020

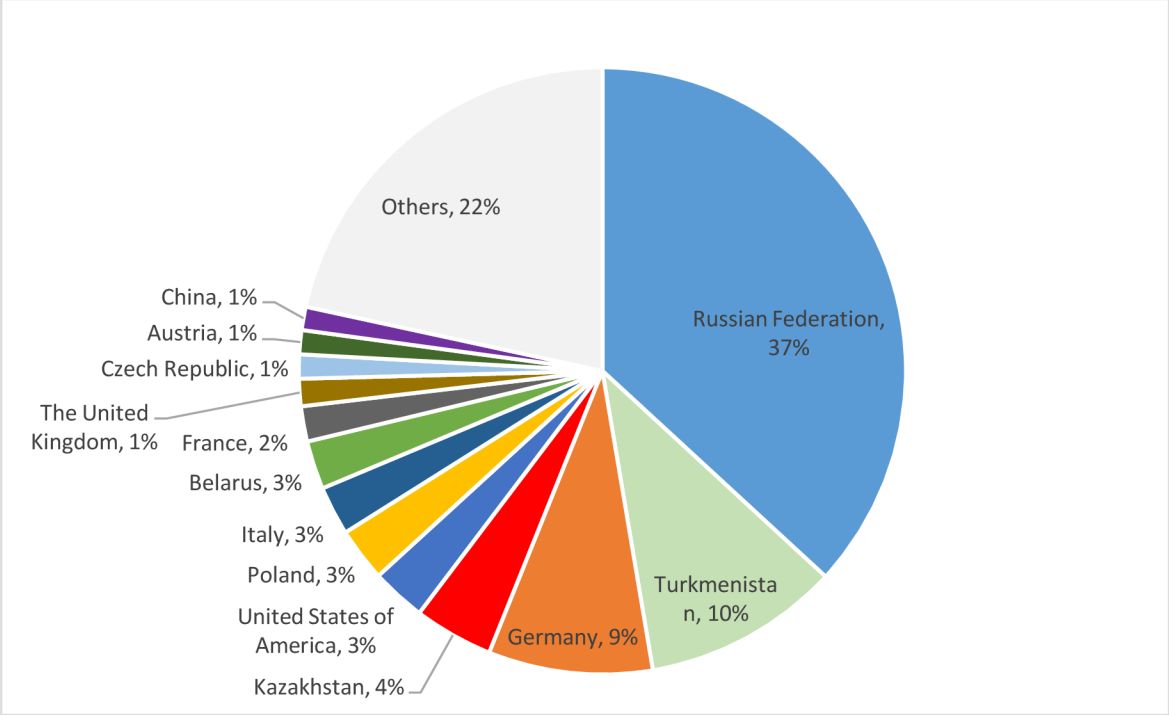


Source: author, based on Ukrstat.gov

According to the data from Figure 10, it can be concluded that China also dominates in the import of goods, whose absolute volume of goods import is 8 318,4$ million and compared to the previous period increased by 8pp. It mainly machine-building products, in particular, electric machines - 34.6% and mechanical machines - 16.8% of the total volume of goods imported from China.

On a second place is Germany with import volumes of 5 339,7$ million, which decreased by 1pp. compared to 2011. At the same time import from Russian Federation decreased by 27pp. between 2011 and 2020.

Figure 11. Geographical structure of import of goods in 2001



Source: author, based on Ukrstat.gov

Figure 11 depicts the geographical distribution of imports in Ukraine in year 2001. In 2001 Russian Federation was the main importer for Ukraine, it encountered 37% with the volume 5 813,4$ million. On the second place there was Turkmenistan with the share of 10% and volume of 1 654,0$ million.

Changes in the geographical structure of the import of goods in 2001–2020 are presented in the Table 8.

According to the Table 8 it can be concluded that in the period 2001–2020, the share of the Russian Federation in the import of goods decreased the most - by 27pp. At the same time during the studied period, China's share increased by 14,1pp. and Turkey - by 4,1pp.

Table 8. Structural changes in the geographical structure of Ukraine's imports for 2001–2020, top-8 main partners.

Country	Changes(pp.) 2001–2020
China	14,1
Russian Federation	-27,0
Germany	-2,3
Poland	6,4
Belarus	4,7
USA	2,9
Turkey	4,1
Italy	1,1
Quadratic coefficient of structural shifts	1,4

Source: author, based on Ukrstat.gov

In general, the structure of imports changed slightly compared to the previous period. According to the coefficient of structural changes, the change in the structure of the import of goods over the studied period was 1,4pp.

To conclude the analysis on the geographical structure in Ukrainian foreign trade, it should be emphasized that the main reason for such a dramatic change is a worthening of the economic relations between Ukraine and Russia.

The free trade zone between Ukraine and the EU was launched in 2016. And Russia has suspended the agreement within the framework of the CIS on an FTA with Ukraine. Introduced customs duties and food embargo on Ukrainian pork, vegetables, cheeses, fruits, milk. Kyiv responded in kind. Since then, the lists have been repeatedly expanded, and the restrictions have been extended.

At the same time, bans are unprofitable for both countries: they damage foreign trade, filling domestic markets, income from exports and sales of imported products.

One of the main goals of Ukraine's admission to the EU free trade zone was the removal of economic barriers, when Ukrainian companies freely sell goods in Europe, and European firms in Ukraine. But cooperation turned out to be not as profitable as the supporters of European integration assumed. A small share of Ukrainian products enters the EU duty-free, while it itself sends mainly raw materials to Europe.

Although the volume of Ukraine's exports to the EU has indeed grown slightly in recent years. However, this does not compensate for the loss of the Russian market.

Ukraine is annually deprived of billions of dollars because of the association agreement with the EU, the terms of which are "catastrophic" for the country's economy. According to the Ukrainian State Statistics Service, due to "asymmetric and discriminatory" conditions, the negative trade balance in 2020 is over five billion dollars.

4.5 Ukrainian trade revealed comparative advantage

According to the classical theory of comparative advantage, a positive economic effect, called the gain from trade, improves the welfare of countries and promotes the development of free trade.

By using Balassa's RCA and Vollrath's RCA indices, the comparative advantage of Ukrainian exports of the biggest product groupings was examined. The following factors led to the selection of two indices: The first and most used RCA measure in the literature is Balassa's RCA index (Yu, 2009). Since the standard Balassa's RCA index has limits, the Vollrath's indicex was employed to compare the variations in findings. The WorldBank and Ukrstat.gov were used as the data sources from 2001 to 2020. The author used Formulas 5, 6, 7, and 8 to calculate the RCA results presented below (Table 9, Table 10).

Table 9. Groups of export with comparative advantages in Ukraine in 2001

Export group	**Ukraine**	**EU**	**RCA Balassa**	**RCA Vollrath**
	Share in total export			
Base metals and products from them	0,420771	0,053292765	**7,895462858**	**2,486115**
Mineral products	0,109556	0,002916098	**7,56945758**	-0,25804
Machines, equipment and mechanisms	0,107332	0,309630345	0,346644519	-0,48611
Production of chemical and related branches of industry	0,092568	0,132910599	0,696464856	-0,29751
Products of plant origin	0,043406	0,013321607	**3,258344076**	**1,710345**

Source: author based on WorldBank and Ukrstat.gov

From Table 9 it can be concluded that based on the Balassa and Vollrath RCA indices, Ukraine had a comparative in two product groups: Base metals and products from them and Products of plant origin.

There is a discrepancy in the results in the group of mineral products, according to the calculations of the Ballasa index, this group of goods had a comparative advantage in 2001, while the results of the Vollrath index show the opposite which can be explained by the inaccuracy of the Ballasa index.

Table 10. Groups of export with comparative advantages in Ukraine in 2020

Export group	**Ukraine**	**EU**	**RCA Balassa**	**RCA Vollrath**
	Share in total export			
Base metals and products from them	0,183904	0,05367	**3,426547**	**1,380711**
Mineral products	0,108584	21,45437	0,008988	0,01175
Machines, equipment and mechanisms	0,091375	0,245089	0,372823	-0,93945
Production of chemical and related branches of industry	0,041141	0,189525	0,217076	-1,67034
Products of plant origin	0,242013	0,023258	**10,40568**	**2,639767**

Source: author based on WorldBank and Ukrstat.gov

As can be seen from Tables 10, Ukraine decreased its comparative advantage in the group of metals and products from them in 2020 compared to 2001 and at the same time increased the comparative advantage in Products of plant origin group, this fact is not accidental, since this period is characterized by an active restriction of trade with Russia because of sanctions.

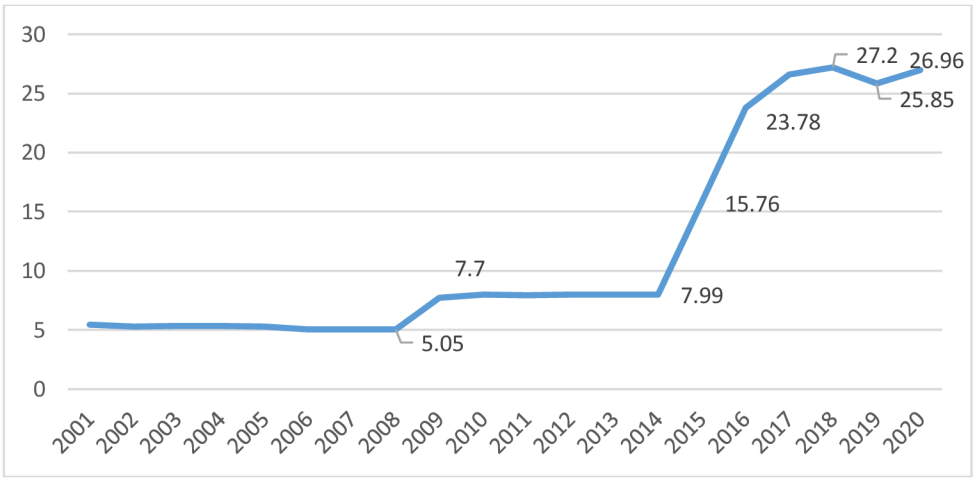
It is worth noting that throughout the entire period considered in the thesis, the orientation of Ukrainian exports remained raw. This puts the country under attack from the coming global crisis. The fact is that half of Ukraine's GDP is exports, the structure of which is dominated by raw materials, and as the turnover of trade wars grows, primitive economies oriented to foreign markets become the most vulnerable. If there is a slowdown in the development of the world economy, the demand for raw materials decreases, and the price dynamics goes down. This hits either the level of growth or the level of decline of these economies that specialize in commodities.

4.6 Macroeconomic situation in Ukraine in 2001 – 2020

Over three decades of the independence after a collapse of USSR, Ukraine has experienced more crises than neighboring states. What is the temporary loss of part of the territories worth in 2014-2015. For almost the entire first decade of independence, the real GDP decreased, and along with it, the incomes of Ukrainians fell. In the mid-2000s, this trend broke, but not for long, because the flourishing of the Ukrainian economy was hindered by global economic shocks and military aggression by the Russian Federation.

For thirty years, Ukrainians have become accustomed to measuring financial stability and their well-being by the dollar exchange rate. Its growth means a devaluation of hryvnia wages and, as a result, a drop in people's ability to pay.

Figure 12. Ukrainian hryvnia/Us dollar exchange rate in 2001 - 2020



Source: author compilation, based on Minfin of Ukraine

Before the introduction of the hryvnia, the dollar in Ukraine appreciated more than 700 times. In 1992, the exchange rate of the American currency to the ruble was 1 to 208, and in 1995 it was 1 to 147,460. Due to hyperinflation, the incomes of Ukrainians rapidly depreciated, so many looked to the dollar as a stable currency.

Already in 1998, under the influence of the global financial crisis, the hryvnia fell slightly to 2.48 per dollar. The devaluation continued in the following years, to almost five and a half hryvnia per dollar in 2000. And after that, the rate stabilized for almost a decade. Even the Orange Revolution of 2004 did not affect the stability of the hryvnia.

On the other hand, another global financial and economic crisis, which began in 2007 and reached Ukraine in 2009, had an impact. The rate fell to almost 8 hryvnia per dollar and again fixed at this level - already before the Revolution of Dignity.

Even at the height of the revolutionary events, on February 7, 2014, the National Bank abruptly "released" the exchange rate, which in one day fell from 7.99 to 8.7 hryvnia / dollar. After the beginning of the events in the Crimea and Donbass, the hryvnia accelerated its fall; on March 21, the psychological threshold of 10 hryvnia per dollar was overcome. Ukraine met the New Year 2015 with the exchange rate of 15.76.

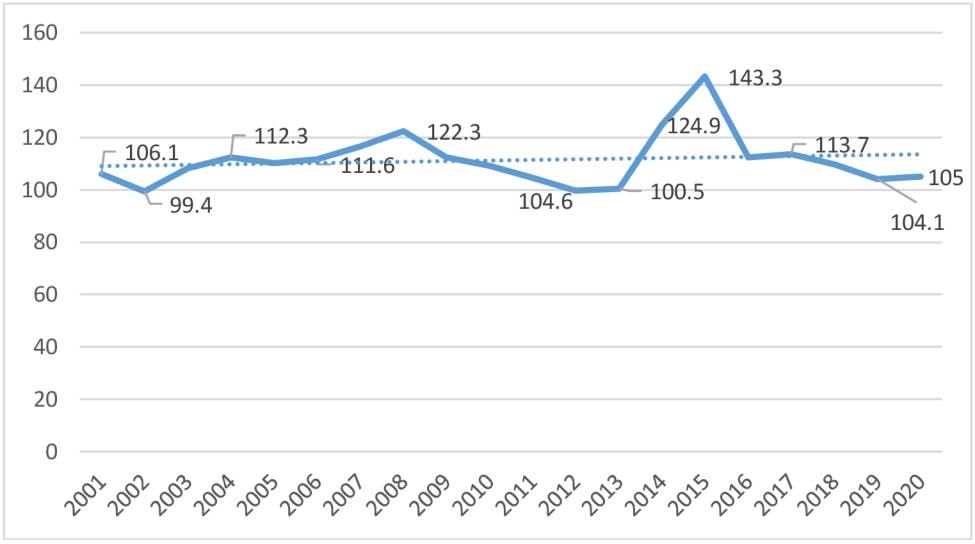
In February 2015, another fateful event for the hryvnia happened - the National Bank refused to support the fixed hryvnia exchange rate - almost the main indicator of economic stability in the eyes of the inhabitants. But to maintain it, it was necessary to burn the already meager gold and foreign exchange reserves.

Weakened by the war, the loss of part of the territories and industry, the country could no longer afford it. The transition to a floating exchange rate turned out to be a shock - in one day, February 6, 2015, the hryvnia fell from 18 to 23.1 per dollar.

This increased the panic among the population, caused, among other things, by the events in the Donbass - the battle for Debaltseve was in full swing. Since mid-February, it has become almost impossible to buy a cash dollar in exchange offices. On February 26, a hitherto unbroken record was recorded - 30 hryvnia / dollar. On the black market, the rate was even higher - up to 40 hryvnia / dollar.

Over time, the situation calmed down somewhat, but objective economic factors played their role: the reduction in the volume of Ukrainian exports in general and the world prices for grain, ore and steel, which formed its basis. Ukraine entered 2016 with the exchange rate of 24 hryvnia/dollar. The volatility of the exchange rate under the influence of internal (seasonality, political situation, inflation, NBU discount rate) and external factors (world prices, export volumes, etc.) has entered a more or less established framework. The population, obviously, is also accustomed to the fact that a small jump in numbers on the scoreboard of exchangers is not yet a reason to urgently buy dollars. In 2019, the hryvnia became the most strengthened world currency at all - the revaluation amounted to 19% against the dollar.

Figure 13. Inflation index Ukraine in 2001 – 2020

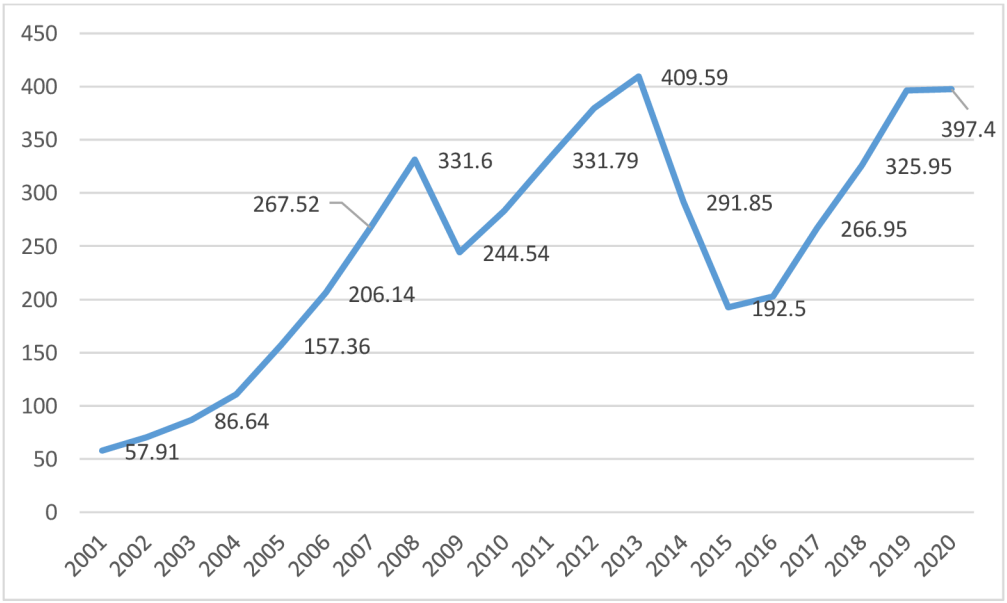


Source: author compilation, based on Minfin of Ukraine

Since 90th, the highest inflation rate was in 2015: 43.3%. Then the NBU introduced an inflation targeting regime, setting the goal of keeping annual price growth at the level of 4-6%. It was possible to enter this corridor in 2019 and 2020.

Although inflation ate the lion's share of citizens' incomes for 30 years, the real solvency of the population grew. The average salary in dollar terms in 2021 exceeded $500 per month for the first time.

Figure 14. Average salary in Ukraine 2001 – 2020, equivalent in US dollars



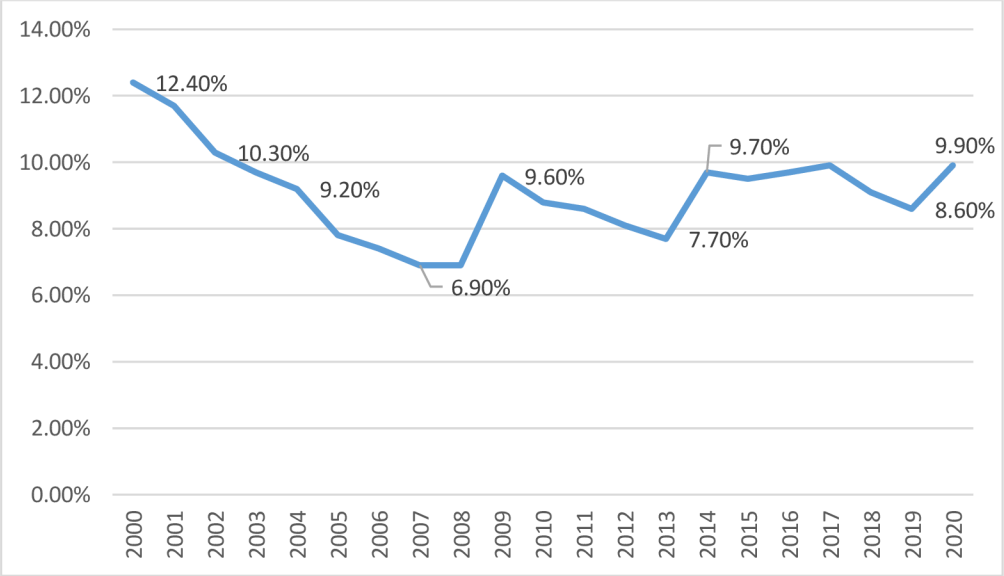
Source: author compilation, based on Minfin of Ukraine

Last but not least, the increase in wages in Ukraine became possible thanks to labor migration. Every year, thousands of Ukrainians go to work in Poland, the Czech Republic, the USA and other countries, which increases the demand for labor within Ukraine.

Remittances from wage-earners have long been a significant component of foreign exchange earnings in the economy.

Every year, the National Bank records an increase in the volume of private remittances to Ukraine. Even quarantine did not break this trend: in 2020, Ukrainians transferred a record 11.98 billion dollars to their homeland.

Figure 15. Unemployment rate in Ukraine 2001 – 2020



Source: author compilation, based on Minfin of Ukraine

Along with the growth of real wages in Ukraine, during the time of independence, unemployment decreased. This indicator increased mainly during periods of crisis.

4.7 Identifying the factors influencing economic development in Ukraine

One of the important statistical methods used to determine the correlation of the outcome variable on factors is the correlation-regression analysis of statistical data. The general situation in Ukraine's foreign trade is determined by many factors: geopolitical, social, economic, political, etc. Assessment of the state and development of Ukraine's foreign trade should be provided with statistical support, especially in terms of analysis and modeling of export-import operations, which determines the purpose of the Diploma thesis work. A typical practical task of regression analysis is the detection of dependencies between

data, for example, in the work, it is the detection of dependencies between the volume of exports and volumes of production and the official exchange rate of currencies, as well as between the volumes of imports and the official exchange rate and average import prices.

For regression analysis, it is assumed that there is a dependence of the form between variables X and Y:

$$Y = b_o + b_1 * x_i + e_i \quad (9)$$

where i - individual observations of the sample;

b0 - unknown constants;

b1 – regression parameter,

ei are random variables that were not observed, since the observation was carried out for n values of the sample.

4.7.1 Regression model building

Since one of the purposes of the Master Thesis is to identify what other factors that play an important role in economic development of Ukraine, the human development index (HDI) was chosen as the dependent variable. It is a composite indicator compiled by the United Nations Development Program and used in the United Nations Special Series of Human Development Reports.

The HDI measures a country's achievements in three main areas:

− health and longevity as measured by average life expectancy at birth;

− access to education, as measured by the average school-age children's expected school age and the average years of schooling of the adult population;

− standard of living measured by gross national income (GNI) per capita.

It should be emphasized that it is necessary to distinguish the factors influencing the HDI from its components listed above. The components (life expectancy, access to education and GNI per capita) do not affect, but directly determine the HDI. If talk about the factors of influence, then they include various characteristics of social, political, economic, scientific and technological development.

It was assumed that the HDI (Y) can be significantly influenced by the values X1 – X6, presented in Table 11.

Table 11. Variable of the regression model

Variable	Units	Interpretation	Rationale for choice
Explained (dependent) variable			
HDI	Points (0 – 1)	The maximum HDI value is 1.0, the higher the indicator, the higher the quality and standard of living in the country.	The Human Development Index (HDI) was created in order to focus on people, more precisely on their ability to realize a satisfactory job and life in the country of residence / location. Assessing a country's potential for individual human development provides an additional metric for assessing a country's level of development beyond taking into account standard economic growth statistics such as gross domestic product (GDP).
Explanatory variables			
Index of Economic freedom	Points (0 - 100)	IES is measured on a scale from 0 to 100; a value of 100 corresponds to complete economic freedom.	The notion of economic freedom embodied in this index is based on the principle of self-ownership. It implies that each person has the right to dispose of his time, talents and property in any way he wants and has no right to another person's resources. Economic freedom requires freedom of personal choice, voluntary exchanges, competition without state interference, and protection of people and private property. And

			the state in the economy should be as small as possible.
Hryvna/$ exchange rate	UAH	Official rate based on market quotations, which depend on the supply and demand for foreign currency	The weakening of the national currency usually indicates the inflation. The price of imported goods is growing, and after that, the average price level in the economy, which in turn affects the well-being of the population.
Education Spending	In % of current GDP	Education-related general government spending (current, capital, and transfers) is shown as a share of all general government spending across all sectors (including health, education, social services, etc.). It comprises expenses paid for by government transfers from external sources. Local, regional, and national governments are together referred to as general government.	State investments in education give a significant economic result, but for different groups of countries, the effect of investments in higher, secondary and primary education is different. In developed countries, an increase in spending on all types of education leads to economic growth, with higher returns on secondary and tertiary education. For developing countries, rising spending on primary and secondary education has a greater effect (Burja & Burja, 2013).
Tax revenue	In % of current GDP	Tax revenue is the term used to describe mandatory payments made to the federal government for public purposes. Fines, penalties, and the majority of social security contributions are exempt from some mandatory transfers.	Entering the territorial budgets, personal income tax is the main source of financing for social security measures. This tax is not targeted, its social function is implemented through the mechanism of indirect financing of social support, in which the savings in tax payments resulting

		Refunds and adjustments for tax money that was incorrectly collected are considered negative revenues.	from the use of social tax benefits by individuals making social expenditures either increase social spending or remain at the disposal of citizens. In turn, the funds remaining at the disposal of the population directly determine the amount of investment directed to the development of human potential. Thus, thanks to tax instruments, the state has ample opportunities for direct and indirect influence on the production and reproduction of human capital.
Current health expenditure	In % of current GDP	Current health spending level reported as a share of GDP. Current health spending estimates take into account the healthcare supplies and services used annually. Capital health investments in equipment, machinery, IT, and vaccine supplies for emergencies or outbreaks are not included in this measure.	Health spending is widely seen as one of the levers to support and stimulate inclusive growth. They can play an important role in improving the well-being and economic potential of citizens and, as the COVID-19 crisis has shown, in protecting vulnerable populations. They also help stimulate long-term economic growth and reduce poverty and social inequality among the population.
Escalation of military conflicts in Ukraine	0 or 1	Dummy variable. Takes an indicator of 1 or 0, while 0 will be assigned to the years before 2014, before	This indicator reflects the escalation of military conflicts in Ukraine, it takes 0 from 2001 to 2013 and 1 from 2014 to 2020.

		the start of hostilities in Ukraine, and 1 – after.	

Source: author

For the conducting research a dataset was collected using the official sources of data that are listed in the references list, dataset is presented in the Appendix 2.

In order to characterize any process, it is necessary to study its structure in terms of autoregression and periodicity. If the autoregressive structure indicates that pt = 1 for the process under consideration, then this process is non-stationary and there is a trend in its dispersion. Dispersion variability (heteroskedasticity) is a very unpleasant phenomenon in simulated processes. The ADF tests were conducted to understand the possibility of the conduction an analysis on the selected data.

Figure 16. Dickey-Fuller test – dependent variable HDI

```
Augmented Dickey-Fuller test for HDI
testing down from 1 lags, criterion AIC
sample size 18
unit-root null hypothesis: a = 1

  test with constant
  including one lag of (1-L)HDI
  model: (1-L)y = b0 + (a-1)*y(-1) + ... + e
  estimated value of (a - 1): -0.344807
  test statistic: tau_c(1) = -3.35946
  asymptotic p-value 0.01245
  1st-order autocorrelation coeff. for e: -0.143
```

Source: author compilation

The result of the Dickey-Fuller test for the dependent variable HDI is presented in Figure 16, it shows that the null hypothesis of the presence of a unit root is rejected, as a p-value is lower than 0,05 (0,01245).

Considering the data, it is considered appropriate to use a linear regression model.

At the beginning, the variables should be check on presence of multicollinearity. To test the model on the presence of multicollinearity there is a need to conduct a correlation matrix as well as an auxiliary regression, as a dummy variable is present in the model.

As it is visible from the Figure 16, there is a strong multicollinearity between variables Current health expenditure and Hryvna/$ exchange rate, Tax revenue and Hryvna/$ exchange rate.

Figure 17. Correlation matrix

```
Correlation Coefficients, using the observations 2001 - 2020
5% critical value (two-tailed) = 0.4438 for n = 20

 Economicfreedom Hryvnaexchange~ EducationSpend~ Currenthealthe~
          1.0000          0.0550          0.0032          0.0274 Economicfreedom
                          1.0000         -0.3489          0.7544 Hryvnaexchange~
                                          1.0000         -0.1256 EducationSpend~
                                                          1.0000 Currenthealthe~

 TaxrevenueofGD~
         -0.0545 Economicfreedom
          0.7451 Hryvnaexchange~
         -0.1334 EducationSpend~
          0.6673 Currenthealthe~
          1.0000 TaxrevenueofGD~
```

Source: author compilation

Auxiliary regression takes form of regressions where a j^{th} independent variable is regressed against the dummy variable. The studied model includes one dummy - Escalation of military conflicts in Ukraine, since there are 5 independent variables, there is a need to conduct 5 auxiliary regression models. And if multicollinearity is severe means that one independent variable can be explained by others.

Hence the auxiliary regression models are the following:

1) **Index of Economic freedom** = $b_o + b_4 *$ escalation of military conflicts in Ukraine $+ e_i$

2) **Hryvna/$ exchange rate** = $b_o + b_4 *$ escalation of military conflicts in Ukraine $+ e_i$

3) **Education Spending** = $b_o + b_4 *$ escalation of military conflicts in Ukraine $+ e_i$

4) **Current health expenditure=** $b_o + b_4 *$ escalation of military conflicts in Ukraine $+ e_i$

5) **Tax revenue** = $b_o + b_4 *$ escalation of military conflicts in Ukraine $+ e_i$

Table 12. The coefficient of determination of the auxiliary regression models

Model	The coefficient of determination
1	0.350579
2	**0.798081**
3	0.327307
4	0.438989
5	0.456951

Source: author compilation

As it's seen from table 12, auxiliary model 2 has the coefficient of determination higher than 0,7 which indicates a multicollinearity in the models, as there is a serious correlation between Hryvna/$ exchange rate and the Escalation of military conflicts in Ukraine.

Hence to deal with the multicollinearity in the model, there is a need to remove a Hryvna/$ exchange rate from the model.

To check the new model on multicollinearity, the correlation matrix was created. The results are presented on Figure 18.

Figure 18. Correlation matrix of the new model

```
Correlation Coefficients, using the observations 2001 - 2020
5% critical value (two-tailed) = 0.4438 for n = 20

 Economicfreedom EducationSpend~ Currenthealthe~ TaxrevenueofGD~
          1.0000          0.0032          0.0274         -0.0545 Economicfreedom
                          1.0000         -0.1256         -0.1334 EducationSpend~
                                          1.0000          0.6673 Currenthealthe~
                                                          1.0000 TaxrevenueofGD~
```

Source: author compilation

As it follows from the Figure 18, there is no high multicollinearity presented in the model.

Figure 19. Results of OLS, using observations 2001-2020 Model 1

```
Model 2: OLS, using observations 2001-2020 (T = 20)
Dependent variable: HDI

                     coefficient   std. error   t-ratio  p-value
  ---------------------------------------------------------------
  const               0.586985     0.0482495    12.17    7.84e-09 ***
  Economicfreedom    -0.000848577  0.000610458  -1.390   0.1862
  EducationSpendin~   0.561628     0.271011      2.072   0.0572   *
  Currenthealthexp~   0.611895     0.324698      1.885   0.0804   *
  TaxrevenueofGDPU~   0.540818     0.115820      4.669   0.0004   ***
  Dummyvariable      -0.00156452   0.00753761   -0.2076  0.8386

Mean dependent var   0.752150   S.D. dependent var   0.019701
Sum squared resid    0.000995   S.E. of regression   0.008430
R-squared            0.865097   Adjusted R-squared   0.816917
F(5, 14)             17.95564   P-value(F)           0.000012
Log-likelihood       70.70774   Akaike criterion    -129.4155
Schwarz criterion   -123.4411   Hannan-Quinn        -128.2492
rho                 -0.179317   Durbin-Watson        2.339651

Excluding the constant, p-value was highest for variable 4 (Dummyvariable)
```

Source: author compilation

As it can be seen from Figure 19, the regression is generally significant, because P-value (F) < 0.05, R ^ 2 (determination coefficient) is quite high and equal to 86,5%, which

indicates a high level of explanatory power of the model. However, it is well seen that variables Economic freedom and Escalation of military conflicts in Ukraine are not significant and can be removed from the model. So, the final model results are presented in Figure 20.

Figure 20. Results of OLS, using observations 2001-2020 Model 2 (Final)

```
Model 8: OLS, using observations 2001-2020 (T = 20)
Dependent variable: HDI

                      coefficient  std. error  t-ratio   p-value
  ---------------------------------------------------------------
  const                0.545078    0.0373679   14.59    1.16e-010 ***
  EducationSpendin~    0.587765    0.240195     2.447   0.0263    **
  Currenthealthexp~    0.544701    0.282880     1.926   0.0721    *
  TaxrevenueofGDPU~    0.541617    0.0978472    5.535   4.52e-05  ***

Mean dependent var    0.752150   S.D. dependent var    0.019701
Sum squared resid     0.001140   S.E. of regression    0.008441
R-squared             0.845415   Adjusted R-squared    0.816430
F(3, 16)              29.16762   P-value(F)            1.01e-06
Log-likelihood        69.34586   Akaike criterion     -130.6917
Schwarz criterion    -126.7088   Hannan-Quinn         -129.9142
rho                   0.060293   Durbin-Watson         1.876437
```

Source: author compilation

Adjusted R-squared is 0.8164, which mean that the variables in the model explain it on 81.64% and since it's higher that 60% - the model is acceptable.

As P-value (F) is 1.01e-06 which is lower than the commonly used significant level 0.05, then we can reject the Ho of F-test, asserting that model is insignificantly, hence the model is statistically significant.

Hence the following results can be made:

1. If the Education Spending increases by 1 pp. of the GDP share, Human development index decreases by 0,587 units;
2. If the Current health expenditure increases by 1 pp. of the GDP share, human development index increasing by 0,544 units;
3. If the Tax revenue increases by 1 pp. of the GDP share, human development index increases by 0,541 units.

4.7.2 Verification of the estimated model

Since all three values are greater than significant level, all three values are in a harmony, meaning that we can't reject H0 of Breusch-Godfrey test – no autocorrelation for residuals.

Figure 21. Presence of autocorrelation (Breusch-Godfrey test)

```
Breusch-Godfrey test for first-order autocorrelation
OLS, using observations 2001-2020 (T = 20)
Dependent variable: uhat

                     coefficient   std. error   t-ratio    p-value
  ---------------------------------------------------------------
  const               -0.000234512  0.0385202   -0.006088   0.9952
  EducationSpendin~    0.000181048  0.247532     0.0007314  0.9994
  Currenthealthexp~    0.0293872    0.313284     0.09380    0.9265
  TaxrevenueofGDPU~   -0.0107489    0.109219    -0.09842    0.9229
  uhat_1               0.0722415    0.282034     0.2561     0.8013

  Unadjusted R-squared = 0.004355

Test statistic: LMF = 0.065610,
with p-value = P(F(1,15) > 0.0656104) = 0.801

Alternative statistic: TR^2 = 0.087100,
with p-value = P(Chi-square(1) > 0.0870995) = 0.768

Ljung-Box Q' = 0.0841583,
with p-value = P(Chi-square(1) > 0.0841583) = 0.772
```

Source: author compilation

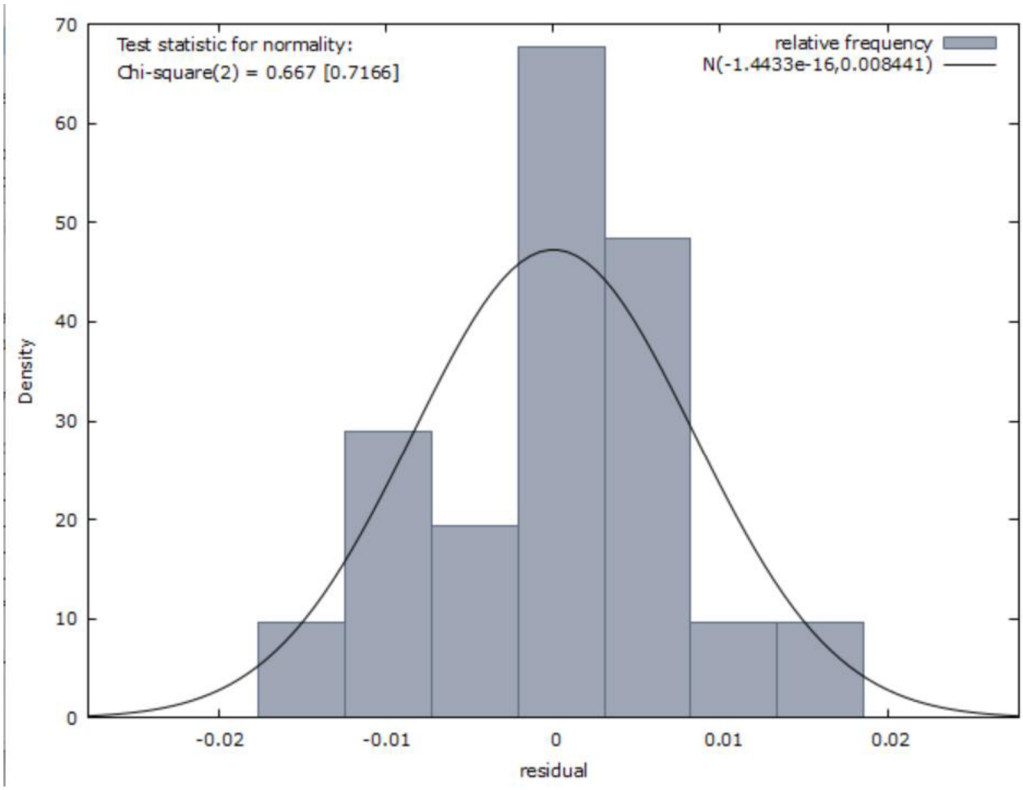
Figure 22. Homoscedasticity (White test)

```
White's test for heteroskedasticity
OLS, using observations 2001-2020 (T = 20)
Dependent variable: uhat^2

                     coefficient  std. error  t-ratio   p-value
  ---------------------------------------------------------------
  const               -0.00906705  0.00846740  -1.071    0.3094
  EducationSpendin~    0.0623258   0.0724673    0.8601   0.4099
  Currenthealthexp~    0.207047    0.275268     0.7522   0.4693
  TaxrevenueofGDPU~   -0.0281307   0.0503344   -0.5589   0.5885
  sq_EducationSpen~   -0.252827    0.301432    -0.8388   0.4212
  X2_X3               -0.570844    1.57738     -0.3619   0.7250
  X2_X4                0.266566    0.345561     0.7714   0.4583
  sq_Currenthealth~    0.0254918   0.463744     0.05497  0.9572
  X3_X4               -0.732778    0.586805    -1.249    0.2402
  sq_TaxrevenueofG~    0.122357    0.105886     1.156    0.2747

  Unadjusted R-squared = 0.341111

Test statistic: TR^2 = 6.822215,
with p-value = P(Chi-square(9) > 6.822215) = 0.655623
```

Source: author compilation

As a p-value of White-test is higher the 0.05, we can't reject the H0 => heteroskedasticity not present.

Figure 23. Normality of the residuals



Source: author compilation

As a p-value is higher the 0.05, we can't reject the H0 => error is normally distributed.

4.7.3 Findings

As it follows from the conducted studies education spendings, health expenditures and tax revenues are strongly influencing the economic development in Ukraine.

It should be noted that the main and priority indicator in assessing the quality of the population is health, on which not only the well-being of society, but also the economic success of the state depends. This indicator largely depends on many factors, such as the level of the environmental situation, the ongoing socio-economic policy, and a number of demographic characteristics. There is a strong relationship between health, as measured by life expectancy at birth, and per capita income. A high level of health, significant investments in health care and its availability have a positive effect on the income level of the population.

This is primarily expressed through the high productivity of employees and the quality of work performed, which leads to an increase in the country's economic growth.

Government spending, by redistributing income through the tax system and social transfers, increases consumer demand and promotes economic growth. However, as government spending increases, signs of its negative impact begin to grow. This is an increase in the tax burden, hence the decrease in the rate of savings and investment. The desire to hide income expands the shadow economy. It should be noted that the growth of public spending without increasing taxes is accompanied by a chronic budget deficit and creates conditions for inflation. A certain stock of health, knowledge, human skills that are used in the field of social production, acting as human capital in macroeconomics, is the main factor and strategic resource for the economic development of the state. It boosts productivity and income.

5 Results and Discussion

5.1 Main outcomes of the research

Based on data on the volume of exports of goods and services from Ukraine in 2001 and 2020, the following conclusions can be drawn:

- the main groups of export goods in 2020 were agricultural products and metals, compared to 2001, exports shifted to agriculture, in 2001 the share of metal exports was 42%, while in 2020 it was only 18.5%;
- in 2020, the main groups of import goods were machinery and technical equipment, as well as mineral products, in comparison with 2001, imports became more deficient, in 2001 the share of mineral products in imports was 43%, while in 2020 the main groups of goods steel machinery (21%), mineral products (16%) and chemical products (14%).
- in 2020, China became the main foreign export of Ukrainian exports with a share of 14%, while in 2001 the first place in Ukrainian exports was occupied by Russia with a share of 23%.
- the main exporter for Ukraine in 2001 was also China (15%), while in 2020 - Russia with a share of 37%.
- Ukraine's comparative advantage during the studied period decreased in the group of metals and products made from them in 2020 compared to 2001, while it increased in the group of products of plant origin.
- Ukraine economic development (expressed in HDI) is influenced by the education spendings, health expenditures and tax revenues. It should be noted that the HDI is certainly a significant, but not an ideal indicator, which was recognized by its creators: in particular, the disadvantage of this index is the use of average values that hide the uneven distribution of benefits and therefore may not reflect the real situation in countries where income asymmetry is significant.

Foreign trade policy has always played an important role in the development or decline, prosperity or, on the contrary, poverty of any country.

This was especially true of states with a high share of imported goods in consumption or exported goods in their own production. It was through active foreign trade that the wealthiest countries in Europe, and then the world, rapidly developed and acquired their wealth. It also stimulated colonial division, and later attempts to redistribute the world. And

in principle, nothing has changed over the past centuries: the place of a certain country in the international division of labor still determines its position in the world and the level of wealth of its citizens.

Therefore, both in the 20th and 21st centuries, the struggle to gain or maintain a more attractive place in the interdependent world economy remained among the priorities of those states that maintain or strengthen their economic positions. Conversely, those who do not pay due attention to the relevant problem or simply ignore it, lose rapidly. They turn into donors, supplying the simplest components for production (raw materials, energy, labor, less profitable simple goods) to others. And Ukraine is consistently pushed into this last group — donors for others.

5.2 Orientation of Ukrainian imports

Last year, Ukrainians spent almost UAH 1.5 trillion on imported goods. And the lion's share of the imports was made up of ready-made industrial goods. In addition, there is an indicated tendency to increase the specific weight of imports in consumption from year to year. If back in 2005 non-food products imported from other countries accounted for 42.4% of all sold in Ukraine, in 2020 their share has already exceeded 67%. In addition, if the majority of countries in the world import either what they cannot produce or extract independently (critical imports), or what is much more expensive to produce themselves than traditional suppliers, then in Ukraine a significant share of imported finished goods are those that can be produced in the country.

For example, the import of ready-made food products not only now significantly exceeds their export (in 2020 — $1.85 billion versus $1.29 billion, respectively). Recently, it has also been growing quite rapidly against the background of a decrease in the volume of exports of the corresponding products of Ukrainian production. And the increase in the production of agricultural raw materials for other countries also occurs at the expense of almost exclusively imported seeds, fertilizers, plant protection products, machinery and, of course, fuel for work. For example, the import of plant protection products and fertilizers for the agricultural sector alone cost $1.73 billion in 2020, and agricultural machinery was imported for another $1.1 billion. For comparison, the production of plant protection products in the country in 2020 was the equivalent of only $57 million, and agricultural and forestry machinery — $318 million.

The dynamics of foreign trade by individual industries over the past 20 years clearly demonstrates that the large-scale influx of imports suppressed domestic production. Either destroyed the existing ones, or at least excluded any possibilities for creating new production of goods needed by Ukrainians. For example, only the volumes fixed by customs (because the true value is often underestimated) of the import of light industry products from 2000 to 2020 increased more than 4.5 times — from $0.59 billion to $2.73 billion, and its production in Ukraine increased during this time only from $0.57 billion in 2001 to $0.88 billion in 2020. And that one is produced mainly according to donor schemes for European companies. The situation is even worse with various chemical products, where imports increased from $0.9 billion in 2000 to $7.3 billion in 2020. At the same time, the entire production of the Ukrainian chemical industry in 2020 was more than twice as small ($3.4 billion), and its exports from 2000 increased only from $1.5 billion to $1.9 billion.

Not the best trends with metal products. The import of finished products from ferrous metals to Ukraine last year almost equaled their export ($874 million and $879 million, respectively), although 20 years ago (in 2000) it was more than five times lower ($125.3 million and $653 million).

At the same time, more and more raw materials and workers were supplied abroad from Ukraine every year to pay for the import of finished industrial goods. Until recently, Ukraine was exporters of low-value-added industrial products, such as semi-finished metals, crude oil or electrical wiring. But the deepening of the trend, which has been outlined recently, threatens to turn Ukraine into an exporter primarily of grain, ore, oilseeds and wood materials with a minimal level of processing.

For example, under the conditions of the growth of foreign sales of grain and oil, according to the results of 2020, the export of Ukrainian dairy products decreased by 23%, beef - by 28.9%, sugar - by 30%, flour - by 36.6%, products of the fruit and vegetable industry - by 18.8%. Our mining and metallurgical complex is increasingly evolving from a producer of metal products to a supplier of raw materials for the metallurgy of other countries. Only according to the results of 2020, against the background of a significant increase in the export of iron ore raw materials by 24.7%, the sale of finished rolled ferrous metals from the country decreased by 20.7%, pipe products - by 23.6%. Meanwhile, over the past 20 years, earnings from the export of metal ores have increased almost 10 times — from $465 million to $4,423 million. Tens, if not hundreds of thousands of potential jobs in metallurgy and metalworking are being lost. and instead, not only more or less complex

metal structures are imported from other countries, but also ordinary screws, nuts, chains, wire, cables, ropes, gratings, nets, wrenches, saws, shovels, rakes, axes, table and kitchen items, plumbing equipment. At the same time, the problem of unemployment is worsening in the industrial cities of the Southeast.

Such changes in the structure and dynamics of foreign trade, on the one hand, are a good explanation, and on the other hand, they make dynamic economic growth in the country impossible. Ukrainians are increasingly forced to look for work in Europe, and our raw materials meet the rapidly growing needs of Asian countries. From where do more and more goods that Ukrainians buy come from. Therefore, our economy is constantly shrinking. For example, the gross domestic product (GDP) of Ukraine in 1999 was only 44.7% of the 1991 level, after partial recovery in 2008 to 81.4% of the starting level, after the end of another cycle of recovery growth and decline in 2020. In 2008, it was already at the level of only 66% from 1991 and 78% from 2008.

5.3 Mistakes done by Ukraine

And this downward spiral in the economy, when after each subsequent cycle of growth and recession over the past 30 years, Ukrainian economy has been in worse shape each time, and the majority of citizens have become poorer than they were before it began, is not an accident or a coincidence. This is a direct consequence of the fact that instead of encouraging and protecting its own production in highly profitable and highly dynamic sectors, the state remained passive in defending its economic interests for decades. Market was increasingly filled with goods produced in other countries

The vulnerability of the Ukrainian economy has increased dramatically since joining the World Trade Organization in 2008. Even before joining the organization, customs rates on a wide variety of goods were sharply reduced in Ukraine. However, at the time of accession to the WTO, they formed the basis of obligations regarding the so-called bound rates - the amount of tariffs agreed at the time of accession, which member countries of the organization cannot exceed in the future. At the same time, they turned out to be many times lower compared to developing countries, in particular Asian countries, which today are literally flooding the Ukrainian market with their finished industrial products. Thus, in bilateral trade, Ukraine found itself in unequal conditions from the beginning.

Optimistic forecasts regarding the results of Ukraine's accession to the WTO emphasized that it would lead to an increase in real incomes of citizens and an increase in

GDP. In addition, the review "Membership of Ukraine in the WTO: Overview of Obligations and Comments" prepared by the Institute of Economic Research and Political Consultancy in 2008 predicted that the changes in the structure of national production caused by the accession to the WTO will lead to "a redistribution of the labor force from sectors, whose positions will deteriorate, in particular as a result of increased international competition, in favor of industries that will benefit from the emergence of new opportunities for development." (Joint Statement from WTO Members in Support of Ukraine, 2008). After all, these changes in the structure of the economy and foreign trade in the time that has passed since then have indeed taken place. However, not for the better, but for the worse.

And despite the stereotypes that the Ukrainian economy allegedly suffers from a reorientation towards trade with the EU or the West, trade with the countries of East Asia naturally caused the greatest damage after joining the WTO. It turned out to be the most disproportionate in terms of commodity structure and actually turns Ukraine into a commodity colony.

Ukrainian officials have recently been publicly singing China's praises and hoping for benefits from further intensification of economic cooperation. At the same time, exactly how this cooperation grows is completely ignored. Therefore, it is hidden that its further increase mainly poses threats to Ukraine. The cumulative deficit of Ukraine's trade with China alone for the years 2009–2020 exceeded $42.7 billion. A similar situation, albeit on a smaller scale, occurred with other countries of the Asia-Pacific region (South Korea, Taiwan, Vietnam, the Philippines, Thailand). Recently, the situation really began to partially change: the volume of Ukrainian exports there grew faster, and the trade deficit decreased. However, the fascination with the rapid growth of gross volumes of exports of Ukrainian products to Asian markets is accompanied by ignoring the fact that that it occurs through the export of increasingly large volumes of raw materials and a decrease in the share of finished industrial products. Instead, as before, Ukraine receives finished products in exchange.

The average duty rate on goods imported in 2020 from the countries of East and Southeast Asia, according to data from the State Customs Service, was less than 3.7%. That is, it was entirely symbolic and clearly unable to create incentives for the production of appropriate products in Ukraine. With this level of customs protection or lack thereof, the availability of the Ukrainian market for Asian manufacturers is not much different from its availability for countries with which Ukraine has free trade agreements (in particular, with the EU). At the same time, the absolute majority of Asian countries still implement a policy

of restricting the access of finished goods to their domestic markets in order to support and protect their own producers. Almost all of them seek to form foreign trade relations based on their own interests: import of scarce raw materials and equipment, which they are not yet able to produce independently, and export of finished industrial or agricultural products with a higher added value.

On the other hand, in Ukraine, in the conditions of the insecurity of the domestic market from the influx of finished industrial products from Asian countries, there are no conditions for the development of new industries instead of old, declining industries. After all, production in Asia is already established and has obvious advantages due to the scale effect and various forms of export promotion by the states.

At the same time, the structure of our trade with the EU and, above all, its dynamics are much more favorable for the development of Ukraine's economy and its prospects in the future. Even now, the share of products of the Ukrainian manufacturing industry in supplies to the European market is much larger than the share of raw materials, and it is growing quite rapidly. At the same time, the supply of raw materials in Ukraine supplies to the EU, on the contrary, is decreasing, in particular thanks to quotas, which mainly limit such products. After all, Ukraine can be much more interesting as a production site for European industrial companies than for Chinese giants, which are usually only looking for sales markets for their already finished goods and raw materials for their production.

5.4 Improvements in the Ukrainian foreign trade situation

The situation in which Ukraine is today can be described as the suppression of the economic potential coming from the East (Asia) and unused opportunities for increasing exports in the West (primarily in Europe). It is from this that the new state policy on foreign trade should be based. Of course, it is necessary to take into account the current obligations of Ukraine within the framework of the World Trade Organization and other international agreements. However, it shouldn’t be forgoten that any agreements and participation in certain organizations make sense for Ukraine, like any other country, only as long as they are useful for it or it can defend its own interests within them.

The WTO toolkit provides certain opportunities to protect the Ukrainian market from sending goods from other member countries of the organization. However, the problem is that during the 13 years of membership in this organization, Ukraine has used such tools very passively. At the same time, the approach to trade cooperation with various partners

has long needed to be radically changed and one's own interest should be taken care of first and foremost. There is nothing wrong with being a major exporter of grain, oil or iron ore if the country already has the capacity to do so. But it is wrong to accept the role of a consumer of imported finished products in exchange only for the right to export the raw materials so necessary to other countries.

After all, in order to break out of the poverty and stagnation that Ukraine has been in for the past decades, long-term and significantly higher than the world average indicators of annual economic growth are needed. But neither the agricultural sector nor the extractive industry is simply unable to provide them for objective reasons. Only the dynamic growth of the production of a wide variety of ready-made industrial goods for domestic consumption and the increase of their exports can ensure such a result.

Therefore, the exit from the current trend of degradation and the transition to dynamic growth depends entirely on whether there will be a rethinking of state priorities in favor of supporting industries with a greater depth of processing and a specific weight of labor costs. It is futile to continue to hope that the situation will improve with the help of the invisible hand of the market. This will not happen - it has been proven empirically over the past decades. The gap between richer and poorer countries is deepening, providing competitive advantages not to those who bet on openness and hope for the invisible hand of the market, but to those who implemented a purposeful policy of protection and development of the national economy. Therefore, Ukraine's place in the international division of labor will depend on whether Ukraine will choose it with active efforts, or whether it will agree to

Instead of observing the inertial scenario of Ukraine's transformation into a kind of resource storehouse of mainly Asian states, the current role of the state should be to change this trend. Development of own production and domestic market should be at the center of the state policy regarding trade with other countries. Proactive economic diplomacy and the dependence of opportunities for manufacturers from other countries to sell finished products with high added value in Ukraine from the opportunity to sell significant volumes of finished Ukrainian products on the markets of the respective countries are important. Otherwise, the access of their goods to the Ukrainian market should be complicated by all possible means. In Ukraine's favor is the fact that the raw material structure of current Ukrainian exports is primarily oriented towards countries that are its large net importers, themselves are in dire need of it and are not interested in closing their markets to our suppliers. At the same time, many of them do not have a serious presence on the Ukrainian market, which today is

disproportionately flooded with products from a small group of countries whose markets are inaccessible to Ukrainian manufacturers of finished goods.

The success story of a new Ukrainian manufacturing small and medium-sized business has a chance to start with winning back a share in the domestic market. It is after the success in the domestic market and the necessary building a businesses that could talk about the exit of such domestic companies to foreign markets. A number of Asian countries, which were in much worse conditions 20-30 years ago, have secured a rapid rate of production expansion thanks to the attraction of licenses and technologies for not the newest product models. At the same time, they ensured a rapid rate of increase in production and employment and the income level of their citizens, creating an increasingly solvent domestic market and a business. At the same time, a different logic should work in relations with the European Union. A number of manufacturers, who in recent years have been actively increasing the supply of their finished products to the EU market, demonstrate that that here the state policy should consist in removing barriers and providing necessary resources for faster scaling of already existing and potential growth points. Much higher labor costs in Europe, acceleration of the process of bringing Ukrainian production to European standards, and state support for manufacturers of finished goods successful on the EU market are able to ensure rapid growth of exports, production, and employment in Ukraine.

6 Conclusion

International trade is an influential factor in economic growth. It is closely related to global financial flows, which causes an increase in the level of technology and management solutions.

A positive balance in foreign trade is evidence of the state's successful economic policy and realization of its innovative potential. In turn, this ensures an increase in the demand for qualified labour, reduces the unemployment rate.

The collapse of the socialist system was accompanied by a process of trade reorientation in most countries of the former socialist camp.

The leaders in this regard were the countries of Central and Eastern Europe, which quickly (since 1991) became associated members, and a little later (2004) full members of the European Union.

Unlike the CEE countries, in which immediately after the crash.

the socialist system began the process of reorientation, in Ukraine this process was more difficult. First, for a long time it was latent. Secondly, there were separate short periods of rapid reorientation, which were replaced by a reverse trend.

Thus, the period in the early 2000s was the first significant period of reorientation. However, it was replaced by a period of rollback. Finally, since 2013, a key period of reorientation began, when changes began to occur at a faster pace and directly affected exports, and not just imports, as was the case at the initial stage of the reorientation.

However, the problems of this period are associated with a violation of the trade balance, characterized by a gradual decrease in the temporary positive balance that has arisen. In addition to the chronic problems associated with the backward structure of production, new problems have arisen. Firstly, the export of standard products of Ukraine to the EU countries, the main trading partner, is subject to quotas, and duties have a deterrent effect on it.

Secondly, there was no restructuring of production, which makes it impossible to increase non-traditional exports. Thirdly, the reason for this can be called the lack of foreign investment, which is held back, among other things, by the military-political situation in which Ukraine finds itself, which is characterized by high risks. Thus, there is a disproportion between the development of foreign trade and the inflow of foreign investment.

The Ukrainian economy remains resource oriented. The country continues to sell abroad products with a low level of processing. Basically, these are iron ore, agricultural products and metallurgical semi-finished products.

On the other hand, in addition to energy products, the largest volume of imports in monetary terms falls on cars, mobile phones, agricultural and computer equipment.

That is, the country sells goods with declining potential: the more iron ore is mined, the more expensive the cost of further production will be.

But country imports goods with a growing potential: after the development of a new car or phone model, the cost of their production is constantly decreasing.

In addition, raw materials do not require a large number of jobs. In contrast to the production of value-added products, which involves the creation of technologies, production chains, attracting much more jobs.

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8 Appendix

Appendix 1. Commodity structure of foreign trade in goods 2001, 2020 in Ukraine

2001	Експорт/Exports	Імпорт/Imports	2020	Експорт/Exports	Імпорт/Imports
	тис. дол. США/thsd. USD	тис. дол. США/thsd.USD		тис. дол. США/thsd.USD	тис. дол. США/thsd.USD
I. Live animals and livestock products	454462,2	182523,8	I. Live animals and livestock products	1188164,7	1258069,2
II. Products of plant origin	693262,5	266116,5	II. Plant products	11883238,0	1989254,2
III. 15 Fats and oils of animal and vegetable origin	225474,6	86494,66	III.15 Animal or plant fats and oils	5746921,7	280378,5
IV. Products of the food industry	450611,2	590418,7	IV. Finished food industry products	3361028,2	2970635,4
V. Mineral products	1749771	6725303	V. Mineral products	5331642,8	8633264,9
VI. Production of chemical and related branches of industry	1478437	1126828	VI. Products of chemical and allied industries	2020105,1	7333672,6
VII. Plastics and rubber	256150,4	697213,2	VII. Polymeric materials, plastics and articles of them	682674,9	3403842,7
VIII. Leather and fur raw materials and products from them	129938,7	66283,23	VIII. Raw leather and curry leather	134656,7	242977,1
IX. Wood and wood products	229946,9	73179,63	IX. Wood and articles of wood	1411557,3	315573,4
X. Paper pulp of wood or other fibrous fibers	286824,2	538066,4	X. Paper bulk from wood or other vegetable fibers	403041,5	1099053,3

XI. Textiles and textile products	614223,9	646856	XI. Textiles materials and articles of textiles	778247,7	2291123,0
XII. Shoes, hats, umbrellas	84615,26	43786,2	XII. Footwear, hats umbrellas	165474,4	435971,0
XIII. Stone, plaster, cement, glass, asbestos products	141252,9	184679,2	XIII. Products from stone, gyps, cement	443248,6	741514,7
XV. Base metals and products from them	6720320	821049,7	XIV. 71 Natural or cultured pearls,precious stones, metals and preparations thereof	114389,0	162584,7
XVI. Machines, equipment and mechanisms; electrical equipment; sound recording and reproducing equipment, television equipment	1714241	2377878	XV. Base metals and preparations thereof	9029989,2	3129317,4
XVII. Means of land, air and water transport	548707,7	746131,7	XVI. Machines, equipment and mechanisms, electric and technical equipment	4486636,6	11552754,1

XVIII. Optical, photographic, cinematographic, measuring, medical and surgical devices and apparatus; watches, musical instruments	77464,07	260146	XVII. Ground, air and water transport facilities	756556,0	5743132,9
XIX. Various industrial goods	92955,23	113684,3	XVIII. Optical, cinematographic apparatus	162611,6	1272711,6
XX. 97 Works of art	11391,25	538,33	XX Different industrial products	1000840,1	1263633,1
Works of art	11391,25	538,33	XXI. 97 Art articles	558,0	3997,7

Source: Ukrstat.gov

Appendix 2. Data for the regression analysis

Date	HDI	Economic freedom	Hryvna/$ exchange rate	Dummy variable	Education Spending (% of GDP)	Current health expenditure (% of GDP) - Ukraine	Tax revenue (% of GDP) - Ukraine
2020	0,779	54,9	26,96	1	13%	9,70%	19,15%
2019	0,75	52,3	25,85	1	13,16%	7,10%	19,20%
2018	0,774	51,9	27,2	1	12,75%	7,52%	20,14%
2017	0,771	48,1	26,6	1	13,02%	7,43%	20,05%
2016	0,768	46,8	23,78	1	12,35%	7,55%	19,63%
2015	0,765	46,9	15,76	1	13,34%	7,78%	20,45%
2014	0,771	49,3	7,99	1	13,12%	7,19%	17,29%
2013	0,767	46,3	7,99	0	13,87%	6,94%	16,90%
2012	0,764	46,1	7,98	0	13,67%	7,12%	17,63%
2011	0,76	45,8	7,96	0	13,48%	6,82%	17,84%

2010	0,755	46,4	7,98	0	15,05%	6,81%	15,00%
2009	0,749	48,8	7,7	0	13,56%	6,61%	15,79%
2008	0,755	51	5,05	0	14,04%	5,50%	17,09%
2007	0,751	51,5	5,05	0	13,92%	6,02%	15,82%
2006	0,744	54,4	5,05	0	13,74%	6,42%	17,09%
2005	0,738	55,8	5,3	0	12,78%	6,35%	16,53%
2004	0,732	53,7	5,33	0	14,42%	6,17%	12,81%
2003	0,725	51,1	5,33	0	14,36%	6,55%	13,16%
2002	0,717	48,2	5,29	0	12,81%	5,99%	12,63%
2001	0,708	48,5	5,43	0	11,36%	5,73%	11,66%

Source: author compilation, based on Ukraine - Human Development index - HDI 2019, Ukraine Economy: Population, GDP, Inflation, Business, Trade, FDI, Corruption, Ukraine education spending 1997-2022 MacroTrends, Current health expenditure (% of GDP) – Ukraine, Tax revenue (% of GDP) – Ukraine, Official Hrivnya Exchange rates, National Bank of Ukraine