Czech University of Life Sciences Prague

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Master's Thesis

The Analysis of Foreign Trade in The Czech Republic

Case Study of Beer Exports

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DIPLOMA THESIS ASSIGNMENT

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Thesis title

The analysis of foreign trade in the Czech Republic – Case study of beer exports

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Objectives of thesis

The main aim of the thesis is to analyze the Czech exports with beer and their impacts on the Czech economy within the period 2010 to 2020. The thesis will consist of two parts, one theoretical and one analytical.

Methodology

Descriptive and comparative research methods will be used in the thesis. Quantitative approach that will help to analyze the beer industry in the Czech Republic, represented primarily by a linear regression model, where causal relationship between beer exports and other selected indicators will be studied based on the time series data covering 2010-2020 time. Causal-comparative research based on secondary data obtained from academic and scientific studies, as well as studies and reports from official organizations.

The proposed extent of the thesis

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Keywords

Czech Republic, beer, foreign trade, export, foreign exchange rate.

Recommended information sources

Foreign Direct Investment, Trade and Economics Growth: Challenges and Opportunities Author: Ahmed, Shahid Taylor & Francis Group 2013 ISBN: 9780415662130, 97813185816203.

Foreign Trade in the Present and a New International Economic Order Author: Dicke, Detlev CHR. Taylor & Francis Group 2019 ISBN: 9780367153403, 9780429690204

Transition Economies and Foreign Trade Author: Winiecki, Jan Taylor & Francis Group 2002 ISBN: 9780415253345, 9780203164594.

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Declaration

I declare that I have worked on my master's thesis titled " The analysis of foreign trade in the Czech Republic – Case study of beer exports" 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 31.03.2023 ______________________________

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The Analysis of Foreign Trade in the Czech Republic – Case Study of Beer Exports

Abstract

The economy of a country is heavily relying on foreign trade, which makes it an vital aspect to investigate. In this thesis, the focus will be on beer exports in the Czech Republic, the country who has a long tradition and a large market for beer. The analysis will cover the history of the Czech beer industry and how foreign trade has affected the overall Czech economy specifically, a case study of Czech beer exports to other countries which hopefully will provide valuable information on the impact of foreign trade on the Czech beer market.

this thesis examines the effect of beer exports on the GDP of the Czech Republic between 1999 and 2021.

There are two parts of this thesis: theoretical part and practical part.

In order to completely understand the importance, requirements, and goals of international trade, the theoretical section is devoted to providing an overview of it.

The practical part, which focuses on the Czech Republic, investigates the relationship between beer export volume and GDP from 1999 to 2021 and provides an overview of trade-related data for the country.

Gretl software is used to analyse the GDP of the Czech Republic, the volume of beer exports, and the exchange rate. Which is based on a model with a single equation. The model has also been validated economically, statistically, and econometrically.

Keywords: Czech Republic, Foreign Trade, Exports, Beer, breweries, GDP, Foreign Exchange Rate, Gretl.

Analýza Zahraničního Obchodu v ČR –

Případová Studie Exportu Piva

Abstraktní

Ekonomika země se silně spoléhá na zahraniční obchod, což z něj činí zásadní aspekt vyšetřování. V této práci bude kladen důraz na export piva do České republiky, země, která má dlouhou tradici a velký trh s pivem. Analýza se bude zabývat historií českého pivního průmyslu a tím, jak konkrétně zahraniční obchod ovlivnil celkovou českou ekonomiku, případovou studií vývozu českého piva do dalších zemí, která, doufejme, poskytne cenné informace o dopadu zahraničního obchodu na Český pivní trh.

tato práce zkoumá vliv exportu piva na HDP České republiky v letech 1999 až 2021.

Tato práce obsahuje dvě části: teoretickou část a praktickou část.

Pro úplné pochopení významu, požadavků a cílů mezinárodního obchodu je teoretická část věnována jeho přehledu.

Praktická část, která se zaměřuje na Českou republiku, zkoumá vztah mezi objemem vývozu piva a HDP v letech 1999 až 2021 a poskytuje přehled obchodních dat pro danou zemi.

Gretl software slouží k analýze HDP České republiky, objemu exportu piva a směnného kurzu. Který je založen na modelu s jedinou rovnicí. Model byl také ověřen ekonomicky, statisticky a ekonometricky.

Klíčová slova: Česká republika, zahraniční obchod, Export, pivo, pivovary, HDP, devizový kurz, Gretl.

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List of abbreviations

GDP	Gross Domestic Product
GVC	Global Value Chain
CZK	Czech Koruna
TTIP	Transatlantic Trade and Investment Partnership
NAFTA	North American Free Trade Agreement
TPP	Trans-Pacific Partnership
TOT	Terms of Trade
WTO	World Trade Organization

1. Introduction

Foreign trade has formed a focus in the research of the first economic thinkers, as various theories dealt with it mainly by subtraction and analysis, and it still occupies the thought of researchers and decision makers. Where theories abstract the economic event by isolating the few variables that affect the trade exchange process, so that the thinker can predict and interpret it.

The development of the global economy following the World War II is due to the development witnessed in foreign trade, thanks to the technological progress that has taken place and the efforts aimed at lifting barriers and restrictions on trade exchanges. The world is undergoing several transformations in terms of technological advancement, the information and communication revolution, the openness of global markets, whether financial markets or foreign trade, and the role played by multinational corporations in consolidating the phenomenon of globalization, which has become a defining characteristic of our era and has contributed to the expansion of trade exchange and the liberalization of the foreign trade sector. Where new ideologies and ideas emerged, as well as diverse ideas about the post-globalization world, multipolarity, and environmental sustainability.

There has also become an international consensus and agreement on the necessity of economic freedom, making market mechanisms the ones that determine balances without the intervention of states and governments, as well as liberating foreign trade from all restrictions that impede the flow of commercial exchanges between countries, and this is what most thinkers of theories explaining trade called for in the conclusion foreign affairs, and sought to establish a multilateral trading system.

The importance of the Czech Republic's export business is shown by the study of foreign commerce, notably a case study of beer exports. The Czech Republic, according to BarthHaas, is one of the world's top 20 producers of beer, and beer exports account for a sizable portion of the economy of the nation. (White, 2023). According to the research findings, the exportation of beer makes up a considerable portion of the Czech Republic's gross domestic product. However, a large percentage of the beer produced is consumed locally. The study also investigated the key elements that have contributed to the success of the Czech beer export industry, such as the exceptional quality and prestige of Czech beer, the advantageous geographic location of the country, and the competitiveness of its beer manufacturing sector. The study ultimately suggests that the Czech beer export industry is likely to continue prospering due to the rising demand for Czech beer in other nations, the country's favourable business conditions, and the growing desire for premium-quality beer worldwide.

2. Objectives and Methodology

2.1 Objectives:

The primary objective of the study is to emphasize the significance of foreign trade in the Czech Republic and to examine the influence of beer export on the country's gross domestic product as one of the macroeconomic factors, for the selected time series (1999–2021).

The study also aims to achieve the following objectives:

- Conducting research on the growth of foreign commerce in the Czech Republic.
- Comparing the development of the nation's beer exports between the beginning of the selected era and recent years.
- Assessing the contribution of beer exports to the Czech Republic's gross domestic product.

This paper will examine the advantages and disadvantages of international trade, as well as the strategies and policies that various nations may employ to advance or defend their economic interests on a global scale.

2.2 Methodology:

This thesis has been realized using a qualitative methodology. According to the research questions and the goal of this thesis, the approach was chosen to analyze the beer industry in the Czech Republic, represented primarily by a linear regression model, where causal relationship between beer foreign trade and other selected indicators will be studied based on the time series data covering (1999–2021).

The second part of the study focused on the causal-comparative research to examine the contribution of beer export on the gross domestic product (GDP) of the Czech Republic based on secondary data obtained from official organizations basically from the National Statistical Office of the Czech Republic. Using Gretl's one-equation modle test using econometric analiz over the time period (1999–2021) for the selected indicators.

3. Literature Review

3.1 Foreign Trade:

Foreign trade is recognized as an essential component for all nations, whether developed or developing. Foreign commerce connects nations and societies, and trade exchange between nations is a reality that the world cannot conceive of without. A nation's economy cannot exist in isolation from the rest of the world, just as it can be viewed as the conduit that connects nations and enables them to dispose of their surplus production (Krugman and Obstfeld, 2003).

International trade refers to the interchange of goods and services between nations or geographic regions. It entails the import and export of goods and services across international borders, allowing nations to obtain the goods and services they cannot produce themselves or at a lower price than if they were produced locally (Dixit and Norman, 1980).

International trade is crucial to a country's economic development in today's globalized world as it can boost economic growth, creates employment opportunities, raises the standard of living for the populace, and increases the competitiveness of domestic industries. Foreign trade also facilitates the specialization of production enabling nations to produce products and services with a comparative advantage and then exchange them for those that other nations produce more efficiently. Terms of trade is the difference between import and export pricescan have a substantial effect on a nation's economic health and balance of payments. However, international trade also presents challenges, including potential trade imbalances and their impacts on local industries (College, 2022).

Several essential foreign commerce concepts must be understood (Singh, 2012):

Exports, which refer to the products or services produced in one nation and sold in another, generate revenue from international markets.

Imports are products or services purchased from a foreign country and introduced into the domestic market in order to fill gaps in domestic production and provide customers with a greater selection.

The balance of trade, another important term associated with international commerce, defines the difference between a country's exports and imports. A nation has a positive trade balance if it exports more than it imports, and a negative trade balance if it imports more than it exports[1].

[1] https://corporatefinanceinstitute.com/resources/economics/balance-of-trade-bot/

Balance of Trade = Export Value - Import Value

- Trade surplus occurs when exports exceed imports resulting in a positive balance.
- Trade deficit occurs when exports fall short of imports resulting in a negative trade balance.

Tariffs are levied on imported products are commonly used used to protect domestic industries and increase employment. Tarrifs can be helpful in protecting domestic businesses, but on another hand, they can also result in higher prices for consumers and a decrease in domestic industries's worldwide competitivness.

The idea of free trade is essential to international commerce because it encourages the unrestricted movement of goods and services across international borders. Free trade can promote economic development and prosperity by enabling nations to specialize in the production of goods and services in which they have a comparative advantage, and then trade those goods and services with other nations (Hoekman and Nicita, 2011).

The foreign commerce commercial transactions can be categorized as follows:

❖ **Exchange of goods**: including consumer products, productive goods, raw materials, semi-manufactured goods, and intermediate goods.

❖ **Exchange of services**: including transport, insurance, shipping, finance, tourism, and other services.

❖ **Exchange of capital**: it also includes international loans and the transportation of capital for short- or long-term investment purposes.

❖ **Exchange of labour**: in addition to migration, labour exchange encompasses the movement of labor from one country to another.

3.2 Foreign trade History and Development

Foreign trade has a long and complicated history, extending back thousands of years to Mesopotamia, Egypt, and China, among other ancient civilizations where traders exchanged goods such as spices, textiles, and precious metals. Foreign trade has grown and developed over time in reaction to changes in technology, politics, and economic systems, and has played a crucial part in the growth of the global economy (Gomes, 1987).

The Silk Road, one of the earliest trading networks that encouraged the exchange of goods and ideas between these regions, was established between Europe and Asia throughout the Middle Ages.

It promoted the exchange of Eastern and Western cultural values while facilitating the sale of goods like silk, spices, and precious metals. These commercial routes between Europe and Asia were created between the second century BC and the eighteenth century AD. European explorers started visiting other continents, especially the Americas, in quest of brand-new business prospects.

Around the world, European countries started establishing colonies and trade posts in the 15th and 16th centuries, during the Age of Discovery. With coffee, tea, and sugar moving from the Americas and Africa to Europe and Asia as a result, a worldwide commercial network was established (Gomes, 1987).

Due to improved industrial capacity and simpler long-distance transportation, foreign commerce considerably rose throughout the Industrial Revolution in the 18th and 19th centuries. As nations strove to gain access to new markets for their commodities, this resulted in an expansion in global commerce.

The foundation of colonies by European countries for the purpose of resource extraction and the development of trade networks had a considerable impact on the development of global trade, mainly through the emergence of colonialism. Globalization and the adoption of more lenient trade regulations contributed to the expansion of international trade in the 20th century and improved the ease with which markets and firms could link throughout the world. Countries might specialize in manufacturing particular commodities and services to take advantage of their comparative advantages as transportation and communication technology advanced (Gomes, 1987).

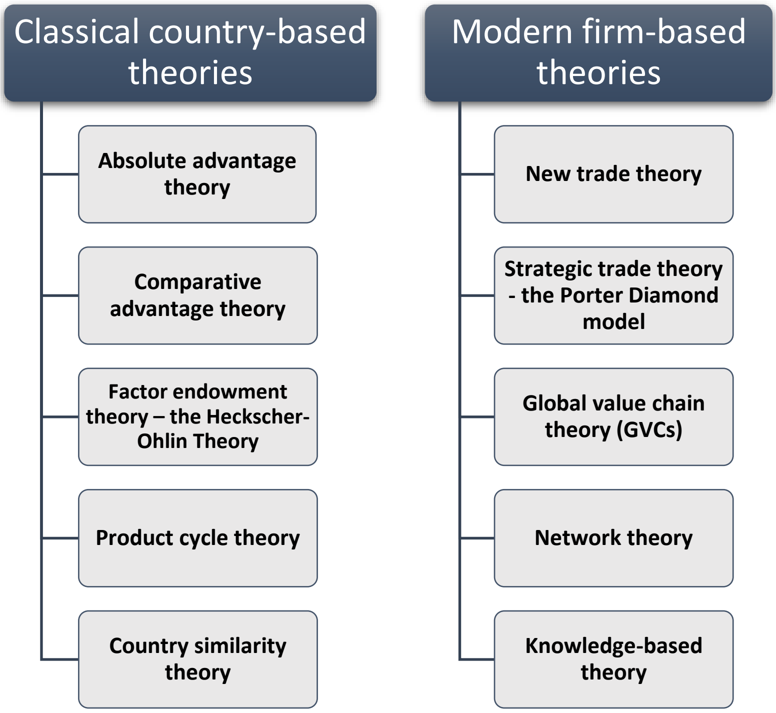
In modern times, international trade has become an essential component of the worldwide economy, with numerous nations exchanging trillions of dollars in goods and services each year. Despite its numerous advantages, foreign trade presents challenges such as trade imbalances and impacts on local industries. Governments have implemented policies to deal with these challenges, including measures to boost free trade and reduce barriers as well as protective measures for domestic industries such as tariffs and trade quotas. Policymakers must ensure that trade laws and strategies are flexible to adapt to the constantly changing global marketplace (Gomes, 1987).

3.3 Foreign Trade Theories

Foreign trade theories are economic theories that explain why countries engage in international commerce and how trade gains are dispersed across various groups within a country. Foreign trade theories have developed throughout time as the global economy and our knowledge of international commerce have changed (Jeníček and Krepl, 2009).

Each theory provides a unique perspective on the patterns and volumes of international trade, as well as the forces that drive them. Policymakers and business leaders can better comprehend the benefits and challenges of international trade by studying these theories and developing ways to maximize their benefits. Some of the key international trade theories are as follows:

Figure (1): Foreign Trade Theories



Source: own elaboration.

3.3.1 Classical Country-Based Theories

Traditional country-based theories of international trade describe trade patterns and outcomes in terms of the resources and characteristics of individual nations. These ideas have affected trade policies and continue to have an impact on economists' and policymakers' perspectives. The following are some of the main, historically grounded ideas of international trade (Bull, 1966):

A. Absolute advantage theory: This theory, proposed by Adam Smith in the 18th century, asserts that nations should specialize in manufacturing goods in which they have an absolute advantage or in which they are able to generate a good more efficiently than another nation, i.e. at a lower cost. Thus, nations can boost their productivity and engage in international commerce to acquire goods they cannot produce as efficiently. According to this hypothesis, specialization and absolute advantage-based free trade would increase the output and prosperity of all trading nations (Bull, 1966).

B. Comparative advantage theory: This theory, developed by David Ricardo in the early 19th century as a development of Adam Smith's absolute advantage theory, asserts that nations should specialize in producing goods for which they have a comparative advantage, or for which they can produce them at a lower opportunity cost than another nation. By doing so, nations can increase their efficiency and engage in international commerce to acquire goods they cannot produce. Competitive advantage enables greater specialization, lower manufacturing costs, greater total productivity, and prosperity for all trading nations (Jeníček and Krepl, 2009).

C. Factor endowment theory – the Heckscher-Ohlin Theory: This theory argues that countries should specialize in producing goods that use their abundant factors of production, it postulates that a country's factor endowments, such as labour, land, and capital, determine its trading patterns. By doing so, countries can increase their efficiency and trade with other countries to obtain goods that use their scarce factors of production (Bull, 1966).

D. Product cycle theory: This theory, developed by Raymond Vernon in the 1960s, argues that the pattern of trade changes as a product moves through its life cycle. Initially, a country with a strong innovation capability will be the primary exporter of the product, but as the product matures, production will shift to other countries with lower labour costs. The notion believed that the new product's manufacture would take place entirely in the nation where it was invented (Jeníček and Krepl, 2009).

E. Country similarity theory: This theory, proposed by the economist Stefan Linder in 1961 to describe the notion of commerce in the train sector, this theory argues that countries with similar levels of per capita income and tastes will trade more with each other. This is because they will demand similar products and will have a similar ability to produce and supply these products (Bull, 1966).

Implications and Criticisms on country-based theories

The influence of country-based theories on creating trade policies and guiding the thinking of economists and politicians has persisted for decades. According to these views, specialization and free trade can result in better economic progress and prosperity for all nations engaged in international trade. Yet, these theories have also been criticized. For example, some argue that comparative advantage assumes that commerce is based on the free movement of goods and factors of production, which may not be the case in reality due to variables such as tariffs, quotas, and other trade barriers (Paliu-Popa, 2009).

3.3.2 Modern Firm-Based Theories

The main topics of modern firm-based theories of foreign trade is the importance of individual enterprises in international trade and how their choices impact trade patterns and outcomes. The following are a few of the main firm-based theories of international trade (Biggart and Hamilton, 1992):

A. **New trade theory:** this theory was developed in the 1980s by Paul Krugman and others and it emphasizes the importance of economies of scale and product differentiation in international trade, according to this hypothesis economies of scale enable large enterprises to create products more effectively than smaller firms and sell these products at lower prices. In this context, Global production networks can help businesses benefit from economies of scale in this situation by producing goods in many locations and assembling them in another ones. Contrarily, product differentiation enables businesses to demand higher prices for their goods and engage in intra-industry trade, where nations specialize in producing several product versions (Biggart and Hamilton, 1992).

B. **Strategic trade theory – the Porter Diamond model:** established in the 1990s, this theory developed by economists such as Paul Krugman and Michael Porter argues that governments can use strategic trade policies, such as subsidies or tariffs to support domestic firms in high-tech industries by doing so governments can help these firms achieve economies of scale and become more competitive in the global marketplace. This theory asserts that a country's competitiveness in a given industry is dependent on four factors: factor conditions, demand circumstances, related and supporting industries, and firm strategy, structure, and competition. According to this hypothesis, countries might get a competitive advantage in a specific industry provided they have favourable conditions in these four factors. A country with a trained workforce, a business-friendly environment, and robust allied sectors, for example, may be more competitive in the high-tech industry than one that lacks these qualities (Biggart and Hamilton, 1992).

C. **Global value chain theory:** This theory has recently become an integral part of international trade it basicaly emphasizes the importance of understanding the complex network of relationships between firms that comprise global supply chains, it also entails the dispersion of manufacturing processes among various nations and companies, with each company specializing in a specific stage of manufacturing. Firms who can properly manage their position in the global value chain (GVCs), according to this theory, can boost their competitiveness and profitability, with GVCs, businesses can benefit from economies of scale, cut production costs, and enter new markets, GVCs can also have an impact on labor markets by causing production to be outsourced to low-wage countries and jobs to be displaced in high-wage ones (Biggart and Hamilton, 1992).

Implications and Criticisms on modern-based theories

Contemporary firm-based theories have consequences for trade policies and the function of corporations in international commerce. The New Trade Theory posits that measures that promote economies of scale, such as investments in infrastructure and research and development, can facilitate international trade. The Porter Diamond Model proposes that policies that improve factor circumstances, demand conditions, related and supporting industries, and firm strategy, structure, and competition can increase a nation's competitiveness in a certain industry. GVCs have consequences for labour markets, as well as for the role of firm-level decisions in international trade. Yet, these theories have been criticized as well. For instance, some contend that the New Trade Theory is too narrow and does not account for the diversity of corporate strategies in international commerce (Jeníček and Krepl, 2009).

The Porter Diamond Model has been criticized for its failure to account for the influence of government policies in fostering industry competitiveness. GVCs have been criticized for fostering a race to the bottom in labour standards and displacing jobs in high-wage countries.

3.4 Importance of Foreign Trade

Foreign trade has a major role at the level of the local and international economy, and the level of foreign trade is considered an indicator of economic growth in it, which is reflected in the various social, scientific and political aspects in the country. The main objective of foreign trade is the exchange of goods and services between countries, due to the scarcity of those goods in the importing countries, and it entails benefits that are reflected in turn on the various social and political aspects of societies, and perhaps the most prominent of them is its ability to find or provide the following as mentioned by (College, 2022):

1) More Job Opportunities. In addition to the employment options offered by a career in international commerce, the industry also contributes to the creation of jobs as companies extend their potential markets. As the accessible market expands and market share rises, manufacturing and service capacities will inevitably expand as well.

2) Expansion of Target Markets and Revenue Growth. Diversification of markets is one of the key reasons for establishing international trade. Domestic markets might be limited in size and scope, and they may not generate sufficient demand for a nation's goods and services. By entering international marketplaces, nations can get access to new markets and extend their client base.

As stated in the preceding advantage, when companies extend their target markets and demand increases, more employment are produced. In addition to creating jobs, a bigger target market allows businesses to manufacture without worry of overproduction, as any surplus products can be exported. Each additional country added to a company's list presents extra chance for expansion to its business and growth in the revenue.

3) Improved Risk Management. In addition to the employment options offered by a career in international commerce, the industry also contributes to the creation of jobs as companies extend their potential markets. As the accessible market expands and market share rises, manufacturing and service capacities will inevitably expand as well. The eventual outcome is that there are more job options for the working class.

Foreign Trade also encourages market diversification, which can lessen the risk of over-reliance on a single market. By entering new markets, nations can lessen their reliance on a single market and diversify their exposure to risk.

4) Greater Selection of Available Goods. Trading globally affords consumers and nations the option to acquire goods and services that are either unavailable or more expensive to create locally.

A simple trip to a local grocery or electronics store demonstrates the significance of foreign trade in a short amount of time.

5) Better international relations. The economic interconnectedness of nations resulting from international trade can result in robust collaboration in other areas. When nations participate in extensive trade, they are more likely to avoid war in other areas.

6) Improved Business Reputation. Trading internationally can enhance a company's reputation on the international market. When a corporation is successful conducting business in one country, it can have a substantial impact on its success in neighboring and surrounding countries. Although difficult to quantify, the increase in firm credibility can have a significant influence when a region as opposed to individual countries is targeted.

7) Possibilities for Specialization. By participating in international marketplaces, businesses may have the opportunity to specialize in a certain field to service a specific market. When a country cannot produce an item or service efficiently, it may attempt to acquire it through international trade. These possibilities to specialize frequently result in better production efficiency, innovation, and quality of development. This may give companies with a long-term competitive edge and global market share expansion.

The advantages of international trade are pervasive. When you go to the shop and purchase South American coffee or wine, for instance, you directly experience the benefits of international trade. The same rule applies while using social networking apps on a mobile device or streaming your favorite movie or television show on a PC.

International trade creates employment possibilities, adds favorably to the economy, provides enterprises with many avenues for growth, and even helps to improve relations between nations. Furthermore (Verter, 2015):

- Foreign trade works to mobilize and develop funds and increase the capital that is produced through foreign commercial work.
- Foreign trade is a major source of obtaining major or rare foreign currencies, which enhances the country's ability to obtain cash liquidity, which is one of the pillars of economic operations, especially financing and investment operations.
- Foreign trade works on the development of economic activities, whether productive, consumer or service, and this is done by activating the commercial movement in those economic sources resulting from export or import operations.

- Foreign trade results from exports, a financial return that can be used as a financing source for development projects, or services that the country needs, which is called current spending.
- The state is trying through foreign trade to find a kind of balance in its economic situation. There is no doubt that if exports increase, they work to create a balance with imports, especially if the imports are growing steadily.
- Balanced foreign trade works to bring about balance in the balance of payments through the requirements imposed on the state and the revenues it achieves. It works to reduce the deficit and imbalance if it balances with exports.
- Securing the needs of developing countries is one of the basic requirements for economic development, such as capital, technology, foreign currency sources, and modern management that helps revitalize the various economic sectors in the national economy.

The importance of foreign trade varies from one country to another according to the level of its economic development and the availability of production factors, where the importance of foreign trade decreases in large countries with huge potentials, because they can produce the bulk of their needs locally. But it can raise the level of well-being of its members by obtaining a larger amount of commodities produced by it and other countries at a relatively lower cost. On the contrary, its importance increases in small countries, so it specializes in producing a limited number of goods and services and depends on the outside to import the bulk of the goods and services it needs. The importance of trade for the same country varies from one period of time to another according to the trade policy that it applies towards the outside world (College, 2022).

The emergence of foreign trade solves the problem of the inability of countries to act on their own to achieve self-sufficiency in goods and services due to their inability to produce this commodity, either for reasons related to the nature of the goods or the lack of capital, technology, or modern management in some countries to produce them at a lower cost.

3.5 Reasons for Establishing Foreign Trade:

The explanation of the reasons for the establishment of foreign trade is due to the main reason represented by the roots of the economic problem, due to the limited economic resources compared to the different uses of them in satisfying renewed and increasing human needs, in addition to the optimal exploitation of existing resources, in addition to other reasons, the most important of which are the following as mentioned by (Jeníček and Krepl, 2009):

1) Diversification of Markets: Domestic markets might be limited in size and scope, and they may not generate sufficient demand for a nation's goods and services, nations can get access to new markets and extend their client base by entering international marketplaces, foreign Trade also encourages market diversification, which can lessen the risk of over-reliance on a single market. By entering new markets, nations can lessen their reliance on a single market and diversify their exposure to risk.

2) Access to Unavailable Domestic Raw Materials, another motive for international trade is to acquire access to domestically unavailable raw materials where many countries do not have the resources necessary to produce certain goods and services, and they must rely on imports from other countries.

3) Competitive Advantage: Foreign trade also provides countries with a competitive advantage as nations have a comparative advantage in manufacturing particular goods and services, allowing them to do it more efficiently and at a cheaper cost, this allows them to sell their products at a lower price, which can give them an advantage in the international market.

4) Economic Growth: Foreign commerce can also contribute to economic growth by providing jobs and generating cash by entering overseas markets where businesses can boost their revenue and profitability leading to job creation and economic expansion which can have a positive effect on a nation's economic performance as a whole.

5) Access to New Technologies: Foreign trade can also provide countries with access to new technologies that may not be available domestically which helps improve productivity and efficiency that definitely leads to economic growth.

6) Increase in Exports: The basic objective of creating international trade is to boost exports which can be accomplished through entering new markets and boosting demand for a nation's goods and services where countries can produce cash and create jobs by expanding exports, which can have a favorable effect on the economy.

7) Unequal distribution of production elements among different countries of the world, which results in the country's inability to achieve self-sufficiency in locally produced commodities.

8) The varying costs and prices of factors of production and the local prices of each country, which leads to a decrease in the production costs of commodities in the water country compared to the high costs of producing the same commodity in another country.

9) Different tendencies and tastes resulting from the qualitative preference for a commodity with international specifications.

10) The strategic and political reasons represented in achieving political influence through the relative scarcity of the produced and traded commodity globally.

11) The difference in the level of technology used in production from one country to another, which results in a difference in the optimal use of economic resources, as well as the different tendencies and tastes of consumers and their preference for some goods and services over others.

12) International specialization in the production of commodities that enjoy a comparative.

13) advantage in their production and quickly replace them with others produced by other countries, in which those countries enjoy the advantage in their production. This specialization results in the establishment of large projects, which leads to cost reduction because of economies of scale.

3.6 Risks of Foreign Trade

In an over article shared by Soumya Singh there are seven disadvantages of Foreign Trade[2]:

1) Economic dependence: Dependence on other countries for exports and imports can give trading partners disproportionate leverage over smaller, dependent countries. It can impair prices, manufacturing, and trade decisions.

Economic dependency can also hinder a nation's industrial development where reliance on imported goods may discourage a nation from developing its manufacturing sector, it also reduces innovation, competitiveness, and domestic worker employment. It also can affect politics, a country that is economically dependent on another may be more likely to cooperate with its trading partner's demands and policies, even if they are not in its best interest which threatens sovereignty and global influence.

[2] https://www.preservearticles.com/education/what-are-the-disadvantages-of-foreign-trade/21487

2) Restricted growth of home industries: The production of goods and services within the country helps to provide a solid base for economic growth and stability, yet foreign trade can be a hindrance to this development, as goods produced abroad may be cheaper than those made domestically, and thus people may choose to purchase the imported product over the local one. This can reduce demand for domestic goods and services, leading to a decrease in the number of individuals employed in the industry, and ultimately a decrease in the output of such goods and services.

3) Misuse of natural resources: A country's excessive reliance on foreign income which could be caused by excessive exports, leading to economic and environmental issues where the excessive exports can place a significant pressure on a country's resources, resulting in a decline in the export quality of those resources this limits a country's ability to profit from its natural resources and can possibly lead to their depletio which is particularly true for nations that export oil, gas, and lumber.

4) Political exploitation has the significant effect of restricting a nation's ability to engage in international trade it is because political exploitation encourages nations to pursue policies that benefit their own interests rather than those of their trading partners, for instance, a country may impose taxes on imports of a particular product to discourage imports and stimulate domestic production, or they may impose export restrictions on raw materials or sensitive technology that a country relies on for economic growth and development.

5) Import of harmful goods as foreign trade may involves importing dangerous goods that can have a variety of negative repercussions, these commodities may pose health risks to the country's citizens, as well as to animals and the environment which can result in greater healthcare and environmental clean-up expenditures for examples imporitng weapons and drugs.

6) Rivalry among nations between nations can be resulted in increased tariffs, taxes, and other retaliatory measures, which can hinder international trade.

The continuing trade war between the United States and China is one of the most notable examples of the impact of interstate competition on overseas trade. In 2018, the United States placed tariffs on $250 billion worth of Chinese imports, prompting China to retaliate, the Chinese government in retrun, placed duties on American goods worth $110 billion, as a result of this, trade between these two countries has dropped by a lot, and American companies have been hit the hardest by the tariffs.

7) Invasion of culture. We have seen how foreign trade is important to the global economy, yet it can destroy a nation's culture. Foreign goods and services may expose locals to new ideas. Cultural shifts may occur as young people become accustomed to foreign purchases and lifestyles.

This trend is widespread. Western clothing, gadgets, and culture have changed Indian culture. Young Indians watch international TV and movies and dress like Westerners.

This behaviour's consequences are concerning. Foreign cultures and goods can boost economic prosperity. Foreign trade often opens doors to foreign technologies, ideas, and investment.

International trade can also destroy local customs. Young people may respect their own culture less when they become accustomed to foreign spending trends. This may hurt national pride and identity.

Thus, governments must safeguard cultural values against foreign trade. Governments must regulate imports and preserve national traditions. Education systems must also teach children to value their own and other cultures[3].

3.7 International Specialization

Specialization is the tendency of nations to exchange specific commodities for other products, as opposed to producing all of their own consumption goods. Countries produce surpluses of their specialized products and trade them for other nations' surpluses. Traders determine whether or not to export or import a product based on its relative advantages (Gomes, 1987).

For example, two countries only produce two products each. Both parties are competent to manufacture both products, so they may choose to operate independently. By focusing on the product for which each nation has a comparative advantage and then engaging in commerce, both nations could consume more than they would independently.

However, the nation with the most efficient production of a particular good does not always choose to specialize in that good. Comparative advantage, not absolute advantage, fuels specialization. When nations choose which products to specialize in, the deciding factor is which nation can produce the product with the lowest opportunity cost. Opportunity cost refers to the sacrifices made to acquire a specific item. It requires determining what could have been obtained if a different product had been produced as opposed to the one provided. Due to the competitive advantages offered by international specialisation, the current global trade climate has compelled a number of nations to increase their emphasis on it. By specializing in specific industries, nations can

[3] https://www.preservearticles.com/education/what-are-the-disadvantages-of-foreign-trade/21487

take advantage of economies of scale and the resulting cost savings associated with mass production. Additionally, specialisation can help nations reduce their dependence on imports, resulting in cost reductions (Kling, 2012).

For instance, Producer A incurs an opportunity cost of half a bottle of vinegar when purchasing one bottle of olive oil. This suggests that Producer A could have produced half a bottle of vinegar in the time it took him to produce a bottle of olive oil. While producing one bottle of olive oil, Producer B could have created a third of a bottle of vinegar. Producer B will have a comparative advantage in olive oil production because he will need less vinegar to generate the same amount of olive oil. In conclusion, the comparative advantage will accrue to the producer with the reduced opportunity cost. Consequently, Producer A has the comparative advantage in producing vinegar , while Producer B has the comparative advantage in producing olive oil (Gomes, 1987).

International specialisation is the process through which countries or regions concentrate on the production and export of particular goods or services while importing others. This method has existed for centuries and is still employed in many nations today.

There is a reciprocal relationship between foreign trade and international specialization, where foreign trade is closely linked to the phenomenon of specialization and division of labour at the international level. Without foreign trade, some countries would not have specialized in producing goods and services in quantities that exceed their needs. On the other hand, without specialization, each country would have only produced what it needed (Kling, 2012).

It is an accepted fact that whatever the nature of the political systems of states, they cannot follow a policy of self-sufficiency because they cannot live in isolation from other states, as states cannot produce all the goods and services they need, rather it requires that they specialize In the production of those commodities whose natural and economic conditions qualify them to produce them at lower costs and with higher efficiency, and then exchange their surplus with the products of other countries that they themselves cannot produce within their borders, or they can produce them but in quantities less than their needs or at high costs.

Foreign commerce is widely acknowledged as a key engine of economic growth and development in many nations. This is especially true for nations with robust international specialization strategies. For instance, countries with a high degree of specialization in particular industries, such as China in the manufacturing sector, have been able to achieve continuous economic growth as a result of the enhanced efficacy of their exports (Kling, 2012).

In addition, countries with a high level of specialization in particular industries can profit from enhanced access to international markets, technology and finance, which has accelerated their economic development. Specialization permits nations to target particular markets and change their strategy accordingly. This can increase export revenues, as governments can concentrate their efforts on the most lucrative markets. Moreover, it can also enhance innovation, as countries are better able to produce new products and services to fulfil the needs of the global market.

Specialization is the basis on which foreign trade is based. In other words, the phenomenon of specialization and division of labour between different countries is closely linked to the phenomenon of foreign trade (Kling, 2012).

According to the theory of specialization advocated by Adam Smith, if an individual specializes in performing one work and masters it, then his skill level will rise and thus increase his productivity and individual well-being, as Adam Smith and the followers of the classical school after him called for the adoption of it, and specialization naturally leads to the exchange between individuals and the specialization of countries It is based on the same principle, so if the individual benefits from his specialization and raises his level of well-being, why do countries not specialize in producing certain types of commodities and then exchange what informs their needs for other commodities from other countries?

3.7.1 Factors Affecting the Establishment of International Specialization:

There are four factors affeting the establishment of international specialization found in an article published on international trade[4]:

1) Natural conditions: The prevailing natural conditions in a country may lead it to specialize in the production of some raw materials or in agricultural or industrial activity.

2) The discrepancy in the supply of labour and capital: This factor is considered to be related to the nature of the production elements available in the country in abundance, as countries specialize in the production of commodities in which the productive element that is available in abundance is used in their production.

[4] https://socialsci.libretexts.org/

3) Transportation costs: This factor is related to the extent of the market expansion of the produced commodity, as well as the cost of production, as the proximity of production to shipping sites reduce the production cost of the commodity and thus reduce the export bill.

4) Availability of modern technology: What is meant is that the state has the precedence in using new technology, so that it becomes in a position to produce highly efficient goods and services.

3.8 Forms of Foreign Trade

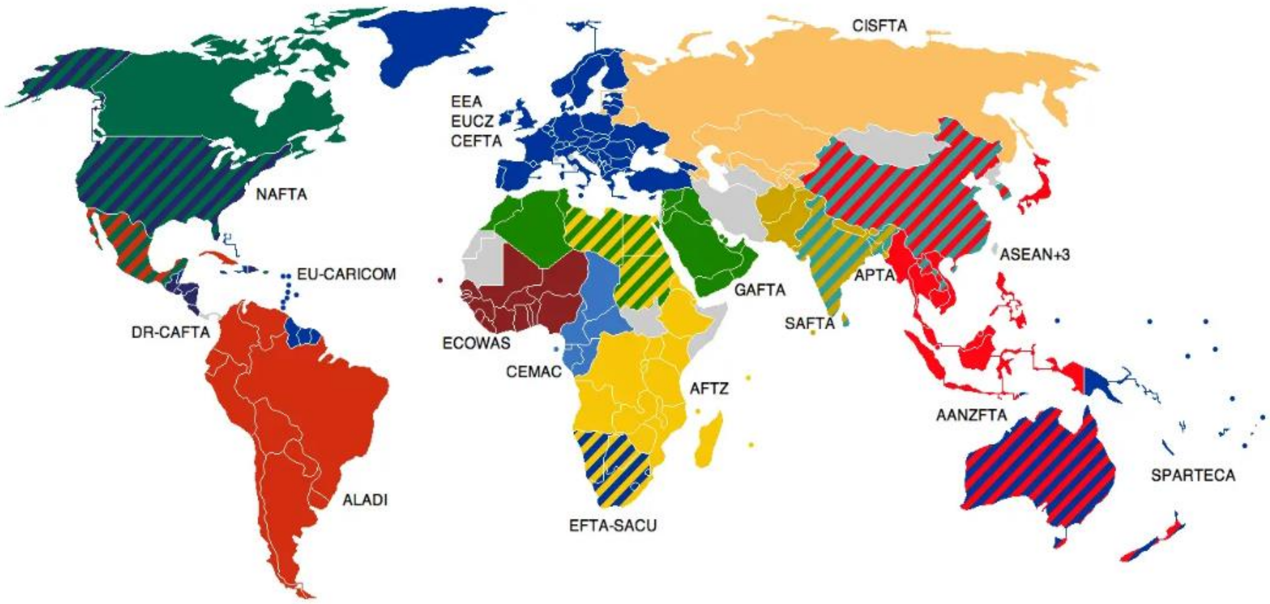
There are four prevalent types of overseas commerce: intra-industry trade, and inter-industry trade, bilateral trade, and multilateral trade (Barrie and Schröder, 2022).

1) Intra-industry trade refers to two-way trade in a given sector, it is mainly the exchange of goods and services between businesses within the same industry where a country may import specific components or raw materials for a product, which it subsequently exports to the same country or to others, intra-industry trade can be advantageous for nations because it enables them to take advantage of economies of scale, thereby lowering manufacturing costs and enhancing product quality. However, it can also result in increased competition among domestic firms, which can be difficult for smaller or less competitive businesses. for example, the United Kingdom both exports cars to Sweden and imports them. The European Community imports wheat from the United States and exports wheat to third countries (Barrie and Schröder, 2022).

2) Inter-industry trade refers to a one-way trade in a specific sector with the exchange of products and services between various industrie, in another word it is a trade of products that belong to different industries, as an example the trade of agricultural products produced in one country with technological equipment produced in another country can be classified to be an inter-industry trade, the inter-industry trade can be advantageous for nations because it enables them to capitalize on their comparative advantages, which is the premise that nations should specialize in the production of products and services that they can produce more efficiently and at a lower cost. However, market fluctuations and adjustments in global demand can impact inter-industry commerce (Barrie and Schröder, 2022).

3) Bilateral trade is the trade by which goods are being exchanged between two countries who agreed to reduce or eliminate; tariffs, import quotas, export restrictions, and other trade barriers to encourage trade and investment, this type of trade is usually governed through a trade agreement between the two countries that outlines the terms and conditions of their commercial partnership, these agreements can be benificial for both countries because they can lower trade barriers and incentivize trade. However, they are susceptible to political pressure and may not always be fair, especially for weaker or smaller nations.

Figure (2): Free Trade Areas



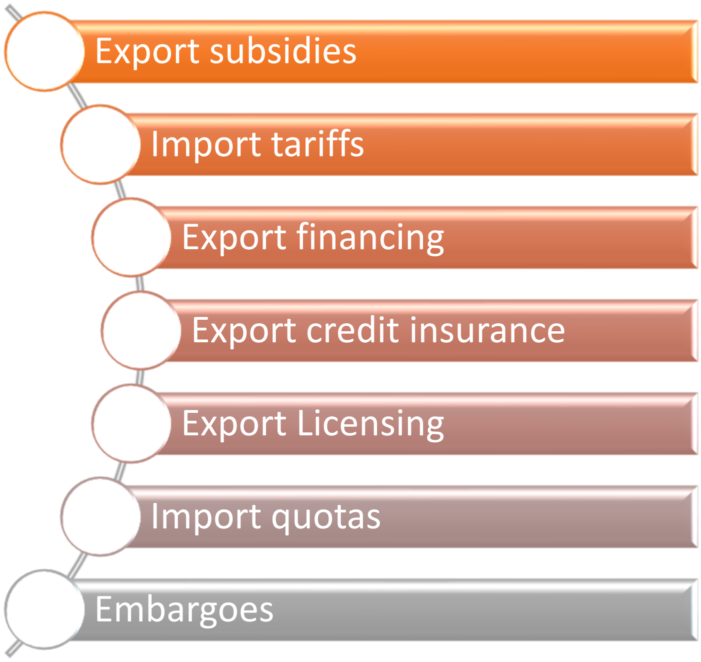
Source: www.economicshelp.org

3) Multilateral trade is the exchange of products and services among three or more nations. Multilateral trade agreements, such as the World Commerce Organization (WTO), are intended to encourage free and fair trade among nations. The WTO establishes a framework for trade discussions and dispute settlement and aims to eliminate trade obstacles and advance economic development. Even though multilateral trade agreements can be advantageous for all parties involved, they can be complex and challenging to negotiate due to the fact that each nation has distinct economic interests and goals (Barrie and Schröder, 2022).

3.9 Foreign Trade Instruments

The success of international trade largely depends on the country's ability to use various trade instruments effectively. These instruments are policies and strategies that countries use to facilitate international trade. In this part, seven foreign trade instruments used by countries, including export subsidies, import tariffs, export financing, export credit insurance, export licensing, import quotas, and embargoes will be discussed (Krugman and Obstfeld, 2003).

Figure (3): Foreign Trade Instruments



Source: own elaboration

1) Export Subsidies are financial incentives provided by the government to exporters these subsidies reduce the cost of production and make the exports cheaper which gives them more competitive in the international market, export subsidies are usually used to increase the volume of exports are often used by developing countries to gain larger market access.

2) Import Tariffs are taxes imposed on imported goods, these taxes are designed to protect domestic industries by making foreign goods more expensive, they are also used to generate revenue for the government. On the other hand, the import tarrifs may have negative impacts on the economy as they increase the cost of imported goods for consumers and can lead to retaliation from other countries and creat issue between the countries.

3) Export Financing is a strategy used by countries to provide financing to exporters this financing can be in the form of loans, guarantees, or insurance, export financing is used to encourage exports and reduce the risks associated with exporting.

4) Export Credit Insurance is a policy that provides insurance coverage to exporters against the risk of non-payment by the importer this policy reduces the risk of exporting and can increase the confidence of exporters to venture into new markets, export credit insurance is used to protect the exporters from the financial loss associated with non-payment by the importer.

5) Export Licensing is a policy used by countries to regulate the export of certain products when the governments impose it to ensure that the export of certain goods does not negatively impact; the national security, health, or the environment. They use the export licensing to monitor the export of sensitive technologies and products that could be used for military purposes.

6) Import Quotas are restrictions on the quantity of goods that can be imported these quotas are used to protect domestic industries by limiting the amount of foreign goods that can be imported, import quotas can be used to prevent market saturation and the dumping of foreign goods in the domestic market.

7) Embargoes, Countries use embargoes to prohibit the import or export of products to or from specific countries it is implemented for political and economic reasons, such as exerting pressure on a country to alter its behaviour or preventing the export of products that could be used for military purposes.

3.10 Economic Integration and Foreing Trade

In the economic history literature, the term economic integration first appeared with the economist (Viner 1950). From a linguistic standpoint, the term "integration" in the general context refers to the gathering of a group of vocabulary into a single entity, meaning the case in which the intended vocabulary is independent countries that seek to establish close relations among themselves, in which they act as though they were one entity, i.e. one country, and the number of countries in the region occurs. Regional integration refers to geographically specific integration. From a terminological standpoint, economic integration is defined as the process of integrating all integrated and declining economic sectors, as the process of economic integration is not limited to integrated economic sectors but also includes competing economic sectors[5].

Positive aspects of economic integration Countries are eager to establish regional economic blocs or to integrate into significant economic entities in order to obtain numerous benefits and gains, which are the real and direct motivation behind the establishment of such blocs and can be summed up as follows.

Economic integration is the foundation for strengthening the political forces of the congregated member countries and their influence in global politics and international organizations, whether in terms of addressing the world's most pressing problems in general or the developing world's problems in particular.

The term economic integration in economic theory refers to the process by which all obstacles to trade between the group of integrated countries are removed, most notably customs restrictions, as well as obstacles that impede the flow of money and labor between member states. In addition, the jihadism of these countries died from Coordinating and creating harmony between the different economic policies, so that in the end they be consistent.

Advantages of economic integration:

Countries are keen on establishing regional economic blocs or merging into major economic entities in order to achieve many advantages and offices, which are the real and direct motive behind the establishment of these economic blocs, which can be summarized as follows (Makoto Tawada et al., 2022) :

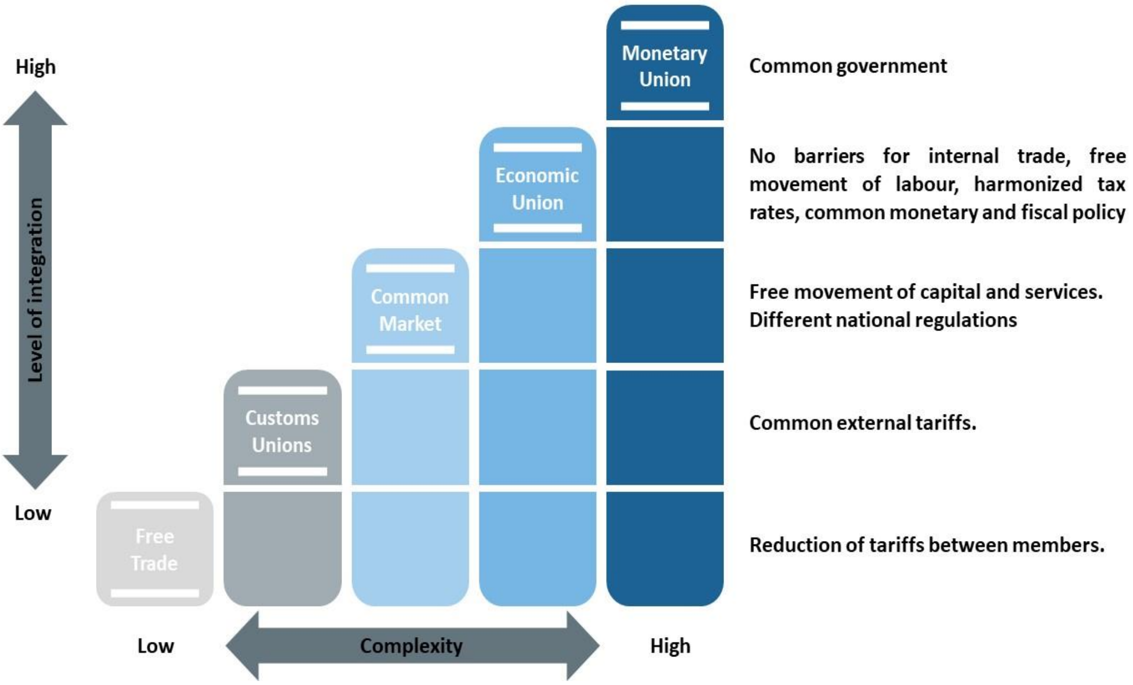
- Economic integration is a basis for strengthening the political forces of the combined member countries and their influence in global politics and international organizations, whether in terms of addressing the major problems facing the world in general or the developing world in particular.

- Expanding the market size: Economic integration works to solve the problem of narrow markets, and different products find wider markets and a larger field, including the creation of new industries in response to the high volume of internal demand, and thus the widening of the circle in which the member states spend their products as a result of the openness of the markets of other member states to them.

[5] https://www.asjp.cerist.dz/en/article/124939

➢ Attracting foreign direct investment: As any carefully drawn complementary arrangement can be a powerful tool for attracting foreign direct investment, as these arrangements encourage investment flows, whether between participating countries or from outside the commercial arrangement, in addition to benefiting from some advantages of foreign direct investment such as technology and funding sources. Low cost management and marketing efficiencies.

Figure(4): Levels of Economic Integration



Source: https://transportgeography.org/ - own elaboration

3.11 The Impact of Foreign Trade on National Economies

Foreign trade is vital to a nation's economy, since it can result in economic growth and development, improved employment possibilities, and access to a wider variety of goods and services (Jeníček and Krepl, 2009).

Foreign commerce contributes significantly to a nation's economic prosperity. A country can gain access to a larger market for its goods and services through international trade, which can result in higher demand, production, and sales. This increased demand may result in the creation of new employment opportunities as businesses expand to satisfy the rising market need. In addition, overseas commerce can result in technological breakthroughs since companies are compelled to upgrade their manufacturing processes and techniques in order to remain competitive on the global market which might strongly result in decreasing expenses, and increasing efficiency and output (Biggart and Hamilton, 1992).

Foreign commerce also provides a nation with access to a greater variety of commodities and services it gives a country access to products that may not be widely available on its home market by importing goods from other nations, that leds to incread competition and lower prices, which is advantageous for end conumers, in addition, by exporting its goods and services to other nations, a nation can diversify its markets, so lowering its reliance on any one market and enhancing its resilience to economic shocks (Kling, 2012).

Moreover, international trade can lead to higher investment in a nation where foreign firms may seek to invest in a country in order to take advantage of lower manufacturing costs or to get access to new markets, consequently, this investment has the potential to generate new jobs, enhance tax revenue, and stimulate economic growth.

However, international commerce can also have detrimental repercussions on an economy for instance, if a nation purchases more items than it sells, it might create a trade imbalance, which can put pressure on the nation's currency and contribute to inflation. In addition, international rivalry can lead to the closure of domestic enterprises, resulting in job losses and economic contraction (Biggart and Hamilton, 1992).

3.12 The Correlation between Exports and Economic Growth

Numerous economic studies have investigated the relationship between exports and economic development. It highlighted that exporting is essential to a nation's economic growth where it increases foreign exchange revenues, creates jobs, and facilitates the transfer of technology.

Exports can generate significant foreign currency for a nation, thereby, contributing to economic expansion. Where It is possible to pay for imports, repay foreign debt, and contribute to government expenditure with foreign currency. Additionally, exporting can contribute to the diversification of a nation's revenue sources, consequently reducing its reliance on a single industry or market. This diversification can enhance economic resilience and stability, particularly in the face of economic disruptions (Barrie and Schroder, 2022).

Moreover, exports generate economic employment as Export-driven industries necessitate specialized labor, which can result in the creation of jobs and a decline in unemployment rates. The increase in employment opportunities can contribute to economic growth as workers' incomes increase, leading to greater domestic expenditure and investment. Additionally, increased employment opportunities can lead to the development of new talents that can be utilized in other industries, thereby fostering further economic expansion.

However, the correlation between exports and economic growth is affected by a number of variables such as, the nation's infrastructure, comprised of transportation, communication, and energy, which might have a significant impact on its export capacity. Where infrastructure improvement can increase a nation's export competitiveness, resulting in increased revenue and economic growth, tariffs, subsidies, and quotas are examples of trade policies that can influence the relationship between exports and economic growth.

We can conclude that there is a positive correlation between exports and economic growth with exporting playing an important aspect in a country's economic expansion, where increased foreign exchange revenues, job creation, and the transfer of technology and innovation are among the benefits of exporting. However, a nation's trade policies and infrastructure can influence the relationship between exports and economic growth.

3.13 Terms of Trade (TOT)

When economists discuss terms of trade, they refer to the relationship between the index of export prices and the index of import prices. It is said that a nation has favorable terms of trade when its export prices increase more than its import prices. This indicates that the nation can purchase more imports with the same amount of export revenue.

- **Theorem of TOT**

The TOT concept evaluates the relative buying power of a nation's exports and impors it is determined by dividing the export price index by the import price index. The following is the formula:

$$\boldsymbol{TOT = \frac{Index\ of\ export\ prices}{Index\ of\ import\ prices} * 100}$$

If the TOT value rises, a country's exports can purchase a greater quantity of imports. If the TOT value falls, a country can purchase less imports with the same quantity of exports. Total can be stated as either a percentage or an index number.

- **Importance of TOT**

TOT is used to measure countries trade success since it determines how much products and services can be purchased with a particular number of exports, which means if a country's TOT rises it may purchase more imports with the same number of exports, which can contribute to economic growth and development. However, if the TOT declines, a country's ability to purchase imports is diminished which can have a detrimental effect on its economy (White, 2023).

Moreover, the TOT impacts a country's balance of payments in case a nation's TOT is positive, it indicates that it earns more from exports than it spends on imports this is what can result in a balance of payments surplus, which can boost a nation's foreign exchange reserves. On the other hand, if the TOT is negative, the country will have to spend more on imports than it gets from exports, resulting in a balance of payments deficit.

- **Factors influencing TOT**

Many factors, including exchange rates, global demand and supply, and inflation, can influence the TOT. For instance, if a nation's currency appreciates, its export prices will rise and import prices will fall, resulting in an increase in the TOT. Similarly, if the worldwide demand for a country's products rises, its export prices will rise, resulting in an increase in the TOT (College, 2022).

3.14 Associations and Treaties related to International Trade:

World Trade Organization (WTO) the WTO is an intergovernmental body that was founded in 1995 to facilitate free and fair trade among its member countries it is solely liable for negotiating and implementing trade agreements, resolving trade disputes, and providing technical assistance to its members the WTO has been instrumental in reducing trade barriers and promoting economic growth among its members[6].

[6] https://www.wto.org/

European Union (EU)

The EU is a political and economic association comprised of 27 European countries that cooperate in a single market and customs union based on supranational political and econmical base the EU was founded in 1993 with the purpose of fostering economic integration and lowering trade barriers among its member states it has successfully created a large and prosperous market for its member countries with a population of over 447 million people[7].

North American Free Trade Agreement (NAFTA)

It is a trade agreement that was signed in 1994 between the United States, Canada, and Mexico, this agreement was to eliminate trade barriers and encourage economic development between these three countries, NAFTA has been effective in expanding commerce among its member nations with trade between the three countries However, it has been criticized for causing the loss of manufacturing jobs in the United States, as some companies have relocated to Mexico to take advantage of reduced labour costs[8].

Trans-Pacific Partnership (TPP)

Was a proposed trade agreement between 12 Pacific Rim countries including the United States, Japan, and Australia the TPP was designed to promote free and fair trade among its member countries, with a focus on reducing trade barriers and promoting economic growth it TPP was seen as a significant achievement in global trade as it would have created a free trade area covering over 40% of global GDP. However, the TPP was not ratified by the United States, and it was ultimately abandoned in 2017.

Associations and treaties related to international trade play a significant role in promoting free and fair trade among participating countries and the WTO, EU, NAFTA, and TPP are just a few examples of the many associations and treaties that regulate and promote international trade. These associations and treaties have been instrumental in reducing trade barriers, increasing economic growth, and promoting economic integration among participating countries. However, they have also faced challenges, such as the loss of manufacturing jobs in the United States and the failure of the TPP to be ratified. Nonetheless, these associations and treaties will continue to shape international trade in the years to come.

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[7] https://corporatefinanceinstitute.com/resources/economics/balance-of-trade-bot/

[8] https://www.trade.gov/northamericanfreetradeagreementnafta#:~:text=The%20North%20American%20Free%20Trade%20Agreement%20(NAFTA)%2C%20which%20was,U.S.%2DMexico%20bilateral%20commercial%20relationship.

3.15 Openness of Foreign Trade

The "openness of foreign commerce" refers to how a nation permits its citizens to engage in economic activities with foreign nations, it indicates how a country enables its citizens to import and export products and services. However, there are potential downsides to embracing foreign trade, such as employment losses and damage to domestic industries (Barrie and Schröder, 2022).

Advantages of Foreign Commerce Liberalization

Economic expansion is one of the most significant advantages of foreign trade openness when a nation permits its citizens to engage in international commerce it creates new product and service markets, this increases demand for those products generating more employment opportunities and higher worker compensation. In addition, international trade can transfer new technologies and ideas, which can increase domestic industry productivity and innovation (Barrie and Schröder, 2022).

A further advantage of international trade openness is that it can contribute to higher living standards when a nation opens its borders to global commerce its citizens can access a greater variety of goods and services which will result in decreased prices and higher quality products for consumers, enhancing their living standards. In addition, international trade can create opportunities for international travel and cultural exchange, which can broaden the horizons of individuals and foster international understanding and cooperation (Jeníček and Krepl, 2009).

Consequences of Openness to Foreign Commerce

Despite the numerous benefits of foreign trade liberalization, there are also potential disadvantages, the potential for employment losses in domestic industries is among the most significant drawbacks when a nation opens its markets to foreign commerce, its ambitions are exposed to foreign competition if domestic industries are not sufficiently competitive, they risk losing market share to foreign rivals, resulting in job losses and economic disruption (Hoekman and Nicita, 2011).

Another potential disadvantage of foreign trade openness is the potential for domestic industries to suffer damage when a nation opens its markets to foreign commerce, its industries are exposed to foreign competition so if domestic industries cannot compete with foreign rivals, they may incur losses or even be compelled to cease operations which can be especially detrimental to industries vital to the economy or national security of a nation (Barrie and Schröder, 2022).

The Function of Foreign Commerce Openness in Modern Economies

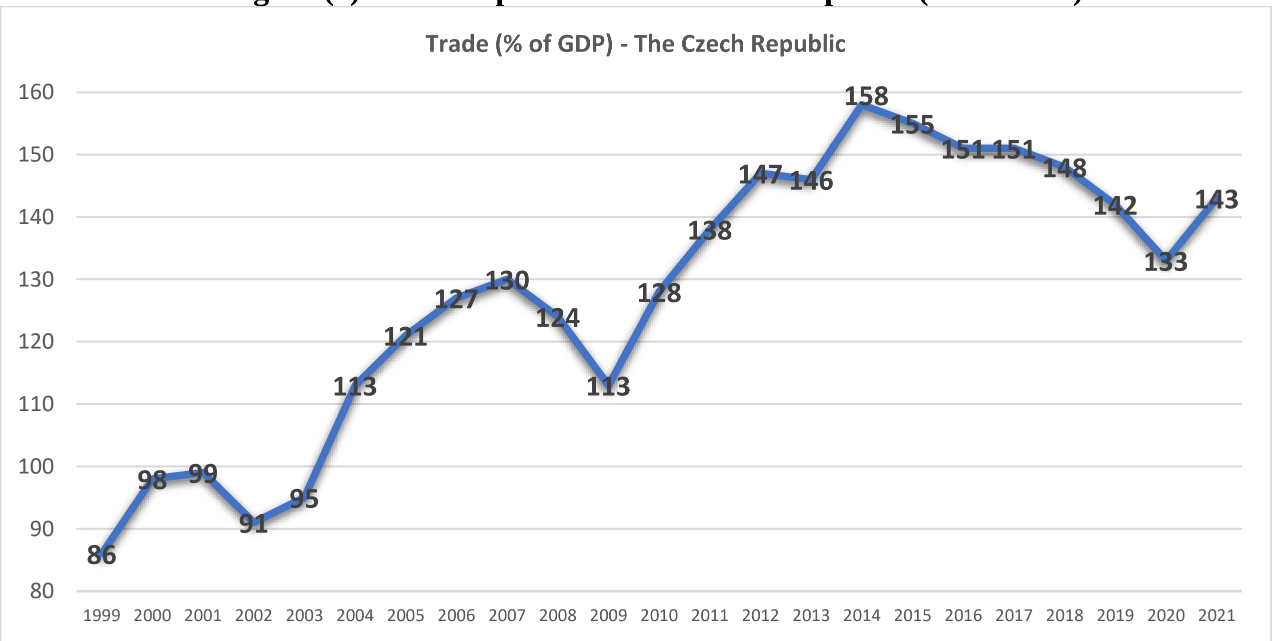
Foreign trade openness is essential for economic growth and development in contemporary economies. Globalization has increased competition and interdependence among nations, making international trade more crucial than ever. Additionally, technological and transportation advancements have made international trade of products and services easier and less expensive.

However, it is essential for nations to manage the process of opening up to foreign trade with care this involves ensuring that domestic industries are sufficiently competitive to withstand foreign competition and that measures are in place to safeguard workers who may be adversely affected by job losses. In addition, nations must ensure that they are not excessively reliant on foreign markets or susceptible to alterations in international trade policies (Barrie and Schröder, 2022).

$$\textit{The Openness of Foreign Trade in the country} = \frac{\textit{Export} + \textit{Import}}{\textit{Gross Domestic Product}} * 100$$

The higher this percentage, the higher the importance of foreign trade in the country, and vice versa.

Figure (5): Trade Openness of the Czech Republic (1999–2021)



Source: The World Bank https://data.worldbank.org/ - Own elaboration.

3.16 The Balance of Foreign Trade

A country Trade Balance is the difference between its total exports and total imports over a specified period of time where the country has a favorable trade balance when it exports more than it imports, therefore, it is Important to preserve a favorable trade balance in international transactions as the magnitude of the gap that exists between a nation's exports and imports in the context of international commerce is an essential indicator of the state of the economy in that nation, if a country is able to produce products and services that are in high demand on international markets, then it is likely that the economy of that country will have a positive trade balance which indicates that this economy is healthy and expanding. Moreover, a nation that has a strong export industry may be more likely to attract investors from other countries, which may contribute to a positive trade balance as well as an increase in the amount of money those investors invest in the nation (Balance of Trade , 2022).

A trade balance that is in the red, on the other hand, is cause for concern because it indicates that a country is importing more goods than it is exporting through its borders. This is a sign that the country's economy is in a state of imbalance, which means that the country's foreign currency stockpiles may become depleted because the country's currency must be used to make payments for imported products and this is because the currency of the importing country is the country's own currency (Egger, 2008).

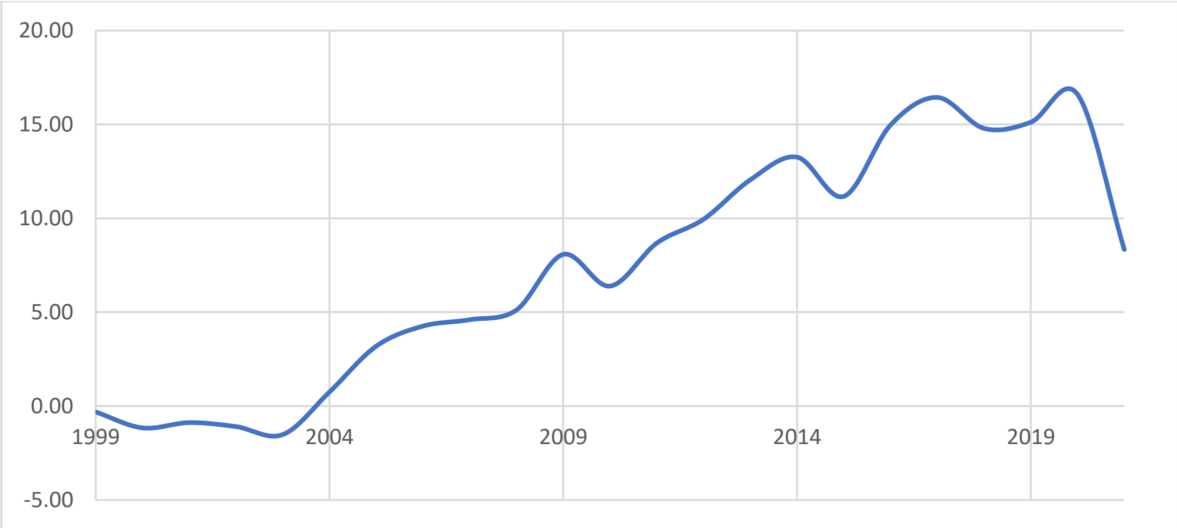
Table (1): Balance of Trade in the Czech Republic (billions USD) (1999–2021)

Year	Exports of goods and services (billion USD)	Imports of goods and services (billion USD)	Balance of trade (exports – imports) (billion USD)	Coverage ratio* (exports/imports) (%)
1999	27.87	28.18	-0.31	99%
2000	29.73	30.89	-1.16	96%
2001	33.13	34.01	-0.88	97%
2002	36.99	38.08	-1.09	97%
2003	46.77	48.29	-1.52	97%
2004	68.36	67.61	0.75	101%
2005	84.77	81.58	3.19	104%
2006	101.38	97.12	4.26	104%
2007	125.71	121.11	4.60	104%
2008	149.08	143.96	5.12	104%
2009	121.03	112.95	8.08	107%
2010	137.03	130.64	6.39	105%
2011	162.58	153.90	8.68	106%
2012	157.99	148.04	9.95	107%
2013	161.00	148.95	12.05	108%
2014	171.58	158.32	13.26	108%

2015	151.47	140.30	11.17	108%
2016	155.26	140.29	14.97	111%
2017	172.77	156.33	16.44	111%
2018	191.59	176.80	14.79	108%
2019	186.58	171.46	15.12	109%
2020	172.05	155.45	16.60	111%
2021	204.94	196.60	8.34	104%

Source: DataWorldBank

Figure (6): Balance of Trade in The Czech Republic (billion USD) (1999–2021)



Source: The World Bank https://data.worldbank.org/ - Own elaboration.

3.17 Foreign Trade Turnover

Foreign trade turnover is an essential indicator of a nation's economic health it aids in measuring the efficacy of a nation's economy on the global market country is competitive on the global market if its foreign trade turnover is high, whereas a country is considered not to be competitive on the global market if its foreign trade turnover is low, it refers to the total valuation of all goods and services imported and exported by a nation during a specified time period (Paliu-Popa, 2009).

The volume of international trade is influenced by economic, political, and social factors, with the principal determinants being as follows (Coban et al., 2019):

- Exchange Rate: the impact of exchange rates on the magnitude of international trade is substantial. When a country's currency appreciates relative to its trading partners' currencies, exports become more competitive and imports become more costly this increases international trade volume.

- Global economic conditions: the international commerce volume is also influenced by global economic conditions when the global economy is expanding then demand for products and services increases leading to a rise in exports and imports.

- Trade policies: a country's trade policies influence its foreign trade volume when a country imposes tariffs or trade barriers on its trading partners this can result in a decrease in the volume of its foreign trade when a nation is politically stable, investors are more likely to invest there, which increases exports.

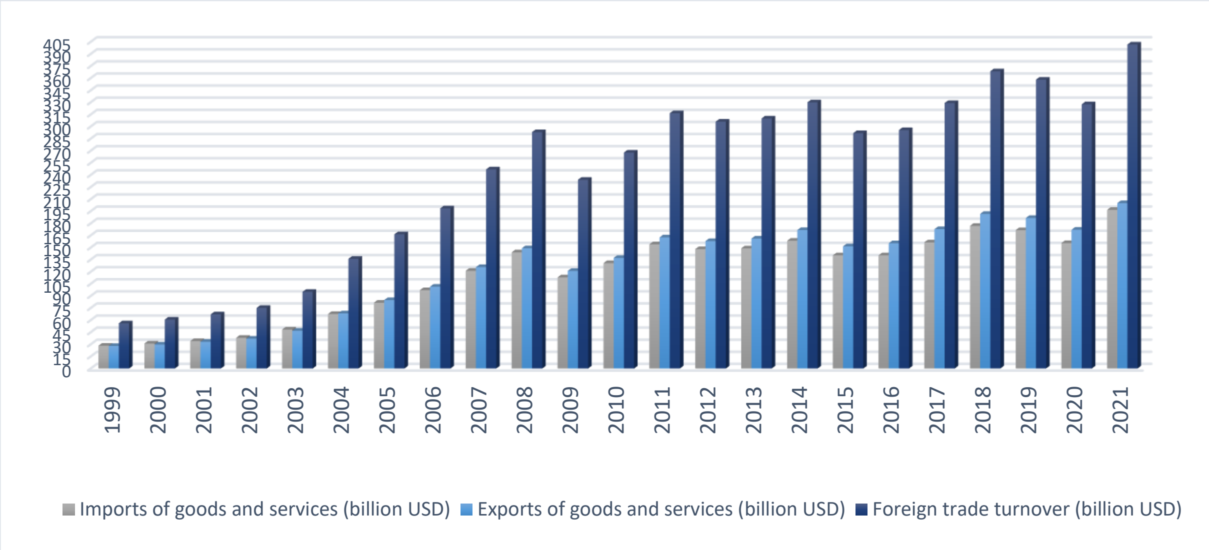
Foreign Trade Turnover = Export Value + Import Value

Table (2) : Foreign Trade Turnover (billions USD) (1999–2021)

Year	Imports of goods and services (billion USD)	Exports of goods and services (billion USD)	Foreign trade turnover (billion USD)
1999	28.18	27.87	56.05
2000	30.89	29.73	60.62
2001	34.01	33.13	67.14
2002	38.08	36.99	75.07
2003	48.29	46.77	95.06
2004	67.61	68.36	135.97
2005	81.58	84.77	166.35
2006	97.12	101.38	198.50
2007	121.11	125.71	246.82
2008	143.96	149.08	293.04
2009	112.95	121.03	233.98
2010	130.64	137.03	267.67
2011	153.90	162.58	316.48
2012	148.04	157.99	306.03
2013	148.95	161.00	309.95
2014	158.32	171.58	329.90
2015	140.30	151.47	291.77
2016	140.29	155.26	295.55
2017	156.33	172.77	329.10
2018	176.80	191.59	368.39
2019	171.46	186.58	358.04
2020	155.45	172.05	327.50
2021	196.60	204.94	401.54

Source: DataWorldBank

Figure (7): Foreign Trade Turn Over in The Czech Republic (billions USD) (1999–2021)



Source: The World Bank https://data.worldbank.org/ - Own elaboration.

Figure (7) shows the improvement that the Czech Republic has accomplished in becoming more competitive on the global market.

4. Practical Part

4.1 Czech Republic Geography and Atmosphere

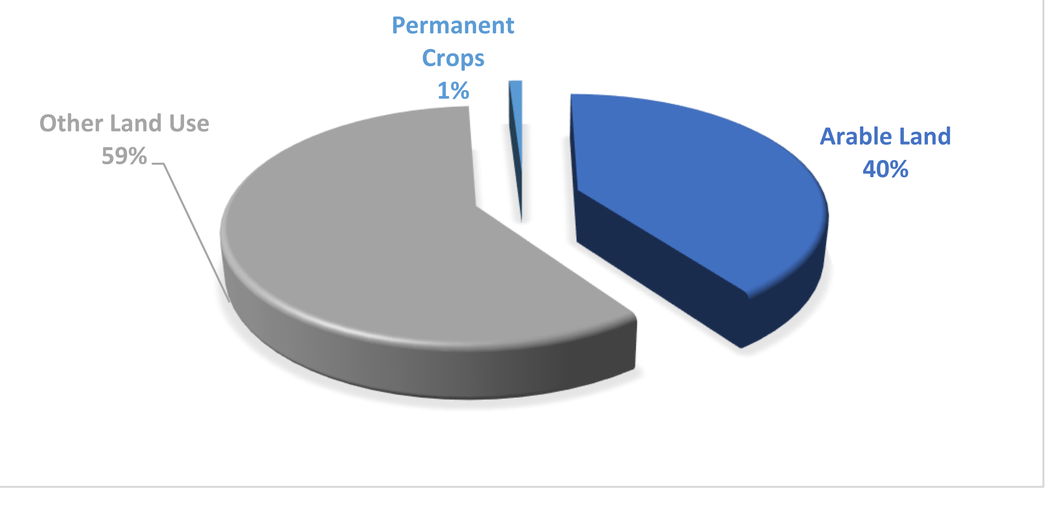
The Czech Republic is located in the center of Europe. The Czech Republic is surrounded almost exclusively by mountains. The Sudetes Mountains, which include the Krkonose Mountains and Mt. Snazka, the highest point in the country, are located to the north and northeast. Along the Czech-Slovak border to the southeast are the Carpathian Mountains. In the southwest, the Sumava Mountains constitute the border with Germany. These mountain ranges shield the nation from the harsh winters of western and northern Europe.

The primary geographic divisions are Bohemia to the west and Moravia to the east, both of which are Czech lands. In addition, a portion of what was once Silesia is located in the country's north-central region. The Czech Republic is comprised of a total area of 78,228 square kilometers. (78,864 square kilometers). Typically, the terrain is hilly with expansive, undulating plains. Bohemia contains a greater number of low summits and plateaus than Moravia, which is generally flatter. Bohemia is twice the size of Moravia, with a total area of 52,764 square kilometers, and contains the capital city of Prague. The Vltava River (Moldau in German) meanders north and converges with the Labe (Elbe) north of Prague. At a height of 250 meters, Prague is situated in the center of the gradually rolling Bohemian Plain.[9]

Landlocked and strategically situated on some of Europe's earliest and most important land routes, the Moravian Gate is a traditional military corridor between the North European Plain and the Danube. Austria is located in the southeast corner of Europe, with Germany to the west, Poland to the northeast, Slovakia to the east, and Austria itself to the east. The varied topography of the country, which includes both forested mountains and fertile lowlands, serves to illustrate the country's varied geographical features.

Prague's climate is humid and continental, with warm summers and chilly winters. Temperatures range from an average daily high of 32°F (0°C) in January to an average daily high of 76°F (24.5°C) in July, with a minimum of 56°F (14°) in January. The average annual precipitation is approximately 30 inches, spread throughout the year. The average relative humidity is approximately 80 percent. High humidity during the winter months makes the winter chill penetrating. Expect light to moderately intense snowfall in January and February. Winter can be a particularly polluted season due to the soft-burning coal and frequent temperature inversions. From November to March, fewer daylight hours combined with pollution and harsh weather create a gloomy atmosphere. In fact, from mid-October, when Daylight Savings Time ends, to early April, when it begins again, Czech law mandates that motorists always drive with their headlamps on.

Figure (8) : Czech Republic Use of Natural Resources



Source: www.countryreports.org - own elaboration.

[9] https://www.countryreports.org/

4.2 Czech Republic Economy’s Main Industries

The Czech Republic holds a prime position in the heart of Europe. There are approximately 10.6 million people living in this country, which spans a total area of 78,866 km2. On the European continent, it shares boundaries with Poland, Germany, Austria, and Slovakia. Prague is the largest city in the Czech Republic as well as the country's capitol. Other important communities in the Czech Republic include Hradec Kralove, Plzen, Liberec, Brno, and Olomouc. Plzen is the country's second largest city. It is estimated that there are 1,300,000 people living in the district. The economy of the Czech Republic is consistently strong and growing, and it ranks among the most developed economies in the globe. This is due to the fact that the nineteenth century witnessed the birth of a robust manufacturing tradition. The availability of educated and experienced automotive professionals, the strategic position in the heart of Europe, and the superior infrastructure network have all played a role in the growth and expansion of the industrial sector. These factors have all been influential in the growth and expansion of the industrial sector. However, the agricultural and business industries are also significant contributors to the economy[10].

- **Conditions of the Czech Republic's Economy**

The total value of the Czech Republic's gross domestic product is 215.7 billion dollars in US currency. The contribution of the manufacturing sector to the country's gross domestic product is the second highest, at 37.8%, after the contribution of the service sector to the country's GDP, which is 59.7%. The contribution of the agricultural sector is 2.5%. These three businesses each have a labor force that is 59.2%, 38.0%, and 2.8% of the total. The prosperity of the European Union is also bolstered by contributions from the Czech Republic. The Czech Republic has maintained the use of the koruna while also adopting the euro as its primary currency. The economic catastrophe that occurred in 1998–1999 and the subsequent recession had an impact on this choice. In addition to being a member of the Organization for commercial Cooperation and Development, the Czech Republic is an important commercial partner. (OECD). The Organization for Economic Cooperation and Development (OECD) was established in 1961 with the purpose of promoting the economic growth of its member states as well as their participation in international commerce. The economies of all 36 member states are prosperous, as evidenced by high human development metrics and high per capita incomes[11].

[10] https://czech-presidency.consilium.europa.eu/en/presidency/information-about-the-czech-republic/

[11] https://economy-finance.ec.europa.eu/economic-surveillance-eu-economies/czechia/economic-forecast-czechia_en

- **Manufacturing Sector**

The manufacturing sector is the primary economic pillar of the Czech Republic. The engineering disciplines of high technology, mechanical engineering, and automotive engineering generate a substantial quantity of goods. The Czech Republic is the thirteenth largest automobile exporter in the world and employs over 500,000 people. According to statistics, in 2010, 54.2% of the automotive industry's products were exported to Germany, Poland, and Slovakia. Skoda Auto, which has existed for more than a century, is one of the largest and most influential automobiles in the annals of automobile production. 2007 was a prosperous year for the Korean automaker Skoda Auto, which managed to deliver 630,033 vehicles. The number of automobiles produced that year increased by an astonishing 14.6% over the previous year. The primary and subsidiary enterprises of Skoda employed 29,312 individuals as of the end of 2008. Hyundai Motor Company is the other privately-owned automaker, alongside Skoda Auto of the Volkswagen Group. Hyundai has invested more than one billion Euros and annually produces at least 300,000 vehicles. This company has generated approximately 3,500 new positions. Tatra trucks (which manufacture heavy-duty vehicles), Iveco Bus, SOB Libchavy, Toyota, Peugeot, and Citron are also well-known manufacturers[12].

- **Service Sector**

Approximately 60% of the workforce in the Czech Republic is employed in the service sector, which is close to the European average of 75%. This level of employment indicates that a nation is highly developed. Due to increased competition in the automotive industry from countries such as Japan, Germany, and Mexico, the service industry has become one of the most productive in the Czech Republic. The services sector is dominated by research and development, information and communication technology and software development, nanotechnology, real estates, consulting, business (such as finance), and life sciences[13].

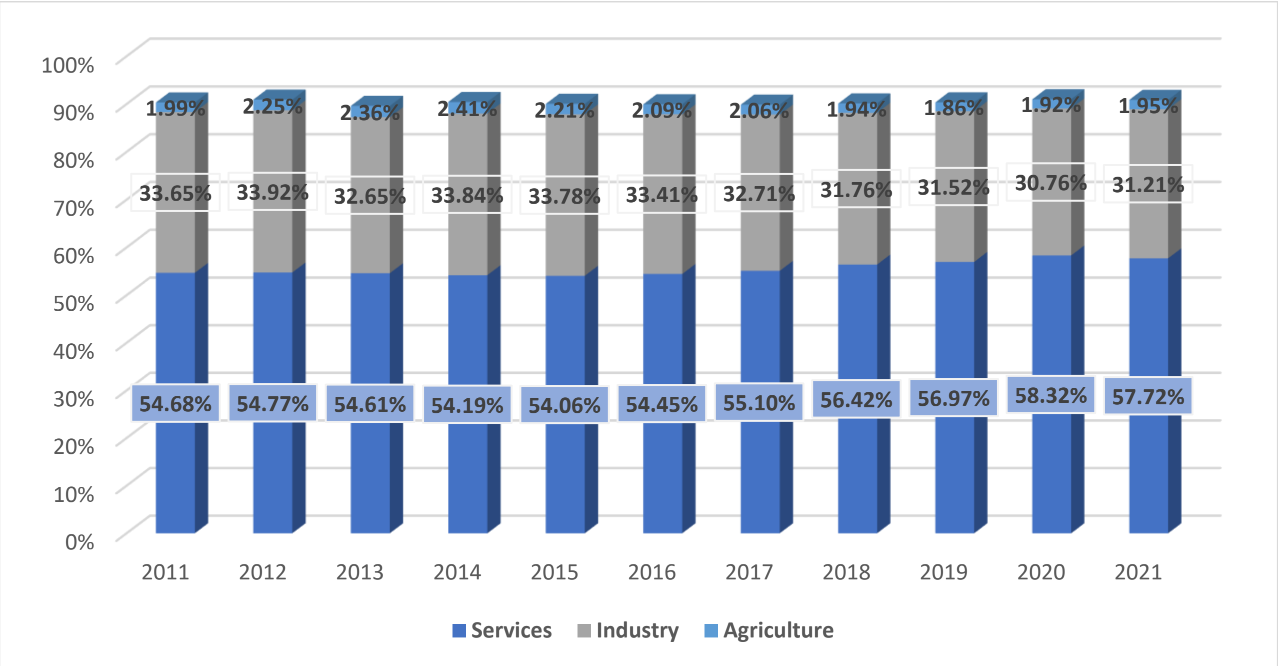
[12] https://tradingeconomics.com/czechrepublic/manufacturingproduction#:~:text=Manufacturing%20Production%20in%20Czech%20Republic%20averaged%203.74%20percent%20from%202000,percent%20in%20April%20of%202020.

[13] https://bradfordjacobs.com/countries/europe/czech-republic/

➢ Agricultural Industry

About 3.9% of the gross domestic product of the Czech Republic is derived from agriculture. However, the country has designated agriculture as one of its most essential economic sectors. This strategy aims to increase agricultural output in order to guarantee food security. The ever-increasing demand for safe and nutritious food has created an opportunity for this industry to flourish by producing even more food to sustain her growing population. Additionally, sustainable agricultural practices are a priority in the agricultural sector. In the majority of cases, agriculture is practiced on estates comprising about 800 hectares of land. By the end of 2007, 53.9% of all land was utilized for crop production. The Czech Republic's farms cultivate exportable commodities such as winter wheat, spring barley, winter rape, cereals, vegetable oils, hops, and potatoes. Through a collaborative partnership program established in 2004, the European Union has provided financial assistance to the nation's agricultural sector. The alliance increased income in the agricultural sector. In 2010, 6.2 billion Czech korunas were earned in total. Regrettably, despite these efforts, the nation's food security continues to deteriorate as the total agricultural output remains low. Agriculture in the Czech Republic has been impacted by a number of factors, including the importation of inexpensive agricultural products, a decline in agricultural employment, and relatively low wages (Jeníček and Krepl, 2009).

Figure (9): Distribution of (GDP) across Economic Sectors - Czech Republic (2011–2021)



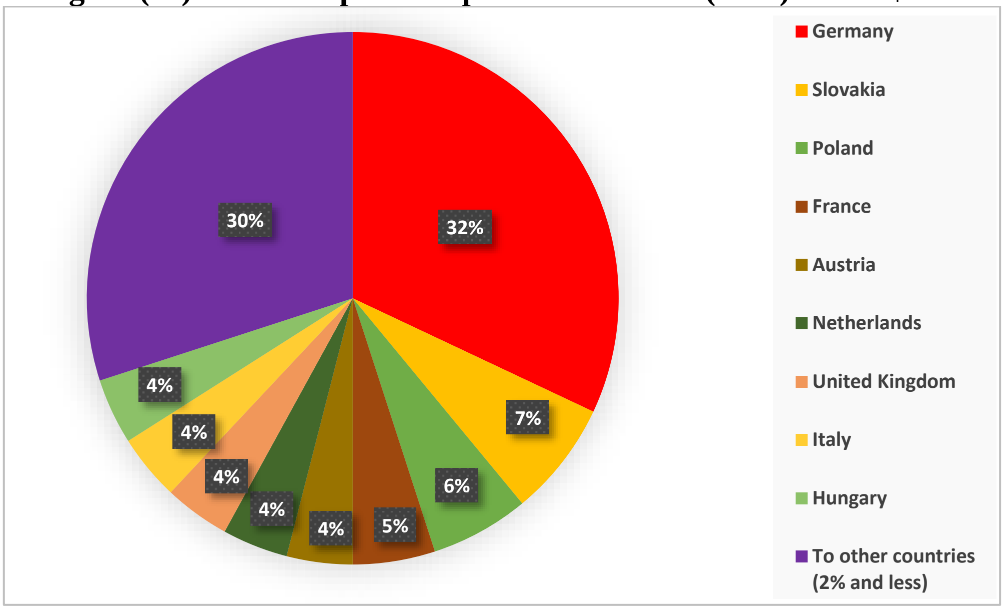
Recourse: www.statista.com - Own elaboration.

4.3 Territorial Structure of Czech Republic Foreign Trade:

The European Union (EU), other countries in Europe, and the rest of the globe make up the bulk of the Czech Republic's international trade's territorial structure.

For the Czech Republic, exports are a significant source of revenue. Germany, Slovakia, Poland, Austria, and the European Union (EU) are the Czech Republic's top export customers. About 75% of all shipments from the Czech Republic go to these nations. The Czech Republic primarily sends vehicles, pharmaceuticals, chemicals, food items, and machinery and transportation equipment.

Figure (10): Czech Repubic Export Destinations (2020) Total: $190B

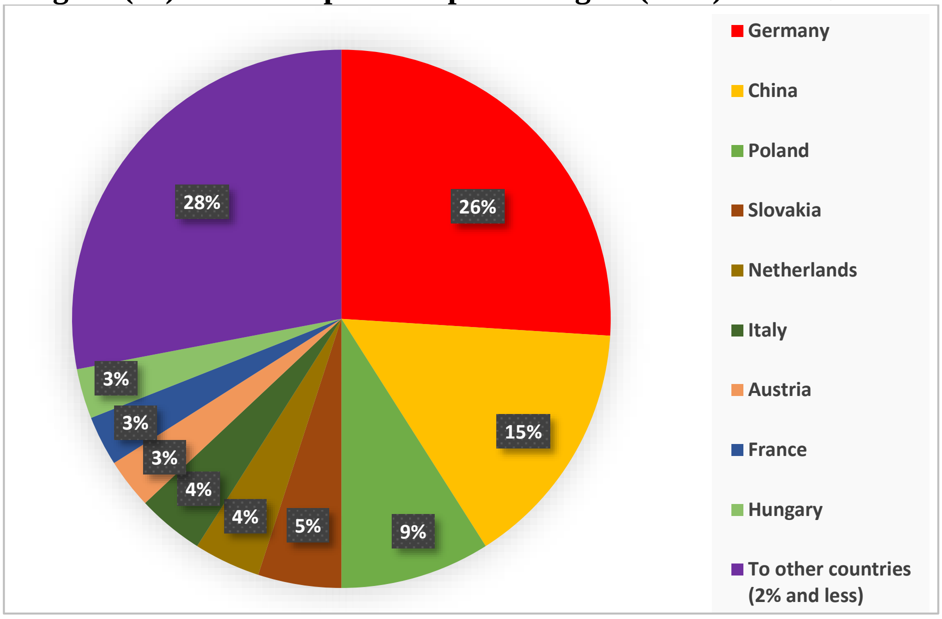


Source: OEC 2023 - Own elaboration

The Czech Republic's economy also heavily depends on imports. The EU nations, Germany, Slovakia, Austria, Poland, and China are the Czech Republic's top trade partners. Approximately 76% of the Czech Republic's overall imports come from these nations. Chemicals, food items, machinery and transportation equipment, as well as automobiles, are the Czech Republic's major imports.

The European Union, other European nations, and the rest of the world make up most of the international commerce of the Czech Republic.

Figure (11): Czech Repubic Imports Origins (2020) Total: $165B

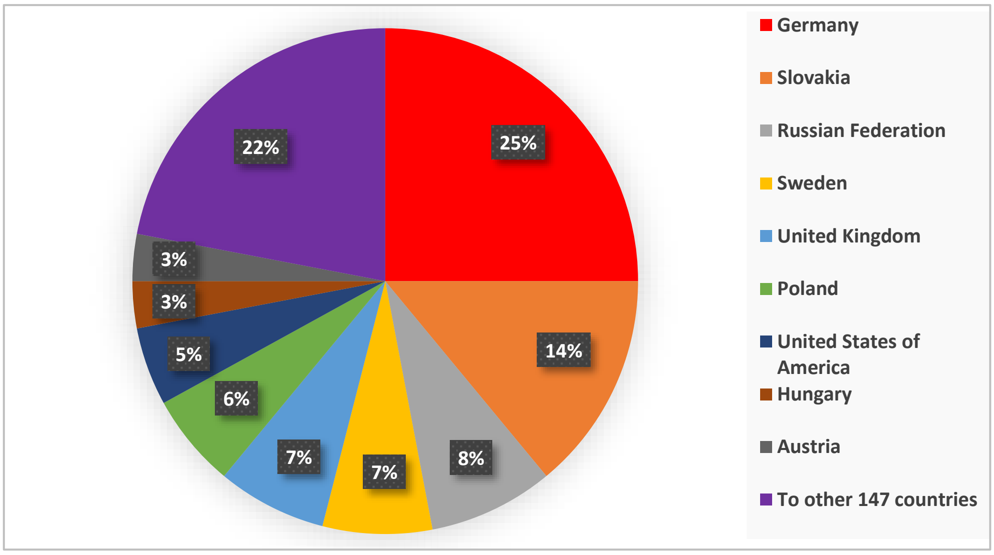


Source: OEC 2023 - Own elaboration

4.3.1 Territorial structure of the Czech Republic beer trade

Figure (12) shows the distribution of beer export in percentage from Czech Republic between 1999–2021, and it is as following: 25% to Germany, 14% to Slovakia, 8% to Russian Federation , Sweden and United Kigdom have the same percentage of exported beer 7%, 6% to Poland 6%, 5% to United States of America 5%, Hungary and Austria also have the same percentage of exported beer 3%, and the remaining 22% of the exported beer was to other 147 countries.

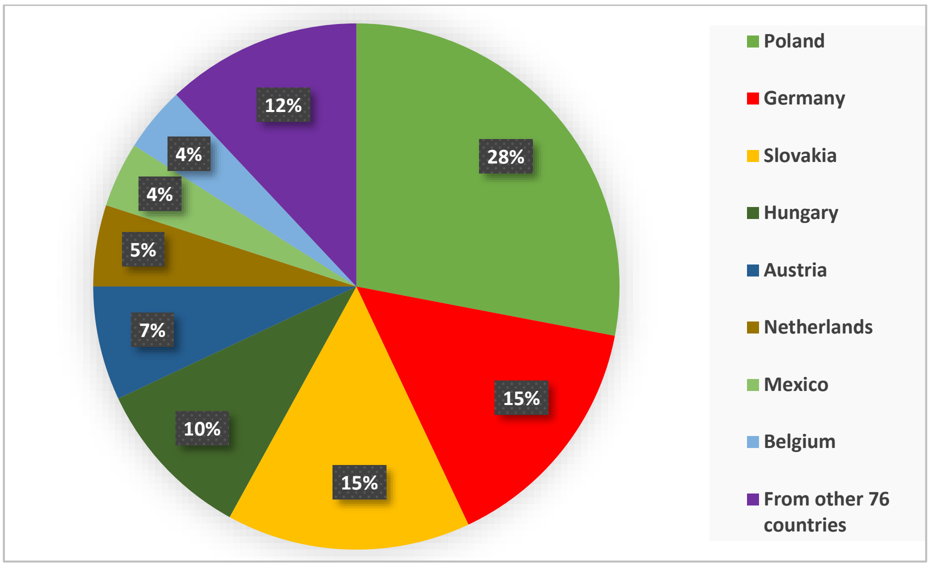
Figure (12): Czech Republic total amount of Exported beer (1999–2021)



Source: OEC 2023 - Own elaboration

Where Figure (13) shows the distribution of imported beer in percentage to the Czech Republic between 1999–2021, and it is as following: 28% from Poland, 15% from Germany, 15% from Slovakia , 10% from Hungary, 7% from Austira, 5% from Netherlands, Mexico and Belguim have the same percentage of imported beer 4%, and the remaining 12% of the imported beer was from other 76 countries.

Figure (13): Czech Repubic total imported beer into Czech Republic (1999–2021)



Source: OEC 2023 - Own elaboration

4.4 Availability of Barley and Hops Recourses in the Czech Republic

In the Czech Republic, the manufacturing of beer is not possible without barley and hops. Malting, the process of turning barley seeds into malt, uses barley as a raw material. Then, malt serves as a supply of enzymes, starches, and fermentable sugars in the brewing of beer. On the other hand, hops are used to give beer bitterness and smells. Hops are used to add bitterness, balance the beer's sweetness, and contribute a range of aromas (Březinová, 2021).

The Czech Republic's brewing business depends heavily on the availability of resources for barley and hops. In the Czech Republic, barley is a significant crop that is primarily produced for malting and as a feed grain. Every year, Czech farmers harvest about 300,000 tonnes of barley, which is sufficient to meet the needs of the brewing business (Březinová, 2021). The Czech Republic is a significant producer of hops, with more than 4,000 hectares of hop fields yielding about 3,000 tonnes of hops annually. Saaz, Sladek, and Kren are the main hop varieties cultivated in the Czech Republic.

The Czech economy benefits from developing hop-growing, which has a long history in the country. The Czech Republic produces almost one-tenth of the world's aroma hops, behind Germany and the US, which together make for over two-thirds of the hop market. In 2017, the Czech Republic had 4,945 ha of hop crops, the most in 7 years. This is up 3.4% year-over-year. The weak 2015 European harvest and demand for quality Czech hops caused the rise. Thus, storehouses emptied, and breweries worldwide, which receive 80% of domestic hop output, ran out. Demand and prices have grown since then, covering hop production costs. Hop production investments have grown. Workers are scarce as hop farms expand in the Czech Republic. (Březinová, 2021)

4.5 Beer Production History and Trends in the Czech Republic

Beginning in 993 at the Bevnov Monastery in Prague, the manufacturing of Czech beer has a long history. A 250-year ban on non-monastic brewing in the Czech Republic, which was repealed in 1250, restricted brewing to monasteries during this period. Several hundred years passed before other beer-drinking nations adopted the technique, but Czech beer has always used hops in its manufacturing. Since other nations did not cultivate hops for brewing for hundreds of years, Czech hops became a highly prized commodity among beer manufacturers. Once the beer ban was lifted, breweries across the country were granted permission to brew beer for the first time outside of monasteries; the cities of Ceske Budejovice in 1265, Plzen in 1290, and Svitavy in 1256 were among the first to receive permission to brew some of the first beer in the Czech Republic (Kandráčová et al., 2012).

In 1900, there were 804 Czech brewers. Breweries struggled during World War I. Breweries received about 25% of their grain needs. In 1916, it was illegal to alter wheat or malt. Wartime copper, brass, and bronze brewing apparatus was disassembled. The war reduced output to 14% of pre-war levels. This time saw 122 breweries close. In 1918, Czechoslovakia had 526 brewers. After 1918, there were no new breweries in Czechoslovakia due to the war's low living standard, lack of goods, loss of foreign markets, and machinery damage. Production has been unified since 1923. The number of brewers dropped to 456 that year (Gow et al., 1998).

During the Second World War, Czechoslovakia had 374 brewers. In 1946, the Economic Union of Brewing and Malting Industry was founded. Later, the government formed the National Company of Czechoslovak Breweries to take over breweries that made more than 150,000 hectolitres of beer. The shift in ownership marked the start of a planned economy, which led to the creation of 22 national enterprises in 1948 to merge 194 active breweries. Central managers-controlled breweries, beer imports, and exports. During this time, Czechoslovakia received almost no foreign beer. Only lager was made and drank at this time. However, lagers had more flavour and quality differences during this time. The Czech Republic and Slovakia's beer markets were greatly affected by Czechoslovakia's shift from socialism and a planned economy to democracy and a market economy, which devastated Eastern Europe (both countries became independent in 1992). Breweries were privatized and acquired by international corporations like Heineken and SABMiller, which later merged with AB InBev and sold their assets in the Czech Republic and Eastern Europe to Asahi, which controls the Czech beer market (Kandráčová et al., 2012). Czech breweries steadily improved efficiency. This was mostly due to international know-how and technologies, better vertical supply chain coordination, and economies of scale (Gow et al., 1998). Big firms made identical beer, replacing regional brews. The beer-making method was altered to shorten production cycles (pro-cesses of fermentation and aging were connected). Standardizing quality eliminated low-quality beer but made it harder to identify products. 17.92 million hectolitres of beer were brewed in the Czech Republic in 2000. It reached 20 million hectolitres in 2015 and has grown since then. According to the 2019 official report, output was 21,6 million hectolitres (Kandráčová et al., 2012). Even though the Czech Republic consumes the most beer per head, they are drinking less each year. Humans consumed 169 L per person in 1992, according to some reports. Since 2003, when people drank 161 L per person, it has dropped to 141 L per person in 2019 (Gow et al., 1998). Price is a factor in beer usage decline, but not the only one. Other reasons include trying to live a healthier lifestyle, changing how people drink beer, switching to wine, and others. Excise tax, rising labor costs, and component costs affect beer prices. The Czech Republic's excise duty is based on a brewery's output volume and divided into six zones since 1995. (mostly in Europe). The standard rate is 32 K/hL per percent by weight of the initial wort extract. For breweries with a production volume between 150,000 and 200,000 hL, the reduced cost is 28 K/hL, 25.60 K/hL, 22.40 K/hL, and 19.20 K/hL. Czechs drank half their alcohol at home and half in bars and eateries in 2003. In 2019, 66% of alcoholic beverages were drunk at home (known as "off-trade"), while 34% were consumed in restaurants and taverns (Kandráčová et al., 2012). The main cause is that draft and bottled beer have different prices. Labour and other costs are higher for eateries.

Czech society revolves around beer. The Czech Republic's distinctive beer flavour is Pilsner, a pale lager that began in Pilsen in the 19th century. Pilsner has a golden colour, crisp taste, and high carbonation.

4.6 Contribution of Beer Exports to the Czech Economy

The beer industry is a significant sector of the Czech economy, and beer exports are vital to its continued expansion. The Czech Republic is one of the world's leading beer-producing nations, and its beer is renowned for its quality and distinct flavour.

Exports of beer represent a significant portion of the country's total exports, and they have increased consistently over the past few years. The Czech Republic exported more than 5,1 million hectolitres of beer worth 303 million euros in 2019. Germany, Slovakia, Poland, and the United Kingdom are the principal export markets for Czech lager.

Additionally, the brewing industry is a significant employer in the Czech Republic, employing over 45,000 people. In addition to direct employment, the industry supports occupations in agriculture, packaging, and transportation, among others.

Overall, beer exports are a significant contributor to the Czech economy, creating employment and generating substantial revenue. The worldwide prevalence of Czech beer is a testament to the country's rich brewing heritage and dedication to quality.

4.7 Linear Regression Model

The econometric analysis integrates econometric theory, mathematics, statistics, and information technology for search, determination, and empirical verification. The approach to econometric analysis is founded on a multistep abstraction derived from the qualitative analysis theory of the economic topic under investigation.

There are four phases to the process: specification, quantification, verification, and application. Linear regression is used to characterize relationships between variables.

Gretl computer software is utilized for this purpose because it provides sophisticated data analysis capabilities.

The time series is interpreted using annual data from 1999 to 2021, with 23 observations.

4.7.1 Economic model construction

Driven by the main objective of the thesis which intends to assess the contribution of beer exports to the Czech Republic's gross domestic product, the following economic model will be used:

The economic model is: $y_{1t} = f(\, x_{1t}, x_{2t}, x_{3t}, x_{4t})$

Where:

y_{1t}: dependent/ explained/endogenous/ variable

$x_{1\text{-}k}$: independent/ explanatory/exogenous/ variables

$$GDP = f\ (BEXP, BIMP, FX)$$

Where GBP, BEXP, BIMP, and FX represent; Gross Domestic Product in the Czech Republic, Exports of Beer from the Czech Republic, Imports of Beet into the Czech Republic, and foreign exchange rate (CZK/EUR) in the Czech Republic.

4.7.2 Econometric model construction

There are three key areas in which the statistical model diverges from the economic model. The econometric model contains a stochastic variable in addition to parameters and a functional form that has been described. The following is a mathematical expression that can be used to describe the econometric model:

$$\beta_{1t}\, y_{1t} = \gamma_{11}x_{1t} + \gamma_{12}x_{2t} + \gamma_{13}x_{3t} + \gamma_{14}x_{4t} + u_{1t}$$

Where:

β_{1t}: parameter of the dependent variables (gross domestic product)

y_{1t}: the dependent quantitative variable representing Czech Republic GDP, unit is billion USD.

x_{1t}: intercept term

x_{2t}: the independent quantitative variable representing beer export, unit is million CZK.

x_{3t}: the independent quantitative variable representing beer import, unit is million CZK.

x_{4t}: the independent quantitative variable representing exchange rate CZK/EUR.

γ_1: parameters of the independent variables (Czech Republic GDP, Beer Export, Beer Import, and exchange rate)

u_{1t}: stochastic term

4.7.3 Data set:

A one-equation econometric model with one endogenous (y_{1t}), four exogenous (x_{1t} - x_{2t} – x_{3t} – x_{4t}), and one stochastic (random component u_{1t}) variables is used to create econometric models.

Table 3 displays the data obtained for parameters estimate from 1999 to 2021. The following equation expresses the shape of a one-equation econometric model:

$$\beta_{1t}\, y_{1t} = \gamma_{11}x_{1t} + \gamma_{12}x_{2t} + \gamma_{13}x_{3t} + \gamma_{14}x_{4t} + u_{1t}$$

Tabel (3): Data set for econometric modelling

Year	GDP in Czech Republic USD (bill)	Exports of Beer **Stat. value CZK (mill.)**	Imports of Beer **Stat. value CZK (mill.)**	Foreign exchange rate (CZK/EUR**)**
Variable	**Y1t**	**X2t**	**X3t**	**X4t**
1999	65.17	2,377.082	218.033	34.57
2000	61.83	2,425.746	220.631	38.60
2001	67.81	2,732.051	240.104	38.04
2002	82.20	2,653.229	229.291	32.74
2003	100.09	2,811.336	212.370	28.21
2004	119.81	3,540.594	236.847	25.70
2005	137.14	3,635.637	280.929	23.96
2006	156.26	4,109.816	276.388	22.60
2007	190.18	4,446.092	314.536	20.29
2008	236.82	4,351.022	369.683	17.07
2009	207.43	4,215.833	632.468	19.06
2010	209.07	3,870.110	729.043	19.10
2011	229.56	3,868.704	574.900	17.70
2012	208.86	4,542.692	506.368	19.58
2013	211.69	5,024.278	538.469	19.57
2014	209.36	5,548.117	351.267	20.76
2015	188.03	6,103.908	473.714	24.60
2016	196.27	6,246.480	358.800	24.44
2017	218.63	6,149.302	356.064	23.38
2018	249.00	6,728.424	429.103	21.73
2019	252.55	7,378.648	506.249	22.93
2020	245.97	6,894.450	608.810	23.21
2021	281.78	7,298.565	654.946	21.68
Average	**179.37**	**4,650.092**	**405.174**	**24.33**

4.7.4 Correlation matrix:

To determine whether or not multicollinearity exists between the extraneous variables, the correlation matrix is utilized. Before continuing with the econometric analysis of the model, for which the correlation matrix is constructed, it is necessary to determine if the variables in question exhibit multicollinearity. It illustrates the interdependence between exogenous variables. The phenomenon of multicollinearity occurs when the range of correlation coefficients is equal to or greater than the absolute value range [-0.8;0.8] using Gretl software.

Table (4): Correlation Coefficients, using the observations 1999–2021

y_{1t}	x_{2t}	x_{3t}	x_{4t}	
1.000	0.8459	0.7799	-0.8502	y_{1t}
	1.000	**0.5547**	**-0.5286**	x_{2t}
		1.000	**-0.6567**	x_{3t}
			1.000	x_{4t}

Source: Gretl SW.

Table (4) illustrates that the relationship among the exogeneous variables is not strong, as we can define that from the correlation coefficients between the variables (0.5547, -0.5286, -0.6567), that are within the interval [-0.8;0.8]. which identify the nonexistence of multicollinearity problem.

4.7.5 Mathematical verification

is the first and simplest phase of all subsequent verifications. Each factor's average value is entered into the equation. Mathematical evidence indicates that the left side of the equation should equal the right side. Zero is the value of the term blunder. This verification is performed automatically by the application Gretl, so it will not be covered in the following chapters.

4.7.6 Statistical verification

Through statistical verification, the significance of evaluated parameters and a model as a whole is investigated. The t-test and the F-test are employed to determine the statistical significance of the estimates at the significance level, and the p-values are compared to the significance level. In the case of model verification, the determination coefficients are evaluated.

We use statistical analyses to determine whether the estimated parameters are statistically significant and to evaluate the goodness of fit in the statistical validation.

For each parameter, the t-test is conducted to determine whether the explanatory variables have an effect on the explained variable. Individual parameter statistical validity can be determined by comparing the derived t-value to a table value, also known as t-tab. According to the following criteria, the null hypothesis is denied if the t-value is greater than t-tab, indicating that the parameter is significant.

$$\boldsymbol{t\text{-}val} > \boldsymbol{t\text{-}tab} \Rightarrow \boldsymbol{reject\ H0}$$

As can be seen, all the included parameters in the Gretl software are statistically significant. of statistical significance 0.5 is demonstrated by three stars (***) as shown in Table (5).

4.7.7 The estimation of the parameters:

The significance threshold for econometric modeling was set at 0.05, and Gretl and Excel were used to process and compute the parameters. The Ordinary Least Squares method was employed to examine the relationship between selected variables. The essence of the Ordinary Least Square method is using the formula to identify parameters that minimize the sum of squared residual errors.

$$\boldsymbol{\gamma} = (\boldsymbol{X}\ \boldsymbol{T} * \boldsymbol{X})\ \boldsymbol{-1} * \boldsymbol{X}\ \boldsymbol{T} * \mathrm{Y}$$

Table (5): Estimation of parameters
Model 1: OLS, using observations 1999–2021 (T = 23) Dependent variable: Y

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	169.279	25.7598	6.571	2.73e-06	***
X2	2.034	2.26434e-06	8.985	2.872-08	***
X3	8.723	2.53757e-05	3.438	0.0028	***
X4	-4.926	0.653818	-7.536	4.03e-07	***

Source: Gretl SW

The computed variable coefficients can now be incorporated into the econometric model. In conclusion, the final one-equation econometric model may be expressed as follows:

$$\beta_{1t}\, y_{1t} = \gamma_{11}x_{1t} + \gamma_{12}x_{2t} + \gamma_{13}x_{3t} + \gamma_{14}x_{4t} + u_{1t}$$

$$\boldsymbol{y_{1t} = 169.279 + 2.034\, x_{2t} + 8.723\, x_{3t} - 4.926\ x_{4t} + \varepsilon_{1t}}$$

4.7.8 Interpretation of Estimated Parameters.

$$y_{1t} = 169.279 + 2.034\, x_{2t} + \ 8.723\, x_{3t} - 4.926\ \ x_{4t}\ +\ \ \varepsilon_{1t}$$

From table (5) we can find the estimated parameters values from the ‘Coefficient’ column.

169.279 – is related to X_{1t} (unit vector). We can eliminate X_{1t} because of unit vector. So, the value 169.279 represents some initial level of GDP. If we would omit the influence of other variables, the value of GDP in Czech Republic would be 159789 million USD.

$\mathbf{2.034}\ \boldsymbol{x_{21}}$– if the export of beer from the Czech Republic increases one unit (1 mill CZK), the GDP in the Czech Republic will increase by 20.7482 million USD.

$\mathbf{8.723}\ \boldsymbol{x_{3t}}$– if the import of beer into the Czech Republic increases one unit (1 mill CZK), the GDP in the Czech Republic will increase by 95.6688 million USD.

$\mathbf{-4.926}\ \boldsymbol{x_{4t}}$– if the Czech currency (Koruna) appreciate by 1 unit, the GDP in the Czech Republic will decrease by 4.926 million USD.

4.7.9 Model verification

For the statistical verification of the parameters and verification of the quality of the whole model, we just see on the software the P-value.

- Parameters estimation.

All P-values has 3 stars, which means that for the selected level of significance $\alpha = 0.001$, the P-values < α .... S (meaning that the parameters are statistically significant).

- R^2 / adjusted R-squared.

In this analyse, the adjusted R-squared is 0.96, so this means that approximately 96% of the variable Gross Domestic Product in the Czech Republic is explained by analysed relationship.

- F-test (P-value)

The P-value (F) is 7.54e-14, which is smaller than $\alpha = 0.001$, so we may say that the model is good from statistical viewpoint.

4.7.10 Application of model

For each exogenous variable to be comparable, the intensity of exogenous factors must be expressed as elasticity. As shown in the data, exogenous factors have a certain degree of influence on endogenous variables. Because individual parameters (exponents) reflect elasticities, the power function eliminates the need to calculate elasticities. For the application of the model, elasticity coefficients will be utilized. Therefore, by evaluating the change in the dependent variable (GDP of the Czech Republic) if the explanatory variable (beer export) increases by 1%.

We will calculate the elasticities for the last period 2021.

$$\bar{y}i = \mathbf{169.279} + \mathbf{2.034}\ (7{,}298.565) + \mathbf{8.723}\ (654.946) - \mathbf{4.926}\ (21.68)$$

$$\bar{y}i = \mathbf{20{,}620.858}$$

$$y_i = f(x_i, x_j, x_n)$$

We will calculate the elasticities for the last period 2021.

- Direct beer export elasticity – it shows the relationship of GDP and beer export.

$$e_{ii} = \frac{\partial yi}{\partial xi} \text{ x } \frac{xi}{\bar{y}i} = 2.034 \text{ x } \frac{7{,}298.565}{20{,}620.858} = \mathbf{0.719\%}$$

If the export of beer increases by 1%, the GDP in the Czech Republic change by 0.719%.

- Direct beer import elasticity – the influence of imports of beer into the Czech Republic on the GDP of the country.

$$e_{ij} = \frac{\partial yi}{\partial xj} \text{ x } \frac{xj}{\bar{y}i} = 8.723 \text{ x } \frac{654.946}{\mathbf{20{,}620.858}} = \mathbf{0.277\%}$$

If the import of beer increases by 1%, the GDP in the Czech Republic change by **0.277%.**

- Direct exchange rate elasticity – the influence of the price of the Czech currency (Koruna) into the Czech Republic on the GDP of the country.

$$e_{ij} = \frac{\partial yi}{\partial xj} \text{ x } \frac{xj}{\bar{y}i} = -4.926 \text{ x } \frac{21.68}{\mathbf{20{,}620.858}} = \mathbf{-0.0051\%}$$

If the valud of Czech Koruna depriciates by 1%, the GDP in the Czech Repubic change by **-0.0051%.**

5. Results and Discussion

The Czech Republic has a longstanding tradition of hop-growing, and there is continued interest in the country's economy to advance this agricultural industry. The Czech Republic holds a significant position in the global hop market as the third largest producer of aroma hops, with a share of almost one-tenth of the harvest. The top two producers are Germany and the US, which collectively contribute to over two-thirds of the hop market. In late 2017, the hop field region of the Czech Republic expanded to 4,945 hectares, marking the highest recorded area in the past seven years. This denotes a 3.4% rise when comparing data from one year to the next. The surge in production can be attributed to the present need for superior Czech hops and the subpar European crop yield in 2015.

Consequently, the depositories were depleted, and the inventories of breweries worldwide, which receive 80% of their domestic hop supply, were exhausted. Subsequently, there has been a surge in demand and prices, which has led to a point where the expenses incurred in hop production are being partially offset.

Consequently, there has been a rise in hop production investments. The expanding hop fields in the Czech Republic present a notable challenge for hop cultivators, namely the issue of labor scarcity.

Geography - note landlocked; strategically located on some of Europe's earliest and most important land routes; Moravian Gate is a traditional military corridor between the North European Plain and the Danube. Czech Republic's location is advantageous because it is situated in the center of Europe. Austria is bounded to the west by Germany, the northeast by Poland, the east by Slovakia, and the south by Austria. The topography of the country consists of undulating hills, forested mountains, and fertile plains, illustrating its diverse geography.

The economy of the Czech Republic is medium-sized, export-driven, and highly dependent on foreign demand, particularly from the Eurozone. Approximately 88% of Czech exports go to other EU member states, with 32% destined for Germany, the nation's biggest trading partner. The United States is the Czech Republic's most important non-EU export market. In 2021, U.S. exports to the Czech Republic reached nearly $3.6 billion, a 23% increase from the previous year, while imports from the Czech Republic reached a record-breaking $6.6 billion. Components and equipment for the automotive industry, energy franchises, information technology, and medical and scientific equipment are among the leading exports and investments of the United States in the Czech Republic.

In the past five years, Germany has accounted for more than 29% of the Czech Republic's foreign trade revenue. The Czech Republic's trade surplus with Germany has been the highest among all its trading partners during the same time period. This surplus has gradually increased and now exceeds the overall trade surplus of the Czech Republic. Very high interdependence exists between Czech exports and German imports and exports. As a consequence of robust collaboration imports, the same is also true for Czech imports of goods. The average share of goods exports to Germany was 31.6%, with the highest share (32.5%) registered in 2009, i.e., during the most severe phase of the global financial crisis.

Corona Virus had impacted the foreign trade worldwide where the international trade fell in 2020 but rose sharply in 2021. Trade impacts vary by goods, services, and trade partners, putting strain on specific sectors and supply chains. The COVID-19 pandemic caused trade structure shifts in a year that normally take 4-5 years. At the end of 2021, trade partner and product imbalances remained, and not all losses from the earlier steep drops were recovered. Trade impacts and trade flows across goods, sources, and destinations are heterogeneous, which increases uncertainty and adjustment costs and encourages consumers, firms, and governments to adopt new or intensify current risk mitigation strategies.

A decline in the beer export might be expected because of the ongoing war between Russia and Ukraine, as Russia had 8% share of the exported beer for the examined period (1999–2021)

In the application segment, the researcher examined the contribution of beer exports to one of the macroeconomics determinants, the gross domestic product of the Czech Republic during the study period (1999–2021) the study found that if the export of beer from the Czech Republic increases one unit (1 mill CZK), the GDP in the Czech Republic will increase by 20.7482 million USD, and when examine the direct beer export elasticity for the last year of the time series (2021) it shows the relationship of GDP and beer export that if the export of beer increases by 1% in 2021, the GDP in the Czech Republic would change by 0.719%.

6. Conclusion

Foreign trade holds great economic significance as it directly contributes to a nation's economic growth. In order to establish national trade policies that adhere to and serve the essential elements of this trade and to advance the development and standard of living of the country, it is crucial to comprehend how countries typically evaluate trade performance indicators in order to assess its impact on economic growth as well as try to remove barriers to international trade.

The Czech Republic's beer business has a rich history and strong reputation for delivering exceptional flavor, making it a major contributor to the nation's economy, culture, and identity, and one of the largest beer manufacturers and exporters globally. In 2020, Czech breweries produced more than 20 million hectoliters of beer, of which almost a third was exported, according to the Czech Brewers' Association.

The Czech Republic earns significant revenue from exporting beer. The Czech Statistical Office provided data indicating that more than 5.5 million hectoliters of beer were exported by the country in 2020; Germany was the biggest market, with Slovakia, Russia, and the United Kingdom following closely. In terms of revenue, beer exports generated approximately 1.3 billion euros in 2022.

Similar to how wine is identified with France, and whiskey with Scotland, beer is connected with the Czech Republic. Today, beer has a significant place in Czech culture. According to estimates conducted by the Czech Brewers' Association in 2020, the trading and distribution of beer alone generates roughhly 55,000 employment in the country, both directly and indirectly, and contributes 1.6% of the Czech Republic's GDP.

7. References

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