Czech University of Life Sciences Prague

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Master's Thesis

Comparing Foreign Trade of Kazakhstan to other countries

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Thesis title

Comparing Foreign Trade of Kazakhstan to other countries

Objectives of thesis

The main objective of this thesis is to analyze the effects of foreign trade on Kazakhstan and compare the results and data with other selected countries. Finding possible actions that will lead to better the foreign trade of Kazakhstan are going to be introduced.

Methodology

The thesis will be divided into a theoretical and practical subclass. The theoretical part will focus on exploring the background of Kazakhstan as a country and establish abundances of resources as well as shortages. Descriptive analytical methods as well as econometric methods will be used to present the data regarding foreign trade.

The practical part will focus on exploring series of data concerning various exports and imports of kazakhstan through a set timeline.

The proposed extent of the thesis

50- 60 pages

Keywords

Import, Export, Foreign Trade, Kazakhstan, Economic Development

Recommended information sources

Bigozhin, U., Bissednova, A., Laruelle, M.: Kazakhstan in the Making. Lexington Books, 2016. ISBN: 1498525474.

DIXIT, A K. – NORMAN VICTOR. Theory of international trade. Cambridge: University Press, 1998. ISBN 0-521-29969-1.

HELPMAN, E. – KRUGMAN, P R. Market structure and foreign trade : increasing returns, imperfect competition, and the international economy. Cambridge: The^MIT Press, 1999. ISBN 0-262-58087-.

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Declaration

I declare that I have worked on my master's thesis titled " Comparing Foreign Trade of Kazakhstan to other countries" 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 29.3.2024   _____

Vojtěch Joza

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Comparing Foreign Trade of Kazakhstan to other countries

Abstract

The country of Kazakhstan experienced a rapid increase in economic development including its GDP values as well as becoming heavily involved in trade with the country's natural resources. This thesis focuses on the foreign trade of Kazakhstan and how other countries affect its trade. The countries utilized for this purpose are China, Turkey and Russia, with each of these countries being economically, culturally and or geographically linked to Kazakhstan and its trade. Russia being heavily connected with Kazakhstan's economy due to their vast history, China being the largest economical power as well as the main trading partner of Kazakhstan especially when it comes to being the main export destination of Kazakhstan. The thesis explores the implications of foreign trade and deduces assumptions that will be discussed with the results computed in the practical part. Additionally economic situations will be explored in the research analysis with insights into certain events that had impacts on Kazakhstan's economy and or international trade. The practical part will analyse the data ranging from 2007 to 2022 for the selected variables for testing and will compare them to deduce possible similarities, irregularities and finally to create a functional econometrics model to address the estimated relations among the variables and the export, and Net export, of Kazakhstan. The strong connection between Russia and Kazakhstan is undeniable with major links between the Russian Ruble and the Kazakh Tenge. Apart from the currency, events that cause sanction to fall upon Russia have major impacts on Kazakhstan's economy and trade affecting the economy in negative ways as well as offering new potential partners for trade in the short term. In terms of share on the trade of Kazakhstan, Turkey has a much lesser impact than China which showcased a large uprise to Kazakhstan's exports in times of a healthy economic growth for China, going in accord with expected foreign trade shifts.

Keywords: Foreign Trade, Export, Net-Export, Kazakhstan, Foreign currency exchange rate, GDP, Russia, China, Inflation rate, Raw material

Srovnání zahraničního obchodu Kazachstánu s ostatními zeměmi

Abstrakt

Země Kazachstán zaznamenala rychlý nárůst hospodářského rozvoje, včetně hodnot HDP, a také se silně zapojila do obchodu s přírodními zdroji země. Tato práce se zaměřuje na zahraniční obchod Kazachstánu a na to, jak ostatní země ovlivňují jeho obchod. Zeměmi, které jsou pro tento účel využity, jsou Čína, Turecko a Rusko, přičemž každá z těchto zemí je s Kazachstánem a jeho obchodem spojena ekonomicky, kulturně nebo geograficky. Rusko je s ekonomikou Kazachstánu silně propojeno díky své rozsáhlé historii, Čína je největší ekonomickou mocností a také hlavním obchodním partnerem Kazachstánu, zejména pokud jde o hlavní vývozní destinaci Kazachstánu. Práce zkoumá důsledky zahraničního obchodu a vyvozuje předpoklady, které budou diskutovány s výsledky vypočtenými v praktické části. Kromě toho bude ve výzkumné analýze zkoumána ekonomická situace a vhled do některých událostí, které měly dopad na ekonomiku Kazachstánu a mezinárodní obchod. V praktické části budou analyzovány údaje z let 2007 až 2022 pro vybrané proměnné k testování a budou porovnány s cílem odvodit možné podobnosti, nesrovnalosti a nakonec vytvořit funkční ekonometrický model, který se bude zabývat odhadovanými vztahy mezi proměnnými a vývozem a čistým vývozem Kazachstánu. Silná vazba mezi Ruskem a Kazachstánem je nepopiratelná díky významným vazbám mezi ruským rublem a kazašským tenge. Kromě měny mají na ekonomiku a obchod Kazachstánu významný dopad události, které způsobují sankce uvalené na Rusko, což má negativní dopad na ekonomiku a zároveň nabízí nové potenciální partnery pro obchod v krátkodobém horizontu. Z hlediska podílu na obchodu Kazachstánu má Turecko mnohem menší vliv než Čína, která v době zdravého hospodářského růstu Číny zaznamenala velký nárůst kazašského vývozu, což je v souladu s očekávanými změnami v zahraničním obchodě.

Klíčová slova: Zahraniční obchod, vývoz, čistý vývoz, Kazachstán, směnný kurz, HDP, Rusko, Čína, míra inflace, suroviny

1 Table of Contents

2 Introduction

The country of Kazakhstan has experienced a rapid increase in economic development including its GDP values as well as becoming heavily involved in trade with the country's natural resources. At the same time it has been able to fund the growth of a newly transferred capital city from a lacking technological city, into a new technologically peaking phenomenon. Apart from this rise, Kazakhstan was chosen because of its unique geographical position as it is located between some of the main economic powers, namely China and Russia, with high economic influence of the EU. In addition to that, the country was integrated into the international system of trade relatively recently, where the country joined the World Trade Organisation in 2015. While Kazakhstan has taken part in trade prior to it joining the WTO, the progress of the country continues into 2022. The fact that the country was integrated in 2015 is timewise in a recent timeline of events, however just enough time has passed since, to be able to analyse the impacts of this integration and compare the data with the time previous to the event of Kazakhstan joining the World Trade Organization.

The country of Kazakhstan is also surrounded by factors that affect its conditions. The country shares a customs union with Russia, in addition to many noticeable factors affecting its trade due to the vast interconnected history with Russia of which it was a part of until Kazakhstan separated from. Kazakhstan is a direct neighbour of China which, unlike Kazakhstan's brief rapid rise, is a rising economic superpower with a much stronger history. Due to the history of Kazakhstan and its geographical positioning, the country has many aspects that connect it to other Turkic nations, of which the country is a part of the council of the Turkic nations alongside their partner Turkey which shares similar religious demographics.

3 Objectives and Methodology

3.1 Objectives

The aim of this thesis is to analyse the foreign trade of Kazakhstan and identify what aspects contribute the most to the rapid growth of the countries' economy in the recent 16 years of its rapid growth. In addition, the aim is to identify factors that are present in selected countries with influence on Kazakhstan, based on cultural, geographical and economic criteria and analyse their effects on Kazakhstan's export, whether the country is flourishing due to its geographical opportunities or the effects of the country's economic structure and the relations of the selected countries in question. Additionally, the aim is to conclude a recommendations of certain actions Kazakhstan could undertake to improve the situation that will be described.

The research questions as well as questions that will be explored during the practical part of this Diploma Thesis are: What are some actions Kazakhstan could undertake to better its foreign trade benefits on its economy? Is Kazakhstan's economic development not meeting its full potential compared to countries situated in similar situations and or backgrounds? What type of resources does Kazakhstan possess and does the country have labour intensive economy or is it land intensive? What are the most significant variables affecting the Export of Kazakhstan?

Hypothesis: Foreign trade with emphasis on Export and specifically Export of raw materials is a major factor contributing to the rapid economic development of Kazakhstan in the past 16 years.

3.2 Methodology

Descriptive analytical methods as well as econometric methods will be used to present the data regarding foreign trade. The data gathered is set to be for the years 2007-2022, the time range selected reflects the desire to compare the years before and after Kazakhstan was introduced as a member to international trading in 2015. The calculation of correlation coefficients will be used to effectively compare two selected countries, specifically it will compare similarities in data for Kazakhstan with the data for the selected countries, which for this work are Turkey, China and Russia, using the formula below:

$$r = n(\textstyle\sum xy) - \dfrac{(\sum x)(\sum y)}{\sqrt{[n\sum x\,2 - (\sum x)2][n\sum y2 - (\sum y)2]}}$$

The quality of regression model will be assessed through the use of the correlation of determination and the correlation coefficient. Relative to the above-mentioned formula, the correlation coefficient, which will be symbolized by "r" will determine the strength of the relationship between two selected data sets or in this case will be created for each country combination to create a correlation table. The coefficients will range between -1 and 1, where the closer the value is to -1 the stronger is the negative similarity of the two data sets, the close the value is to 1 the stronger the positive similarity of the two data sets and lastly the closer the value is to 0 the weaker the relationship is in either negative or positive terms respectively depending on if the value is above or below 0. Correlation values that showcase a value of 0.8 in either negative or positive aspects are seen as strong similarities between data sets, while values that fall below 0.3 are seen as weak.

Coefficients of determination will be used to test the percentage of the data that is explained through the data set itself. The coefficient which will also be labelled "r squared" in this work will be evaluated through the following formula.

$$R^2 = 1 - \left(\dfrac{\mathrm{RSS}}{TSS}\right)$$

The percentage coefficients for data sets that would be above 80% are seen as high while values that fall below 40% are seen as a low percentage of data that is explained through the data set.

Among other time series functions, Statistical forecasting will be used to predict possible future data points based on existing data. The limit set on the years predicted will be set to 2 years, due to the fact that any further prediction would be significantly less accurate. The predictions will be conducted through linear trend function calculations using the linear trend function formula:

$$y' = a + b \times t$$

In the formula, a represents a constant, b is a coefficient with t being the appropriate time mark which will range from 1 to 16 as that is the number of years that are being analyzed. The complete data sets will then allow for pseudo forecasting which will give insights on estimated predictions including a probability range of estimated minimum and maximum for the confidence interval of a set 95% by an applied 0.05 alpha.

Predictions will be accompanied by accuracy testing of the forecasted values by comparing forecasted values to known data. This will be done through the use of Relative error forecast which will be referred to as REF. This tool will generate a percentage which is a comparison of theoretical data with the actual data and will determine the percentage of error of the prediction for the selected year for testing. Using the function:

$$\text{REF} = \left| \frac{P - A}{A} \right| \times 100\%$$

P = predicted value
A = Actual value

The lower the percentage from the REF calculation will be the safer it is to use as it is more probably reliable and accurate. For this work, the stated margin of an acceptable and desirable percentage will be set at 10% with an acceptance value of 20% where it will be noted that it is a higher relative error forecast and is thus less reliable.

Basic time series characteristics will be analysed through the use of index formulas, namely fixed base, chain base and average growth rate. These formulas will be applied to selected variables and or deemed important commodities that can then be compared with the index of the other selected countries for this work, which in this case is Turkey, China and Russia. These results will then be analysed in the discussion part of the work and put into context with the pseudo forecasting calculation with further discussion on impacts and possible causes.

$$Fixed\ base\ index = \frac{Present\ value}{Original\ first\ value}$$

The fixed base index allows for understanding on how the time series has developed to a certain selected year also referred to as "yt", compared to the first year in the data set which is also referred to as "y0". The closer the value is to 1 the less difference between the two values there is.

$$Chain\ base\ index = \frac{present\ value}{previous\ value}$$

The chain base index analyses the value and the difference between the selected year or "yt" and the year previous to that thus "yt-1". This index allows to analyze short term changes and identify steep changes in the trend of the data set. Regarding the conditions for interpretation of the result: when the chain base index is negative then the value is now decreasing in the selected year while if the index is positive, the value is increasing in the selected year.

$$Average\ growth\ rate\ index = \sqrt[n-1]{\frac{y_n}{y_1}}$$

The average growth rate analyses the growth that occurs in the data set from each year to the next on average throughout the whole data set timeline. This index will be used to compare the calculated average growth rate with the actual growth rates to locate externalities and abnormalities in the data set, which can then be modified using dummy variables or exchanging the values for the average rate for better data compatibility while impacting the overall data the least. In the case of such an action, the edited values are clearly labelled as "modified values" and will be accompanied with a possible reasoning for the abnormal value, and it cause.

Hypothesis testing will be conducted to test the variables for relationship levels or lack there off. With the alpha being set to 0.05 and the estimated p-value being used as to identify instances when it is possible to reject the null hypothesis and at what certainty. In cases where the p-value is lower than the alpha (0.05) the H0 can be rejected and H1 stands, if the p-value is higher than the alpha then the H0 cannot be rejected with significant certainty. The hypothesis for H0 and H1 entail the following:

$$H0 = there\ is\ no\ relationship\ between\ the\ variables$$
$$H1 = there\ is\ relationship\ between\ the\ variabels$$

Heteroskedasticity will be tested for the econometrics model after ordinary least squares method is processed, with the aim to test for a significant systematic relationship between the independent variables and the squared residuals which will be symbolized in two hypotheses listed below.

$$H_0 = significant\ uniformity\ of\ the\ scattered\ residuals$$
$$H_1 = there\ is\ no\ significant\ uniformity\ of\ the\ scattered\ residuals$$

Criteria for rejecting null hypothesis:

$$if\ pvalue < 0.05, reject\ H_0, model\ has\ heteroskedasticity$$
$$if\ pvalue > 0.05, H_0\ stands, no\ heteroskedasticy\ detected$$

Data set interpretation for the exports and imports of the selected countries, which in this case are Kazakhstan, Turkey, Russia and China, will be interpreted on an economic scale and discussed on the effects on their economies through emphasis on factors such as exchange rates GDP fluctuations, possible market causes and implications on the central bank reserves and its causes on the economic situations and attractiveness to foreign trade with top trading partners of the selected countries. These factors will be discussed through the practical part and concluded in the discussion part with reasonings and recommendations for actions to be undertaken by each of the selected countries to stabilize their economy and depending on the situation, to strengthen or weaken the domestic currency with a healthy inflow of foreign currencies.

An econometric model will be used to create functional representations of selected commodities. For each of the selected countries, the variables will be selected in identical fashion for all the countries being compared to Kazakhstan. Meaning Kazakhstan, Turkey, Russia and China, there will be two econometric models. One will analyse the dependent variable of Net Export for Kazakhstan with variables of exchange rate of the specific selected country, GDP of the specific selected country and the GDP of one of the main trading

partners of the specific selected country. The exchange rate will allow for a representation of the local currency strength, the GDP will then be used as an indicator on the overall macro effect on the export and import of the country and the GDP of the main trading partner is used to allow external factors that may affect the export and imports of the selected country. The formula for the Net Export of Kazakhstan will not be combined later on with the larger model, this is solely for the purpose of creating a quantifiable illustration of how the net export of Kazakhstan reacts to the variables, and then these values will be compared to the values attained for Kazakhstan. The formula used for the countries will be:

$$Net\ export\ of\ Kazakhstan_{1t}$$
$$= constant + \beta_{2t} exchange\ rate\ of\ Kz\ Tenge_{x2t}$$
$$+ \beta_{3t} GDP\ of\ Kazakhstan_{x3t}$$
$$+ \beta_{4t} GDP\ of\ main\ trading\ partner\ China_{x4t} + \varepsilon_{1t}$$

Concerning the second and the strongest econometrics model that will be conducted for each of the countries gathered variables, it will use the variables of each of the specifically selected countries and will further have variables of exchange rates, GDP of the domestic selected country, GDP of the main export destination partner as this equation is focused mainly on the export of Kazakhstan this variable will be unique to Kazakhstan, and will include the variable that is the top exported item of the Kazakhstan Export pool . The formulas for each country will not be combined later on nor will be calculated separately, this is solely for the purpose of creating an quantifiable illustration of how the export of Kazakhstan reacts to the changes in the variables that are selected for the selected countries and later on to allow comparison of the quantified data of the selected countries with the data calculated for Kazakhstan. The equations used for the econometric part are as follows:

$$Export\ of\ Kazakhstan_{1t}$$
$$= constant + \beta_{2t}Foreighn\ Exchange\ rate\ of\ Kazakh\ Tenge_{x2t}$$
$$+ \beta_{3t}Inflation\ rate\ of\ Kazakhstan_{x3t}$$
$$+ \beta_{4t}GDP\ of\ main\ export\ destination\ China_{x4t}$$
$$+ \beta_{5t}Foreighn\ Exchange\ rate\ of\ Chinese\ Yuan_{x5t}$$
$$+ \beta_{6t}GDP\ of\ Turkey_{x6t}$$
$$+ \beta_{7t}Foreighn\ Exchange\ rate\ of\ Turkish\ Lira_{x7t}$$
$$+ \beta_{8t}GDP\ of\ RUssia_{x8t}$$
$$+ \beta_{9t}Foreighn\ Exchange\ rate\ of\ Russian\ Ruble_{x9t}$$
$$+ \beta_{10t}Raw\ material\ Export\ of\ Kazakhstan_{x10t} + \epsilon_{1t}$$

Dependent and Independent variable data units and details:

- Y - Export of Kazakhstan in billions of USD
- X1 - constant
- X2 – Foreign Exchange rate of Kazakh Tenge against US Dollar
- X3 – Inflation rate of Kazakhstan in %
- X4 – GDP of main Export destination China in billions USD
- X5 – Foreign Exchange rate of Chinese Yuan against US Dollar
- X6 – GDP of Turkey in billions of USD
- X7 – Foreign Exchange rate of Turkish Lira against US Dollar
- X8 – GDP of Russia in billions of USD
- X9 – Foreign Exchange rate of Russian Ruble against US Dollar
- X10 – Raw material Export of Kazakhstan in billions USD
- u – Error Term

Before incorporation of the data collected into the Ordinary Least Squares method, the data will be tested for multicollinearity in order to ensure accurately estimated coefficients of the econometric model. For this work, the correlation coefficient will have a set threshold of above r = 0.8, or below r = -0.8. upon identification in the correlation testing the correlation combination will be modified using the first difference method which will

come a t a cost of 1 observation period and will track the changes of the value of the specific variable selected for modification, this variable will be selected by upon identification of the two highly correlated variables, the two variables will be compared on their correlation to the dependent variable, in this case the Net Export of Kazakhstan in the first econometric model, or the Export of Kazakhstan in the second larger model. The variable with the weaker correlation to the dependent variable is selected for modification as it is viewed as less important than the higher correlated one with the dependent variable. The First difference tool will be utilized as follows:

$$Y_{((yt-(yt-1))}$$

A second option of modification will be to use the system of lagged variables to edit the variables by utilizing each time period's data of the chosen variable and using the variable earlier instead. Using the tool:

$$Y_{(t-1)}$$

This method will come at a cost of 1 observation period of the most recent data which in this case will be data for the year 2022, unlike the first difference method which would come at a cost of the data for the year 2007. In this instance the first difference method will be prioritized over the lagged variable, which will be used if first difference is proven to not eliminate the high correlation. In the occurrence where the high correlation resides after both methods, the variable will be subject to elimination depending on its importance, the variables for Kazakhstan will have a higher sense of importance due to the main focus on Kazakhstan's foreign trade. Thus creating a view on the situation on Kazakhstan's economy and what factors affect the Export of Kazakhstan the most and are deemed as most significant.

The statistical verification will utilize aspects from the Ordinary least squares method which is implemented for estimation of the coefficients of the econometric models. Using the following formula:

$$(X^T * X)^{-1} * X^T * Y$$

- X – The matrix X composed of all independent variables in the data set
- X^T – The Transposed version of matrix X
- Y – The dependent variable matrix Y

The statistical verification will utilize the matrix created from the $(X^T * X)^{-1}$ part of the OLSM equation, which will factor in the values in diagonal form through the matrix. Following this the verification will be analysed through the following points:

1. $(X^T * X)^{-1}$ – diagonal variable
2. sii – multiply by 2
3. sbi – to the power of 0.5
4. Enlist absolute estimated parameter values
5. Calculate the t-value by dividing the est. parameter values by sbi
6. Identify Critical t value based on degrees of freedom and alpha
7. compare t value and critical t-value
8. Identify significance, if t-value is larger than the critical t-value the variables may be classified as Statistically Significant or "SS" for short. In case the value of the t-value is lesser than the value of the critical t-value, the variable is classified as Statistically Insignificant or "SI" for short.

The results from all the listed types of analysis will be compared with one another during the discussion chapter of the thesis, where the goal will be to identify strong factors such as Trade or exchange rates, that proved to have a strong value on the Export of Kazakhstan and comparing with the situational matters, discussed in the research analysis, in the economic structure of Kazakhstan. This will lead to a conclusion on whether the Export of Kazakhstan is a Major factor contributing to the rapid growth of Kazakhstan in the recent years, while taking into account how the situations evolved in the selected countries for comparison.

4 Literature Review

4.1 Why do countries utilize Foreign Trade

Countries engage in trade to acquire valuable assets that can boost their economy. When an economy is struggling due to issues like high unemployment or inefficient resource utilization, there may be a situation where the economic growth is hindered by the shortage of a specific commodity, either due to the circumstances or the country's geographical location. Such a scenario can significantly impact the standard of living and the GDP of the country. In situations like these, it is advisable to identify a commodity or tradable good that is abundant domestically and seek trading opportunities with a country that faces the opposite situation, where the commodity is scarce.

As Paul Wonnacott highlights, "International trade and the accompanying financial transactions are generally conducted for the purpose of providing a nation with commodities it lacks in exchange for those that it produces in abundance." This emphasizes the collaborative aspect of economies working together to address each other's deficiencies, leading to stronger economies. Lastly, international relations aim to maximize trade opportunities for countries at the most cost-effective rates. Trading this way allows countries to progress internally in economic growth by utilizing resources that would have otherwise been too abundant to be useful ("Britannica Money," n.d.).

4.2 Mercantilism

The Foreign Trade was done through "barter" which was an act of exchange of goods between the two parties. Foreign Trade is referring to the trade of two unique countries.

In the 16th to 17th century, a high impact on trade was influenced by Mercantilism. Mercantilism focuses on pursuing wealth in various forms such as finding gold valuable and aiming for the nation's wealth. The conviction of mercantilism was that two nations when committing to a trade will lead to one country benefiting from it over the other. The government therefore started monitoring prices, managing wages, emphasizing exporting of products and importing only raw material when necessary. Whole idea was to make the market wider through promotion of exports and the surplus made through exports was converted into gold.

Disagreements towards mercantilism began in the 18th century. In England a Scottish Economist Adam Smith has written "The Wealth of Nations" where he writes about what benefits could bring if trade restrictions and other barriers are removed. Highlighting how some trade is rather inefficient with high custom duties and sometimes even prohibitive leading to impulsive negotiations. Many agreements were put into effect on trade in support of those liberal ideas. After Adam Smith, many restrictive policies were put in place with claims to justify the situation that the government is aiming to protect its home production against competition by avoiding imported products, bans on imports were uplifted but custom levies were put in place. As countries could set their own rates themselves freely, sometimes they were way too high. In the case of France and Britain, the French tariff in 1860 was extremely high. In the exact year therefore a Anglo-French agreement was signed to within five years limit protective duties of France to max 25 percent. Additionally, all products from France were able to enter Great Britain with exception to wine. Trade was disrupted by World War I. And the postwar situation impacted the world's economy. New trade restrictions were put in effect and trade barriers once again had risen. The situation was dire and 29 countries in 1947 went to convention to discuss the ongoing situation and the GATT General Agreement on Tariffs and Trade was signed. The policies supporting mercantilism were emphasized until the situation of World War II. The post-war situation led to a shift into international trade[1].

4.3 Comparative advantage

The definition of comparative advantage lays in the country's ability to utilize its resources to the highest efficiency, in terms of using the means of production the country has at a disposal compared to the means of production of another side or in this case other country. Another terms that ties to comparative advantage is "opportunity cost", which is the cost of choosing one product over the other with the other product being the cost paid. In an article by Adam Hayes, it is defined as "an economy's ability to produce a particular good or service at a lower opportunity cost than its trading partner". By reasoning, it takes into account that if there was no advantage for countries to conduct trade as it wouldn't offer any efficiency privileges, there wouldn't be a reason to conduct trade in the first place. In an

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[1] ALLAIS, M., BALASSA, B., BERTRAND, J.B. *History of Foreign Trade.* 2024. Available at: https://www.britannica.com/money/international-trade.

instance that a country has the means or is in possession of a good or service to offer, a good or service that the country is able to produce or acquire at a cheaper rate than the trading partner, then this country should be the one to focus on producing and or offering the specified service and trade it to the country that wouldn't be as efficient in acquiring it.

This benefits both sides of the trade, as the country that is capable of mass acquiring the product or service may focus and develop the specified trade and make profit off of trade of the product instead of trying to manage acquisition of all items in demand which would result in the country having to pull away their focus from the original product or service. In return this country can import any lacking products or services from countries that are in a similar position, with the inverse condition that the other country is able to acquire the product or service at a better opportunity cost. In a sense, a relatively fortunate trade would be occurring between two countries that fill in each other's needs for certain products and services by focusing on what their opportunity cost is favourable for them and simply conducting trade with one another. In the world of trade, this applies with countries exporting goods and or services, which they are in a better position of acquiring than the majority of other countries and Importing in return goods and or services from external sources (Hayes, 2024).

4.4 Types of foreign trade

The different types of foreign trade show the direction of how the goods and or services move out of or into a country. When the goods and or services go one way, the corresponding price flows in the opposite direction. A country may experience an inflow of foreign currency and or outflow of local currency.

In instances where a country exports a good and or service to another country, the country experiences an inflow of foreign currencies on the local economy which is healthy for the strength of the currency as well as for the reserves of the national bank. On the other hand, a rise in the strength of a currency leads to a drop in attractiveness for further trade once the currency strengthens in comparison to its previous norm in terms of its foreign exchange rate. Such an instance leads to lessened exports, which is tied to a decrease of the inflow of foreign currencies, and in cases where the local currency grew too rapidly, a deficit of foreign currencies on the local market. The result is an economy that is filling in the blanks

on the market from its reserves of the national bank until depletion which by then pushes the currency back down.

Instances of countries importing experience an outflow of currency and for some countries such a state is more common due to a lack of resources such as goods to export in return. In order to acquire such goods, the country must import them in such a case. However, a trade deficit of greater margins is less sustainable as money keeps flowing outward from the country into other countries being traded with instead of an inflow into the country[2].

Transit trade or re-export means that the goods imported into a country are then exported without substantial added value from the side of the companies of that country that imported the goods in the first place. The question of what it means substantial added value, is governed by the rules of origin either on the base of the WTO or relevant preferential agreements.

In case a country utilizes transit trade, it has a relatively positive effect of its economy. Apart from the establishment of new contractual connections, a part of the profit remains in the country as well as at least payments for services like transport, storage and so on. After the completion of the whole process, the country that imported the goods and later exported the goods to a third country, experienced a net profit and a smaller inflow of foreign currency on the base of the difference of the import price and the export price. This should lead to an increase of foreign currencies in reserves with a possible tendency to strengthen the local currency[3].

4.5   Recent development and issue of Re-exports to Russia for Kazakhstan

Since the year 2022 a new phenomenon occurred in the foreign trade of Kazakhstan, it results from the fact that on one side Kazakhstan shares a custom union with Russia and at the same time is not a subject of sanctions against Russia resulting from the recent war in Ukraine. In this respect two categories of goods must be evaluated separately; the first

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[2] *What is the Foreign Trade? What are the types?* 2020. Available at: https://perralojistik.com/en/what-is-foreign-trade.

[3] *What is transit trade? Why important?* 2023. Available at: https://www.impextur.com/en/what-is-transit-trade-why-important/index.html#:~:text=In%20transit%20trade%2C%20goods%20bought,place%20the%20goods%20are%20shipped.

category are goods that are subject of sanctions like a dual use goods and technologies (products that can be used for civil purposes as well as for armed forces). Regarding this category Kazakhstan strives to avoid any accusations of being an actor in avoidance of the sanctions as it is clear as mentioned in the article published by EUROBAK: "Kazakhstan will monitor goods that are imported into the country for re-export, tracking them until they reach their final destination". On the other hand, when it comes to the goods that are not subjects to the sanctions, but European and US companies are limiting their direct exports to Russia for various reasons - for example the western companies that do not want to be in any way connected with Putin's Russia, Kazakhstan is reasonably not opposed to have such products re-exported into Russia.

At the same time, it is difficult to predict the reactions of western companies in cases of when they find out that their products ended up on the Russian market as a result of going through Kazakhstan, creating a worrisome treatment to trade with Kazakhstan with many companies turning away from trade with Kazakhstan. It is worth it to mention that in such cases Kazakhstan also lacks instruments to limit such re-exports (instruments such as tracking). This development influences the results of foreign trade of Kazakhstan in the years 2022 and 2023, with 2022 being within the analysis range of this thesis[4].

4.6 Kazakhstan and Trade agreements

The international trade system is based on WTO (World Trade Organization) that grants equal treatment among the members. The most important exemption from this rule are preferential trade agreements. Those can have a form of free trade agreements, a deeper form of this is customs union with the final stage of economic union. Free trade area agreements lead to abolishment of most customs duties and quantitative restrictions on trade.

Customs unions mean that all members apply the same tariffs for the goods originating outside of the customs union. This allows limiting the border controls between the members of the union. Aim of the economic union is to reach an integration of the countries on an economic level, resulting in the situation with basically no differences when companies sell their products on their domestic market or on the markets of other members

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[4] *Kazakhstan: Changes regarding monitoring of goods re-exported to Russia*. 2024. Available at: https://eurobak.kz/kazakhstan-changes-regarding-monitoring-of-goods-re-exported-to-russia/.

of the economic union. The main task of the economic union is to abolish non-tariff barriers to trade like certifications.

4.6.1 Euro Asian economic union and Kazakhstan

In case of Kazakhstan the most important preferential agreement is the Euro Asian economic union. This union was established in the year 2014 in Astana, and it replaced the former customs union. Members of the Euro Asian economic union are Russia, Belarus, Kazakhstan, Kyrgyzstan and Armenia (Potters, 2021; Wolczuk and Wallace, 2022).

In the trade relations between Kazakhstan and for example Russia, it doesn't mean only that trade and or customs tariffs were abolished, but in fact that is not complicated for the goods to cross the border between the two countries. At the same time, it is worth to mention that because of the difference in the economic and administrative strength most of the regulations that are valid in all of the union, originate from Russian regulations. An example of such trend can be veterinary and phytosanitary (protection of health of plants) regulations and when required control is carried out nearly exclusively by Russian authorities (Aidarkhanova, 2023).

The Euro Asian economic Union is clearly inspired by the European Union, with the differences coming from its relatively short existence up until now and Russian economic domination that is present inside the Union[5].

4.7 Advantages of international trade

The advantages of international trade on a nation's economy can be seen in many ways, where they allow benefits to different sectors within the country. Bruna Martinuzzi's article highlights ten significant advantages, outlined below, associated with foreign trade among participating countries.

1.   Revenue Boost

An increase in income can be seen as the nation gains access to a larger pool of potential customers abroad.

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[5] *International organisations: Euroasian Economic Union.* 2023. Available at:
https://www.mfa.am/en/international-organisations/6#:~:text=The%20Eurasian%20Economic%20Union%20is,May%2029%2C%202014%20in%20Astana.

Example: By exporting its technological gadgets to foreign markets, a country like Japan, which is known for its technological industry can use the broader consumer base which then results in increased revenues.

2.   Exploring New Markets:

Accessing markets with lower competition, especially in sectors and or industries where certain resources are scarce or abundant and the competition is almost on the stage of oligopoly which brings up the barriers for entry. If a company joins from an external source, it may be able to restore competition to the market and thus be very beneficial for the host country.

In the opposite way, a country exporting specialized agricultural products may find a lucrative market in a foreign country where such products are rare, leading to reduced competition on that market as it will become more dominant.

3.   Extended Product Lifespan

Prolonging the demand for products by introducing them to emerging markets. An example would be the United States that can maintain the popularity of certain products by exporting them to emerging markets, ensuring sustained demand over time. Products that would otherwise die down in demand in the United States otherwise, due to factors such as an overwhelming increase of popularity of a competitor.

4.   Enhanced Cash-flow Management

Improved control over cash-flow, facilitated by upfront payments for exports. An example would be receiving payments in advance for exported goods which allows a nation to manage its finances more efficiently, reducing dependence on consumption levels in the importing country.

5.   Reduced Risk Exposure

Mitigation of risks associated with domestic economic downturns. An example would be a country with a diversified market presence, both domestically and internationally, can shield its economy from adverse effects caused by political factors or environmental events. As the chances of economic problems arising in numerous economies is less probable than it happening in one.

6.   Cost Savings on Currency Exchange

Cost-effective transactions through strategic use of currency exchange rates. An example would be exporting to a country with a stronger currency can result in higher demand due to competitive pricing since the weaker currency will be more affordable to the consumers in the country with the stronger one, and also factors such as organizations like the Export-Import Bank of the United States offer support in managing such transactions.

7.   Export Financing Opportunities

Access to financial support for export-related activities. An example would be organizations like the U.S. Small Business Administration that provide financial assistance to businesses engaged in export activities, allowing for growth and expansion.

8.   Optimal Resource Utilization

Efficient utilization of abundant resources, contributing to improved GDP. An example would be a country with surplus in agricultural resources can enhance its GDP by exporting agricultural products, additionally if the country focuses on exporting this product and or resource to a country that inversely has a scarcity of it can allow for further contribution. In best cases increasing optimality may happen when Country A that has an abundance of resource A but has a scarcity of resource B, focuses on the production of product A and conducts trade with Country B that has an abundance of resource B for product B but has a scarcity of resource A and focuses on producing product B.

9.   International Reputation Enhancement

Augmented international reputation over time. An example of this is that consistent export performance builds credibility for a nation, making it more recognized and trusted in neighbouring countries and beyond which then further allows for more trade to be made in the future with more countries.

10.   Specialized Focus on Exported Goods

Encourages the country to concentrate on enhancing and diversifying the specific product it exports. An example of this would be by investing in research and technology, a country can continually upgrade its exported goods, solidifying its position as a leading

exporter in that particular product category. Thus it allows the country to focus on producing what it excels at producing and trading for whatever it need through the product that was mass produced (Martinuzzi, 2023).

4.8 Disadvantages of international trade

The article authored by Barry Moltz explores the drawbacks associated with engaging in foreign trade. These drawbacks, outlined below, span from dealing with shipping customs and requirements to challenges in executing the export process in a foreign country.

1. Various Shipping Customs and Requirements:

Exporting goods to different destinations is likely to come with the need to comply with various conditions for importing goods, including rules, restrictions, and taxes imposed on shipped commodities. Navigating the diverse regulations of export destinations can pose challenges for a country, making it difficult to meet all the specified standards at once in which the more there are destinations does not necessarily result in better outcomes.

Example: In Country A, certain products may require specific certifications and inspections, while in Country B, there might be different customs duties that significantly impact the overall cost of the exported goods.

1. Different Languages:

Language differences present a significant barrier, with the highest issue being that it can lead to miscommunications through poorly translated documents between countries. This can result in messages being distorted and crucial information being lost in translation, making communication efforts more time-consuming and less efficient.

Example: Misinterpretation of product specifications due to language difficulty may lead to manufacturing errors or the delivery of goods that do not meet the expectations of customers in the foreign market. Leading to an assumption of breached trust and a decrease in trade between the two countries.

2. Differences in Culture:

Cultural differences contribute to further miscommunications regarding values and preferences, which might be well-known internally but not necessarily understood internationally.

Example: The color red may symbolize luck in one culture but signify danger in another. Failing to grasp such cultural perceptions could lead to inappropriate product choices or marketing strategies in factors such as promotion designs and or word usage that may be understood in one country through a local context but loses the meaning in the foreign culture where the context is not understood.

3. Customers of Various Backgrounds and Locations:

Serving customers across the globe introduces challenges related to time zones, work ethics, and language barriers, extending communication timelines and potentially delaying business transactions and thus impacting efficiency.

Example: Coordinating product launches or marketing campaigns may be complicated when dealing with customers from different continents, each with its own distinct business hours and communication norms. Furthermore, applying such coordination on multiple distant time zones becomes more complicated.

4. Refunds:

Addressing issues such as product returns and refunds can incur costs, especially when the country bears the expenses of return shipments. Opting not to offer refunds may reduce risks but could impact customer demand for foreign goods.

Example: A customer dissatisfaction issue resulting in a return might require the country to cover the return shipping costs, increasing the overall financial burden and decreasing profits of the company.

5. Stealing the Idea of the Property:

As products cross borders, there is an increased risk of similar or identical products entering the global market. Protecting intellectual property becomes challenging, with international institutions having limitations in enforcing copyright laws abroad.

Example: A unique design or innovation in a product could be replicated by competitors in a foreign market, leading to a loss of the competitive edge for the original

country's businesses as the country is limited in how much it can interfere with the market outside of its jurisdiction which in this case would the border of the country.

The idea is that engaging in foreign trade brings about many challenges, ranging from navigating complex shipping regulations to addressing cultural and language differences. These challenges underscore the need for careful consideration and strategic planning when venturing into international markets. In the realm of foreign trade, being aware of and addressing these disadvantages is crucial for successful global business endeavors as the country must evaluate the positive aspects but also count on the negatives as mentioned above. In a perspective concerning the thesis, it can be expected by the information gathered that a country with a strongly different language and cultural background of beliefs will have more trouble exporting or inversely importing goods and or services from or to countries that don't share similar ideals (Moltz, 2022).

4.9   Effect of foreign trade on the domestic economy

Trade plays a crucial role in a country's economic landscape, impacting its Gross Domestic Product (GDP). When we talk about exports, we're referring to goods and services leaving a country, bringing in foreign currency. Proper management of these incoming funds is essential for the central bank to maintain reserves and avoid extreme economic shifts. On the flip side, imports involve the inflow of foreign goods and services, resulting in the outflow of local currency. This also allows the country to experience a higher competitive market and lowers risks and issues related to large oligopolies and or monopolies. A higher competition in a country's market allows for the market to experience a healthy demand and satisfaction as firms are forced to lower prices and increase quantity and quality to compete for the attention of the consumer.

Exports tend to be more beneficial for countries with weaker currencies, as they receive a boost from the influx of foreign currency, as well as the fact that it is more common as a weaker currency is more attractive to foreign countries for whom it is then viewed as a way to save money. In contrast, countries with stronger currencies often benefit more from a variety of choices available through imports, enhancing options for consumers. Products imported from abroad can contribute to cost savings for both the importing and exporting countries, promoting competition and potentially lowering prices.

In markets with limited competition, dominant players may set higher prices, limiting consumer choices. Conversely, a significant import presence can lead to a more competitive market, providing consumers with affordable options and encouraging businesses to stay competitive with their pricing.

However, an imbalance between a country's imports and exports can have negative consequences. Large-scale imports exceeding exports may disrupt the nation's balance of trade, potentially devaluing its currency, as the central bank of the country will have to pay out the difference from its reserves which is not a problem in a short-term spectrum but becomes a problem if it becomes an occurring trend until the bank runs out of reserves. In that case the country's currency would suffer, specifically the value of the currency would fall in contrast to other currencies, as it would be necessary for the market to be more attractive to the foreign eye to motivate foreign countries to export from the domestic country and restore balance to the economy with the inflow of their foreign currency. Thus, this imbalance can result in adverse effects on GDP, inflation, interest rates, and exchange rates (Kramer et al., 2023).

4.9.1 Expenditure method of calculating GDP

The expenditures method of calculating GDP considers consumer spending, investment, government spending, and net exports (the difference between exports and imports). Exceptionally high levels of imports and exports can serve as indicators for assessing foreign economies in comparison to the domestic economy. As Leslie Kramer states, "If exports are growing, but imports have declined significantly, it may indicate that foreign economies are in better shape than the domestic economy." Conversely, an increase in imports and stagnant export values may signal a stronger economy in the country of origin compared to external economies. As it revolves back against the currency exchange rate with foreign countries doing better economically will allow them to export more from the domestic country as it is more affordable while a stronger domestic currency allows for more affordable importing from foreign countries with lesser exports as these countries will have trouble keeping up with the stronger economy of the domestic country (Kramer et al., 2023).

4.10 Foreign Trade Protectionism Tools

From the tools mentioned in the article by Kimberly Amadeo, the most common tools are custom tariffs. Their usage is partially limited by WTO rules and in the case of free trade agreements or deeper forms of economic integration, the usage of custom tariffs is basically prohibited. The same situation applies in the case of customs quotas or quantitative quotas. Only in the case of safeguard measures or anti-dumping tariffs, the tariffs and quotas can be applied to relevant products for a limited time frame. Subventions are broadly used to support local production, but their existence has to comply with WTO rules and in case of economic union (for example internal market of the European Union), the rules in force prevent distortion of competition among the member states.

Currency manipulation is a relevant topic in recent times for relations between the US and China. For a number of years China has carried out interventions in order to weaken their currency (the Chinese Yuan) with the aim to make its exports more competitive and imports more expensive as to reach the goal of becoming less attractive to the Chinese consumers. Currency manipulation is totally prevented by the adoption of common currency, for example EURO in the Eurozone. For instance, EURO prevents Italy from devaluating its currency in order to increase its exports to Germany or France (Amadeo, 2022).

In case of Kazakhstan custom tariffs and quotas were delegated to the level of Euro Asian economic union, so the country is in no position to use them independently. In the past there seemed to be a tendency by the Kazakh national bank to use the currency manipulation but experiences of the year 2015 and the following (Russian economic problems after the annexation of Crimea) led to the establishment of a floating exchange rate of Kazakh Tenge. Meaning the Kazakh national bank has limited means of affecting the exchange rate. This results that there is only one tool available to Kazakhstan for purpose of trade protectionism namely subsidies. The country has a number of development strategies that include subsidies to relevant sectors of the economy[6].

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[6] International Trade Center. *Regulatory and procedural barriers to trade in Kazakhstan.* 2014. Available at: *https://unece.org/DAM/trade/Publications/ECE-TRADE_407E-Kazakhstan.pdf.*

4.11 Cultural background of Kazakhstan

The country of Kazakhstan has a dynamic history that affects many aspects of the country, culturally wise as well as politically wise. From the point of view of the changes in the culture of the country, it is important to mention that the influence of the rule of the USSR, that took place in the years between 1936 to 1991, created factors that still affect the country today. While Kazakhstan was declared fully independent in 1991, with the aid of Nursultan Nazerbayev who then led the country until the year 2019, certain pacts remained as well as many interconnections between the two countries. While initially after the separation the country of Kazakhstan was given limited authority, the authority over political matters grew over time. Culturally wise, through the long-term connection to the USSR, many Russians moved to Kazakhstan which heavily affected the demographics of the country. Firstly, the country's religious shares makeup was altered with an initial drop in the Muslim religion percentage and a rise in the orthodox Christian percentage, meaning that the amount of Russians transferring to Kazakhstan was a very large proportion compared to the Kazakh population. Post separation from the USSR, Kazakhstan is showcasing a rise in the percentage of Muslim population, which opened up relations with other heavily Muslim countries such as Turkey which is a partner with Kazakhstan on the council of Turkic nations. While the religion, has undergone numerous changes, the language has remained mainly used as Russian in the country. The Kazakh language is an official language of Kazakhstan but the population uses Russian as the main base of communication.

In terms of the political factors and economic factors affected by the history of Kazakhstan being a part of the USSR until the year 1991. The country became heavily interconnected economically wise, which lasted even after the separation. Today the country of Kazakhstan showcases many similar shifts in currency exchange rates of the Kazakh Tenge to the Russian Ruble. From previously signed pacts, the country of Kazakhstan was a part of the military pact with Russia, this topic became a large issue in the recent event taking placing around the war in Ukraine. With the pact pushing Kazakhstan to assist Russia, while Kazakhstan standing against the idea. In many cases, such interconnection with Russia affects Kazakhstan on the trade side of things with external trading partners due to the two countries heavy trade tendencies between one another as it is geographically and economically more convenient for both (Allworth et al., 2024).

4.12 Effects of war in Ukraine on Kazakhstan

The war between Russia and Ukraine has many negative effects on the Russian economy with many countries seizing to conduct trade with Russia in a way of distancing themselves from the Russian economy as to not support it. These actions have devastating effect on Russian economy, the value of the Russian Ruble, inflation rates and sever problems for foreign trade of Russia. While these actions and effects are true for Russia as a reaction to an action, many countries neighbouring Russia are experiencing negative influences from this event as well. Kazakhstan being a large trading partner of Russia as well as the country that shares the longest border and has a heavily interconnected economic system with Russia, the effect are notably visible on the Kazakh economy and trade overall as well, as was stated in the article by Amantay Kenzheali where she stated that "Because of their close trade links, neighbouring countries like landlocked Kazakhstan are experiencing changes in trade and disrupted supply chains, thus adversely affecting inflation and economic growth".

The manufacturing sector of Kazakhstan experienced a major decrease in production due to the sanction emplaced on Russia as many supply chains were cut off due to the event. From one side, it is difficult for Russia to supply certain materials to Kazakhstan as Russia is simply not in the position to export with the rapid decline in the overall system both economic and political in Russia. From the second side of the view, many supply chains that were previously imported from other countries were also cut off due to the problems with trade with Russia. In this case it means that many countries do not wish to conduct trade with Kazakhstan, not because of a problem with Kazakhstan but because Russia and its largest bordered neighbor Kazakhstan have a very interlinked trade system in addition to being geographically connected. Thus resulting to a possibility of Russia attaining many resources from these countries through Kazakhstan which is not what is wanted. In this sense the problems of Russia are being carried over to Kazakhstan which is then left with a decrease in trade opportunities. However, the manufacturing sector, after the initial drop, was able to get back to some degree of production, which is an implication that Kazakhstan appointed new sources to Import from to manage its manufacturing process demands.

Apart from the bad sides such as a drop in the value of the Kazakh Tenge as well as an increase in inflation, Kazakhstan is in position to gain in terms of an increase of foreign investments. Since many companies are stationed in the country of Russia, it is

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understandable that since the outbreak of the war it has been more complicated for these companies to operate in that territory. As the article by Elvira Mami mentions, companies such as "Japanese Marubeni and the US-headquartered in Drive" are in the described situation of being stationed in Russia, with introducing a possible solution of transferring their companies' stations to Kazakhstan. As this action is a reaction to the war in Ukraine, it is important to mention that this solution is possibly simply for the time being until the event comes to a close.

Oil is as one of the main items in the raw materials that Kazakhstan exports, in this sense the ability to export oil is of high importance for Kazakhstan with the main means of delivering the oil is through the "Caspian Pipeline Consortium (CPC)", however this pipeline goes through Russian land which was then put on hold by Russia. This created the situation that Kazakhstan went to the second option of using the "Baku-Tbilisi-Ceyhan" pipeline instead. From the point of view of Kazakhstan, this matter is of high necessity and value in terms of what it means for the exports and economy of Kazakhstan, since the amount of oil that was delivered through the CPC pipeline was equivalent to "80% of Kazakhstan's total oil production" as mentioned in the article by Amantay Kenzheali.

The fact that the war in Ukraine cost Kazakhstan opportunities of trade with certain countries is definitely a loss for Kazakhstan, however the exports of Kazakhstan in 2022 went up to "$65.8 billion" which is an increase by "47.5%" compared to the value in 2021. The article states that this increase was because of the increase in the price of commodities on the market and not because of an increase in the number of exports being conducted. The increase of commodity prices across numerous sectors in Kazakhstan is also seen in an overall increase in inflation to "19.6% year on year (as of the end of November 2022)".

The article states that Kazakhstan is actually gaining a lot on the increase of the prices of oil at the moment, however the country is destined to face large problems related to the rapid increase in inflation as the article mentioned earlier to the degree that in 2022 the GDP growth rate had already went down to "2.8%" with the warning that how this event will end up affecting Kazakhstan when oil prices stabilize again will be up to the monetary tools the country decides to apply to battle the inflation problem within the country at the moment (Mami and Kenzeali, 2022).

4.13 Annexation of Crimea in 2014

As a result of annexation of Crimea by Russia, the first wave of international sanctions was imposed on the Russian federation. This led to the deterioration of the economic situation in Russia, in those years the main trading partner of Kazakhstan, and lead to the depreciation of the Russian Ruble. Development of Kazakh trade and economy in the years 2014 to 2016 must be explained only within the political framework.

The main impact of Russian annexation of Crimea in 2014, which resulted in the first wave of international sanctions, this resulted in sharp reduction in the growth of the Russian economy, decrease of it's exports and worsening of access to the international financial markets. Following the devaluation of the Russian Ruble the problems transferred along to the economy of Kazakhstan. The national bank of Kazakhstan was, after some time forced to stop interventions and allow the devaluation of the Kazakh Tenge in order to limit sharp increases of import from Russia.

Through a narrow history of the two countries, it is clear that factors that affect one of the countries in return grant effect on the other. From this it can be understood and expected that, among the event details and what it meant for the countries, that the exchange rate as well as the GDP of Kazakhstan and Russia is heavily interconnected and will result in high correlations in the correlation testing parts in the practical part. In addition, the values in terms of the currencies and GDP of the two countries will definitely take a rapid drop in the years 2014 to 2016 which may be expected in the upcoming graphs of the data collected. In the long term, the steps of Kazakhstan aiming at the decrease of its dependence on Russia can be seen. One of such steps is the project of pipeline connections between Kazakhstan and Azerbaijan aiming at establishment of an alternative route of transport of Kazakh oil to the world markets.

5 Practical Part

5.1 Data analysis and GDP correlation testing

To set the ground for analysis of the selected countries' foreign trade and their economies the correlations testing will be created to test similarities between the countries. This data will then be useful in comparing further calculations with possible reasoning pointing towards the type of correlation realized. The clean data for the GDP of Kazakhstan, China, Russia and Turkey is stated in the graph figure 1 and 2 below, due to reasons of differentiated scales of economies between the countries Kazakhstan and Turkey who have substantially smaller GDP then Russia and China.
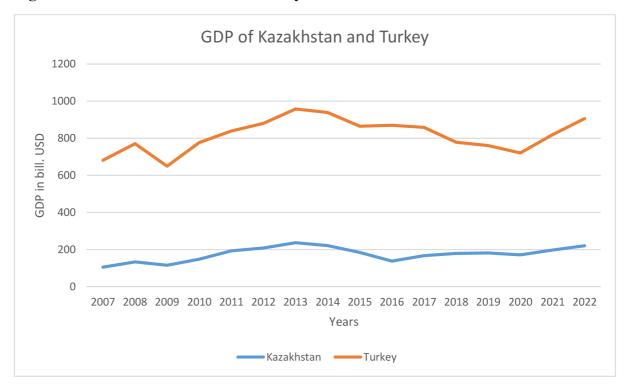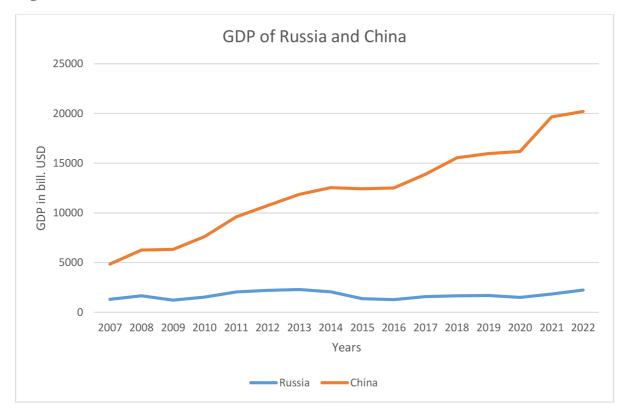
Figure 1: GDP of Kazakhstan and Turkey

Source: own processing, macrotrends.net

The figure shows that there is a tendency in similar shifts and relative minimums for each of the two countries. The correlation table will give a precise value on the similarity in a table below. From the data the Turkey has a relative minimum in 2009, which is also the case for Kazakhstan where it is a much smoother transition. A similar now smaller drop is

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in 2020 which can very easily be attributed to the pandemic. Another relative minimum in a isolated section is for Kazakhstan in 2016 which is an interesting development seeing as, from the research, the country became a member of international trading in 2015 which would give expectations of the opposite outcome.

Figure 2: GDP of Russia and China

Source: own processing, macrotrends.net

The data shows a very steady increase for GDP of China with a never declining margin, in cases of the smallest progress the value is not dropping below the previous year and is remaining stagnant in the worst case. On the other hand, while Russia still has much higher GDP values than the other two countries in Figure 1, it is still behind the GDP of China. The data for the country shows relative minimum in 2015 lasting into 2016 after which the values are not increasing as heavily.

To analyse the basic time series, the following tools will be used to analyse the chain in data through the years in a more quantitative way: fixed base index, chain base index and average growth rate index.

Table 1: Fixed base Index for GDP

Kazakhstan	Turkey	Russia	China
2.104	1.330	1.724	5.060

Source: own processing

In Table 1, the index shows that out of the four countries, in the selected time period for testing, China and Kazakhstan have the highest increase in GDP after 16 years with Kazakhstan being over twice as much as what it had initially and China having five times its original value. Turkey has the lowest increase in the time series and Russia is a little over a quarter below twice the value it had in 2007.

The chain base index will allow us to analyse the change of the selected year from the previous year. To analyse possible abnormalities, for each country the chain base index will be analysed for the year it experienced its relative minimum. Due to the differences in the cases of Kazakhstan and Turkey who have a more dynamic set of changes, the relative minimum will be applied for these two. In cases of Russia and China the chain base index will be utilized for the latest data in the time series as will be done for Kazakhstan and Turkey as well. The results are stated below in table 2.

Table 2: Chain base Index for GDP focusing on relative minimum

	Kazakhstan	Turkey	Russia	China
Relative minimum	0.864134	0.842741		
Latest period	1.119274	1.106174	1.219681	1.008008

Source: own processing

The data shows that for Kazakhstan and Turkey in the year 2009, the GDP lowered by around 15% during their relative minimum point. Looking at the latest period, all countries are experiencing an increase with Russia having an increase of over 21% and Kazakhstan having the second largest with an increase of almost 12%. China has the lowest increase with 0.8% however it is important to mention that China is generating multiple times the amounts of GDP that the other countries generate. Furthermore, it is coming off a year where the country had a very steep increase as can be seen from the data set.

To estimate by how much the GDP of each country increases every year, the average growth rate index will be used. The results are below in table 3.

Table 3: Average growth rate index of GDP

	Kazakhstan	Turkey	Russia	China
Average growth rate index	0.131509	0.08311	0.107737	0.316224

Source: own processing

The table above shows that the estimated growth for each year for Kazakhstan was a little over 13% which is the second highest with China having over 30% estimated increase every year for the selected 16-year time period. Turkey has the lowest estimated yearly increase with a little over 8%[7].

Table 4: Correlation testing of GDP

	Kazakhstan	Turkey	Russia	China
Kazakhstan	1	0.80233	0.86689	0.57045
Turkey	0.80233	1	0.70421	0.34223
Russia	0.86689	0.70421	1	0.29112
China	0.57045	0.34223	0.29112	1

Source: own processing

The correlation testing above in table 4 shows that the strongest correlation is between Kazakhstan and Russia with a positive strength of 0.86 which can be viewed as a strong correlation. The correlation between Kazakhstan and Turkey is on second highest place with 0.80. A visible outlier can be seen in China where the correlation coefficients are of medium strength with Kazakhstan and weak with Turkey and Russia. For the purpose of this thesis, the correlation of the selected countries is mainly focused on the correlation with Kazakhstan. As was explained in the research, and can be seen through the correlation testing, Turkey has a similar trend to Kazakhstan, as the countries share factors such as beliefs and religion majority. However, the highest correlation is also the most logical as in the fact that Russia and Kazakhstan are very interconnected due to their history and territory. Additionally, the economies of Russia and Kazakhstan are closely bound together by the

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[7] *Russia Trade Balance*. 2024. Available at: https://www.macrotrends.net/global-metrics/countries/RUS/russia/trade-balance-deficit.

existence of Euroasian economic union. This means that there is a customs union between them resulting in abolishment of obstacles of trade and thus development of exchange rate of Russian Ruble will affect the Kazakh Tenge, which is a trend that can be expected in the following foreign exchange rate correlation testing in the next chapter.

5.2 Data analysis of Exchange rate with time series analysis

5.2.1 Exchange rate of the Kazakh Tenge

The data for the exchange rate is gathered as the average value of that specific year for the years 2007 to 2022. The data collected is shown in figures 3, 4, 5 and 6 which are presented separately due to various ranges in which the exchange rate of the selected country's currency with the USD varies and would otherwise be less observable.
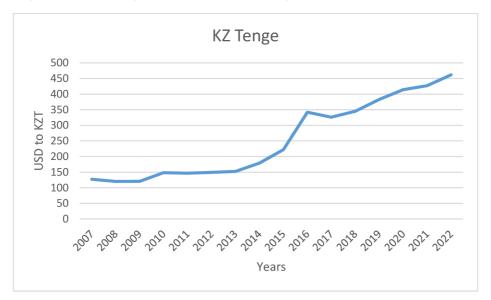
Figure 3: Exchange rate of Kazakh Tenge

Source: own processing, exchangerates.org

The data for Kazakhstan shows a dynamic change in the selected period. In observable terms the largest spikes are especially in 2014 to the year 2016 where it peaked at a relative maximum. This time period matches the event of the annexation of Crimea by Russia, where the first wave of international sanctions were imposed on the Russian Federation which this lead to the deterioration of the economic situation in Russia and lead

to the depreciation of the Russian Ruble. As was explained, where Kazakhstan and Russian economies are heavily intertwined, the Kazakh Tenge suffered alongside the Russian Ruble as was clearly the case from the data set. This additionally means that the correlation that will be executed in the following chapter will be especially high between the Russian Ruble and the Kazakh Tenge and is expected to be of higher strength. Following the year 2016 the exchange rate of Tenge stabilized a little but continued it rise later on, surpassing the peaked value of 2016 in the year 2019. The fixed base index will allow to quantify how much the exchange rate of Tenge changed from the year 2007. The value is shown in table 5 below.

Table 5: Fixed base index of the exchange rate of the Kazakh Tenge

	2007	2022	Fixed base index
Kazakh Tenge to USD	127	461.71	3.635511811

Source: own processing, exchangerates.org

The fixed base index shows that the foreign exchange rate of the Kazakh Tenge in 2022 is 363% of what it was in 2007. It stands to reason that the steepest increase in 2016 contributed to such a high index. The chain base index will calculate by how much the rate changed in the year 2016, additionally another chain base index will be used in 2015 as the event of the Crimean annexation took place in that time. The results are shown in table 6 below following table 7 with the average growth rate of the Kazakh Tenge.

Table 6: Chain base index of the exchange rate of the Kazakh Tenge

	2015	2016
Chain base index	1.242604	1.538773122

Source: own processing, exchangerates.org

Table 7: Average growth rate of the exchange rate of the Kazakh Tenge

Average growth rate index	0.227219488

Source: own processing, exchangerates.org

This shows that the Kazakh Tenge lost its value in 2015 by over 24% and additionally lost over 53% more into the year 2016. This means that the currency became much weaker

compared to its previous years. As it can be seen that the currency strengthened in 2017 again it can be understood that this is due to the currency being weaker and thus the market of Kazakhstan being suddenly more attractive to the foreign countries. The problem is that the Kazakh Tenge continued to lose its value following the years 2018. It is true that the market may have become more attractive to the foreign eye and thus should increase the amount of exports from Kazakhstan resulting in an inflow of foreign currency and later on pushing the local currency to become stronger again and stabilize, however if the country relies heavily on imports and or has less export product/resources to offer, it is possible that the currency may not stabilize. The size and further effect of Net exports thus exports – imports, will be analyzed in the upcoming chapter. The average growth rate index shows that the currency has an estimate of growing by 22.72% every year which means that the currency is has a tendency to lose strength on the foreign market rapidly[8].

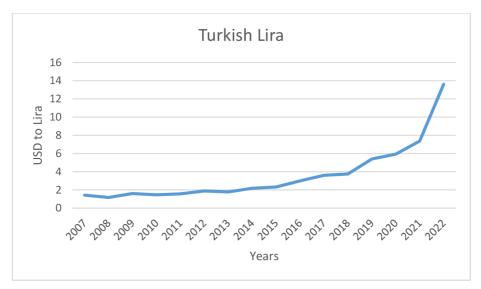### 5.2.2   Exchange rate of the Turkish Lira

Figure 4: Exchange rate of the Turkish Lira

Source: own processing, poundsterling.com

The data shown in figure 4 shows that the Turkish Lira loses its value in comparison to the USD at a steady rate with an abnormality in the most present year 2022. The chain

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[8] *US Dollar to Kazakhstan Tenge Spot Exchange Rates for 2022.* Available at: https://www.exchangerates.org.uk/USD-KZT-spot-exchange-rates-history-2022.html.

base index for the year 2022 in the table 8 below shows that the Turkish Lira exchange rate went up by over 84% in the recent year, which is a major drop in the strength of the Turkish currency[9].

Table 8: Chain base index of the Turkish Lira

Chain base index	1.847997

Source: own processing, poundsterling.com

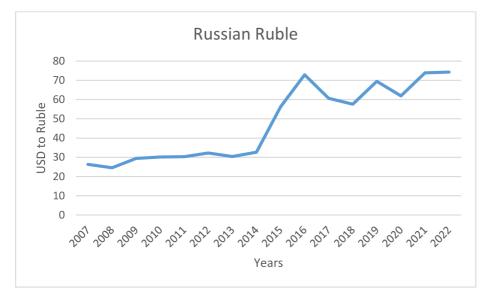### 5.2.3   Exchange rate of Russian Ruble

Figure 5:Exchange rate of the Russian Ruble

Source: own processing

The data shown in figure 5 shows that the Ruble had a steady rate until the year of 2014 from where it experienced a steep rise. As was said in the analysis of the time series of the exchange rate if the Kazakh Tenge, the Crimean annexation is the event that took place during this exact time period. Furthermore, this trend to a strong margin is similar to the time series of the data for the Kazakh Tenge. Following the peak in 2016 the Russian Ruble stabilized after which it returned to a growing rate. In the following chapter where the

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[9] *U.S. Dollar / Turkish Lira Historical Reference Rates from Bank of England for 2007*. Available at: https://www.poundsterlinglive.com/bank-of-england-spot/historical-spot-exchange-rates/usd/USD-to-TRY-2007.

correlation of the Ruble and Tenge will be conducted the correlation is expected to be of a strong positive strength, as can be seen that during the years, events affecting Russia hold an effect on Kazakhstan as well. The chain base index in table 9 below shows the development of the changes from year 2014 to 2015 and 2015 to 2016.

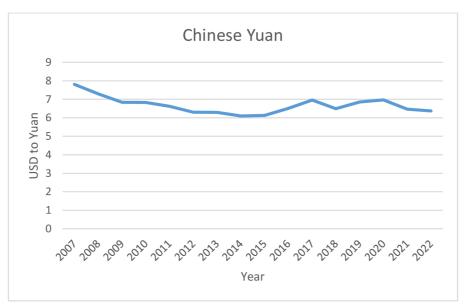**Table 9: Chain base index of the Russian Ruble**

Year	2015	2016
Chain base index	1.721979	1.296817432

Source: own processing, BankofRussia.ru

The data shows that in 2015 the exchange rate for Ruble grew by 72% following the increase in 2016 by over 29%. As in the case of Kazakhstan the currency became cheaper for the international eye however this definitely had an impact on the import capabilities of Russia. Following the year 2016 after the backlash from the annexation of Crimea calmed down, the currency stabilized[10].

5.2.4 Exchange rate of the Chinese Yuan

Figure 6: Exchange rate of the Chinese Yuan

Source: own processing, internationalmonetaryfund.org

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[10] *Official Exchange rates on selected date.* Available at:
https://www.cbr.ru/eng/currency_base/daily/?UniDbQuery.Posted=True&UniDbQuery.To=01.01.2007.

Unlike the values of the exchange rates seen with the other currencies, the Chinese Yuan seems to be gaining power to the US Dollar. Though some fluctuations are visible, the currency rate has a tendency to drop up to the year 2022. Fixed base index calculation below shows the change in the 16 years.

Table 10: Fixed Base Index of Chinese Yuan

Fixed base index of Chinese Yuan	0.815903

Source: own processing, imf.org

The data in table 10 shows that as discussed, the strength of the Chinese Yuan has gone up as it is closer to the value of 1 USD than the other selected countries in the year 2022. In the time frame of 16 years the currency has gained strength by almost 19%. As the country was selected due to the fact that it is the largest trading partner to the core country being analysed, Kazakhstan, this gives insights on potential for the trade of Kazakhstan which may benefit from the, as analysed, increase in GDP and stronger currency in China. Since the Chinese Yuan will grow stronger, it will be more desirable for China to export from other countries where the prices will feel cheaper for them. On the other side, from the side of Kazakhstan, the import can be expected to suffer since the prices in China for Kazakhstan will feel higher[11].

5.3 Correlation Testing of Foreign Exchange rates of selected countries

The correlation testing conducted in Table 11 below shows the correlations between the currencies of the selected countries, thus referring to the Turkish Lira, Russian Ruble and Chinese Yuan, and comparing the values through the 16 year selected time frame with the main data set of interest for this work, the foreign exchange rate of the Kazakh Tenge.

Table 11: Correlation Coefficients testing of selected countries with the Kazakh Tenge

Currency	Kazakh Tenge
Turkish Lira	0.83666

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[11] *Representative Exchange Rates for Selected Currencies for January 2007.* Available at:
https://www.imf.org/external/np/fin/data/rms_mth.aspx?SelectDate=2007-01-31&reportType=REP.

Russian Ruble	0.95517
Chinese Yuan	-0.18634

Source: own processing

The table above proves many points discussed throughout the data preparation chapter. Referring to the correlation between the Kazakh Tenge and the Turkish Lira, there is a strong positive correlation with r = 0.84. While the fluctuations in the exchange rate of these two countries were definitely of similar shifts, Turkey was selected on the basis of cultural similarity and so the high exchange rate correlation to the Tenge exceeded expectation. The correlation between the Kazakh Tenge and the Russia Ruble is undoubtably the strongest out of all the countries with r = 0.96. This goes with the points mention in the chapter of data preparation of the Russian Ruble as the steep changes throughout the timeline are of similar basis. Both having effects occurring to their currency strengths from the annexation of Crimea event in 2014 that lasted into 2016. In the following chapter during the analysis of the economies of these two countries, Russia will undoubtably be a major indicator for changes and of what to expect in the Kazakh economy as the two countries are proved to be heavily intertwined through historical agreements as well as trade, which is also the main reason for the selection of Russia as a country for comparison in this thesis. The correlation of the exchange rates of the Chinese Yuan and the Kazakh Tenge shows a very weak and negative correlation with r = -0.19. This is in contrast to the other countries including the analyzed Tenge, where the other countries perpetually over time, in this case from the year 2007, see a loss to their currency strength as their currency rates against the US Dollar grow on an average year basis. This is not the case with the Chinese Yuan which was additionally confirmed with the fixed base index in table 10 earlier.

5.4 Forecasting for Kazakh Tenge

The forecasting will be applied for the data of the foreign exchange rate of the selected currencies using the data from the 2007 to 2022-time frame. Using a Linear equation the forecasting will be created for the years 2023 and 2024 points with a confidence interval of 95%, estimating the most probable range where the value is predicted to end up with the exception of sudden abnormalities in world or local events affecting the selected county's economy. The Linear Regressions will additionally allow for an analysis of the goodness of fit of each of the data sets in the Time frame modified to 1 to 16, for data processing purposes.

Using the data for the Kazakh Tenge to USD exchange rate, the linear equation for time values 1 to 16 symbolizing 2007 to 2022 is as follows:

$$Y = 25.335x + 38.675$$

The Coefficient of determination is estimated to $R^2 = 91.35\%$, meaning that over 91% of the data is explained through the data set. Using the equation to test an estimated value for a known year to compare it with the actual value to calculate the REF value will determine the validity of the prediction for the years 2023 and 2024. The test for REF is below in table 12.

Table 12: REF testing of forecasted values for 2021 and 2022

Year	REF
2021	-1.87%
2022	-3.83%

Source: own processing

The REF testing shows that the difference between the actual values and estimated values is negligible with both percentages being way below the 10% set threshold. This means that the prediction for 2023 and 2024 can proceed and be viewed as statistically reliable.

The forecasted estimations for the years 2023 and 2024 also referred to as t=17 and t=18 is shown in figure 7 below.
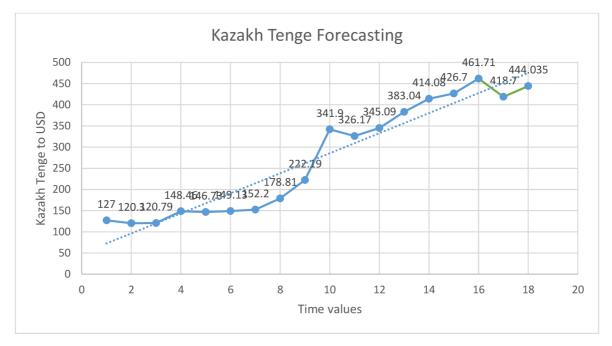
Figure 7: Predictions of exchange rates of Kazakh Tenge to USD in 2023 and 2024

Source: own processing

The linear equation estimates that the exchange rates of the Kazakh Tenge will drop in 2023 from 461.71 KZT for 1 USD in 2022 to 418.7 KZT. Firstly, suggesting that the Tenge will increase in strength to the Dollar and secondly making the value in 2022 a new relative maximum as in the weakest the currency has been in the 18, 16 plus the 2 predicted years, years' time frame. The prediction for 2024 shows a slight increase in the rate, pushing up to 444.03 KZT to 1 USD suggesting a repeated loss in strength of the currency.

5.4.1 Forecasting of Kazakh Tenge with confidence Interval

The confidence interval for the predicted values of 2023 and 2024 are written out in the confidence equation which states the lower and upper values that represent the full 95% confidence range that was set for this forecasting.

$$Y_{17t} = KZT_{2023} = (399.71 KZT < 418.7 KZT < 437.69 KZT) = 95\%$$

$$Y_{18t} = KZT_{2024}(425.045 KZT < 444.035 KZT < 463.025 KZT) = 95\%$$

The range for the exchange rates predicts that in 2023 the Kazakh Tenge rate to 1 US Dollar ranges between 399.71KZT up to 437.69KZT with the precise estimated point in the middle at 95% confidence. The range for the year 2024, has a lower limit of 425.045KZT and ranging up to the upper limit of 463.025KZT at a 95% confidence rate.

5.5   Data preparation of Kazakhstan Net Export econometrics model

5.5.1   First round correlation testing for Kazakhstan Net Export Model

The data used for the Net Export model for Kazakhstan uses the variables: foreign exchange rate of the Kazakh Tenge, GDP of Kazakhstan, which is stated in billions of US dollars, the GDP of the main trading partner to Kazakhstan which was selected as China. Before the utilization of the ordinary least squares method to estimate the coefficients for the model, the correlation coefficient testing is used to test for multicollinearity in order to limit possible effects of individual independent variables may have on each other through some other common factor that affects them. The variables for further analysis are also referred to as y as the dependent Net Export of Kazakhstan, x1 as the constant and x2, x3 and x4 as the above-mentioned variables respectively. The first correlation coefficient testing is listed below in table 13.

Table 13: Data preparation correlation testing for Net Export of Kazakhstan Model

Variables	y	x2	x3	x4
y	1	-0.40876	0.529843	-0.19714
x2	-0.40876	1	0.270813	0.934279
x3	0.529843	0.270813	1	0.570454
x4	-0.19714	0.934279	0.570454	1

Source: own processing

The Correlation matrix shows that there are no correlations between the independent and dependent variables that are above r = 0.8. However, there is a very high correlation between the variables x4 (GDP of China) and x2 (foreign exchange rate of the Kazakh Tenge).

5.5.2 Second round correlation testing for Kazakhstan Net Export Model

To remove the multicollinearity and remove the similarity of these two variables which would otherwise hinder the accuracy of the econometric model later, the first difference method will be used on the appropriate variable. To decision to apply the first difference method on the variable of GDP of China is given due to the comparison of the two variables in question and their correlation with our dependent variables. Since x4 has a weaker correlation then x2, it will be modified. Additionally, due to the properties of the first difference tool, the data set will lose 1 observation period, in this case the data for the year 2007 will be omitted. With the applied modifications by the first difference method the second correlation coefficient matrix can be seen below in table 14.

Table 14: Data preparation Second correlation testing for Net Export of Kazakhstan Model

Variables	y	x2	x3	x4 1st diff
y	1	-0.50264	0.490544	0.205676
x2	-0.50264	1	0.167536	0.028365
x3	0.490544	0.167536	1	0.196965
x4 1st diff	0.205676	0.028365	0.196965	1

Source: own processing

The Correlation matrix tests all coefficients to be below 0.8, thus the multicollinearity was eliminated, and the data can proceed to econometric modelling and verifications.

5.6 Net Export of Kazakhstan Econometrics model

Using the Ordinary Least squares method, the estimated coefficients that are inputted into the equation for Net Export of Kazakhstan is as follows:

$$Net\ Export\ of\ Kazakhstan = Y_{1t}$$
$$= 3.9785 - 0.0602_{x2t} + 0.2042_{x3t} + 0.0018_{x4t} + \varepsilon_{1t}$$

- The estimated coefficients reflect the situation of the effects they are expected to have on the Net Export of Kazakhstan. If all other variables are equal to 0, the Next Export is equal to 3.9785 billion US Dollars.

- When the foreign exchange rate of the Kazakh Tenge to the Dollar increases by 1, the Net Export of Kazakhstan will decrease by 0.0602 billion US Dollars ceteris paribus. Although the Net Export decreases it does so at the same time as the currency loses value, as that the Net Export (Export – Import) doesn't decrease because of the weaker currency, but it is the currency that weakened from the decrease in Net Export particularly the decrease of Export of Kazakhstan. This causes a drop in foreign currency in the Kazakh market, and in order to reestablish an attractive pull for foreign currency to re-enter the market, the currency of the Kazakh Tenge must drop to initiate more export to foreign countries yet again. In the instance foreign countries begin exporting from Kazakhstan again and the flow of foreign currency begins to come back to the Kazakh market, the exchange rate of the tenge will strengthen again, resulting in better opportunities for Imports which will in return lower the Export to Import ratio and yet again potentially lowering the Net Export.

  This proves that the development of the balance of trade (Net Export) has a crucial impact on the exchange rate of the Kazakh Tenge to US Dollar rather than in the opposite direction of the exchange rate affecting Net Export. This may be caused by a reason such as by the composition of the export of KZ from Kazakhstan. With the essential share of raw materials, mainly oil and natural gas, which are traded on the basis of world market prices, the impact of the exchange rate on the competitiveness on such exports is rather limited. Another possible explanation comes from the importance of the revenues originating in the export of oil and gas for the Kazakhstan economy and its state budget. This suggests the readiness of Kazakhstan for the devaluation of the Kazakh Tenge in cases of decrease of stagnations of the oil and gas exports.

- When the GDP of Kazakhstan increases by 1 billion US Dollars, the Net Export of Kazakhstan increase by 0.2042 billion US Dollars ceteris paribus. The country generates more and following that it is able to export more to foreign markets.

- When the GDP of China increase by 1 billion US Dollars, the Net Export of Kazakhstan increase by 0.0018 billion US Dollars ceteris paribus. The change can

be linked to the fact that if the main trading partner is doing well for themselves, they will be in a better position to conduct further trade.

5.6.1 Statistical verification of the Net Export of Kazakhstan Model

Using the Ordinary Least Squares Method process with the addition of the estimated coefficients, the statistical verification will be conducted with comparison of the t-value and the Critical t-value. As the data set had to be modified and thus was reduced by 1 observation period, the degrees of freedom decreased to 14 instead of the previous 15 observations at a 0.95 or 95% confidence. The table testing the statistical verification is below in table 15.

Table 15: Statistical significance testing of Net Export of Kazakhstan

	x1	x2	x3	x4 1st diff
Matrix (XTX)-1	2.050645	4.64E-06	6.19E-05	1.35721E-07
sii	4.10129	9.28E-06	0.000124	2.71442E-07
sbi	2.025164	0.003047	0.011126	0.000521001
abs par val	3.978511	0.06021	0.204286	0.001883028
t value	1.964537	19.76237	18.36114	3.61425201
crit t value	2.145	2.145	2.145	2.145
comparison	1.96<2.145	19.76>2.145	18.36>2.145	3.614>2.145
SS or SI	SI	SS	SS	SS

Source: own processing

The Statistical significance testing calculated the variables x2 (foreign exchange rate of the Kazakh Tenge), x3 (GDP of Kazakhstan) and the First difference modified x4 (GDP of the main trading partner China) variables to be Statistically significant with the strongest significance being with x2 with x3 closely behind.

5.7 Export of Kazakhstan model

5.7.1 Data preparation

The data used for the model of Export of Kazakhstan is listed in table 16 below, with the variable listings and clean data that will be worked with during the data preparation and econometric model estimation.

Table 16: Data for Export of Kazakhstan

year	KZ Export bill. USD	Constant	KZT exchange rate	KZ inflation %	GDP of main trading partner China bill. USD	Chinese Yuan exchange rate	GDP of Turkey bill. USD	Turkish Lira exchange rate	GDP of Russia bill. USD	Russian Ruble exchange rate	KZ raw material export bill. USD
	y1	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
2007	47.748	1	127	10.85	3550.33	7.8073	681.32	1.41875	1299.7	26.3311	32.643
2008	71.172	1	120.3	17.14	4594.34	7.2996	770.45	1.16864	1660.85	24.5462	50.282
2009	43.196	1	120.79	7.32	5101.69	6.8367	649.29	1.60892	1222.65	29.3916	30.003
2010	57.244	1	148.46	7.4	6087.19	6.8281	776.97	1.45542	1524.92	30.1851	41.56
2011	88.108	1	146.73	8.42	7551.55	6.6215	838.79	1.56578	2045.92	30.3505	63.811
2012	86.45	1	149.13	5.1	8532.19	6.3001	880.56	1.881275	2208.29	32.1961	64.961
2013	84.7	1	152.2	5.85	9570.47	6.2897	957.8	1.7762	2292.47	30.3727	63.372
2014	79.46	1	178.81	6.71	10475.62	6.099	938.93	2.17448	2059.24	32.6587	59.31
2015	45.96	1	222.19	6.67	11061.57	6.1248	864.31	2.314539	1363.48	56.2376	30.36
2016	36.69	1	341.9	14.55	11233.31	6.5126	869.68	2.99268	1276.79	72.9299	22.734
2017	48.3	1	326.17	7.44	12310.49	6.9552	858.99	3.59825	1574.2	60.6569	31.415
2018	60.96	1	345.09	6.02	13894.91	6.4959	778.48	3.75345	1657.33	57.6002	43.451
2019	57.31	1	383.04	5.25	14279.97	6.8557	759.93	5.39474	1693.11	69.4706	40.049
2020	46.45	1	414.08	6.77	14687.74	6.97	720.29	5.924539	1493.08	61.9057	30.473
2021	60.62	1	426.7	8.04	17820.46	6.4682	819.03	7.365	1836.89	73.8757	39.573
2022	84.66	1	461.71	8	17963.17	6.37	905.99	13.6105	2240.42	74.2926	58.33

Source: imf.org, bankofRussia.ru, exchangerates.org

For the preparation of the data before the coefficients can be estimated through the Ordinary least squares method, the data will be tested for multicollinearity among the independent variables to ensure estimation of reliable coefficients.

5.7.2   First Correlation testing of Export of Kazakhstan model

The results of the first correlation testing are listed in table 17 below, with markings of multicollinearity between independent variables above 0.8 in orange and high correlation of independent variables with the dependent variable in green.

Table 17: First correlation testing of the Export of Kazakhstan model

	y1	x2	x3	x4	x5	x6	x7	x8	x9	x10
y1	1.00	-0.21	-0.20	0.03	-0.39	0.58	0.13	0.94	-0.33	0.99
x2		1.00	-0.16	0.93	-0.19	0.10	0.84	0.03	0.96	-0.28
x3			1.00	-0.36	0.46	-0.16	-0.16	-0.34	-0.11	-0.23
x4				1.00	-0.47	0.34	0.82	0.29	0.89	-0.04
x5					1.00	-0.75	-0.20	-0.52	-0.26	-0.39
x6						1.00	0.17	0.70	0.15	0.56
x7							1.00	0.30	0.74	0.04
x8								1.00	-0.09	0.93
x9									1.00	-0.40
x10										1.00

Source: own processing

The correlation testing shows 6 instances of combinations of independent variables having a correlation coefficient that is higher than 0.8, with two correlations having a very strong positive correlation to the dependent. The correlation is the strongest between x9 (Russian Ruble exchange rate) and x2 (Kazakh Tenge exchange rate).

5.7.3 Model data Modification

This correlation will be focused on in the first stage of data modification as it includes variable x9 which is a part of 2 correlation combinations and x2 which is a part of 3 correlation combinations. This correlation as stated in the previous subchapter is defined by the fact of the severely intertwined economies of Kazakhstan and Russia with Ruble having very strong impact on the Kazakh Tenge. The decision of which of the two variables will be subject to modification using first difference depends on the correlation strength of the subject variables and the dependent variable. In the case at hand, both variables have a negative correlation to the dependent export of Kazakhstan as it stands to reason from the nature of exchange rates. The Russian Ruble has a correlation of r = -0.33 while the Kazakh Tenge exchange rate has a correlation of r = -0.21. This means that x9 has a stronger correlation strength and is thus more valuable to keep unchanged and so the first difference will be applied on the x2 variable (Kazakh Tenge exchange rate).

After the modification the data spans now for 15 years from the years 2008 until 2022. The modified variable x2 (Kazakh Tenge exchange rate) is noted as "x2 1st diff." as to symbolize the first difference being applied to it. The second correlation test showed a

decrease of highly correlated independent variables, taking the initial number of variables with high correlation of r >0.8 from 6 to 3 in this test. The multicollinearity for all correlation combinations of x2 that were previously present were solved.

The highest correlation present after the second test is the correlation coefficient between the variables x10 (Kazakh raw material export) and x8 (GDP of Russia). Due to the fact that these two variables were not affected in the previous multicollinearity solving procedures, the first difference can be applied to one of the two variables without a loss of further observation periods. Both x10 and x8 have a very strong correlation with the Export of Kazakhstan (the dependent variable) with x10 (Kazakh raw material export) having a higher correlation with r = 0.99, making x8 (GDP of Russia) the variable subject to modification.

Thus, the previous variable x8 is marked as "x8 1st diff." as to symbolize the first difference being applied to the variable. The multicollinearity between the variables x10 (Kazakh raw material export) and x8 (GDP of Russia) has been solved. The current table shows a remaining multicollinearity between the variables x4 (GDP of the main trading partner China) which is present in both combinations with x7 (Turkish Lira exchange rate) and x9 (Russian Ruble exchange rate). As there are only two remaining multicollinearity coefficients with a "r" higher than 0.8, the variable with weakest correlation to the export of Kazakhstan (dependent variable) will be subject to modification with the first difference being prioritized over lagged variable usage in order to prevent loss of observation periods. In case the first difference does not suffice, the lagged variable tool will be utilized. As the weakest correlation to the dependent variable is x4 with r = -0.07, it will be subject to modification which should additionally solve multicollinearity for x7 and x9 variables. The final correlation test is listed in table 20 below with x4 being noted as "x4 1st diff. to symbolize the first difference being applied to the variable.

Table 18: Final correlation testing of Export of Kazakhstan model

	y1	x2 1st diff.	x3	x4 1st diff.	x5	x6	x7	x8 1st diff.	x9	x10
y1	1.00	-0.44	-0.16	0.20	-0.33	0.54	0.09	0.53	-0.42	0.99
x2		1.00	0.27	-0.43	-0.26	0.13	0.18	-0.34	0.53	-0.45
x3			1.00	-0.07	0.44	-0.08	-0.13	0.21	-0.05	-0.20
x4				1.00	-0.07	0.03	-0.05	0.41	-0.02	0.18
x5					1.00	-0.70	-0.11	0.30	-0.09	-0.34
x6						1.00	0.10	0.17	0.03	0.53
x7							1.00	0.25	0.73	0.00
x8								1.00	-0.02	0.48
x9									1.00	-0.49
x10										1.00

Source: own processing

The final correlation matrix in table 18 shows that the multicollinearity has been eliminated from the model with all independent variables having a correlation coefficient among each other r < 0.8. This means that the data set is ready to be modelled for parameter estimation for the econometrics model without regards to possibility of multicollinearity affecting the output due to high similarities between the independent variables.

5.7.4 Export of Kazakhstan Econometric model

Using the Ordinary least squares method, the following econometric equation was generated with estimated coefficients for the relationships between the independent variables and the Export of Kazakhstan (the dependent variable). The equation is listed below with the output table post data preparation.

$$Export\ of\ Kazakhstan_{1t}$$
$$= 17.4679 - 0.0354_{x2\ 1st\ diff.t} + 0.3769_{x3t} - 0.00004_{x4\ 1st\ diff.t}$$
$$- 2.0943_{x5t} - 0.0011_{x6t} + 0.2827_{x7t} + 0.0009_{x8\ 1st\ diff.t} + 0.05914_{x9t}$$
$$+ 1.2198_{x10t} + \epsilon_{1t}$$

Table 19: Coefficient estimation post data preparation before statistical significance testing

```
Model 6: OLS, using observations 2008-2022 (T = 15)
Dependent variable: y1

                 coefficient    std. error    t-ratio    p-value
     ---------------------------------------------------------------
     const        17.4679       28.1530        0.6205     0.5621
     x21stdiff    -0.0354344     0.0236998     -1.495     0.1951
     x3            0.376927      0.159472       2.364     0.0645   *
     x41stdiff    -4.47148e-05   0.000844826   -0.05293   0.9598
     x5           -2.09438       3.25827       -0.6428    0.5487
     x6           -0.00110398    0.00882248    -0.1251    0.9053
     x7            0.282725      0.231276       1.222     0.2760
     x81stdiff     0.000967724   0.00230539     0.4198    0.6921
     x9            0.0591364     0.0528784      1.118     0.3143
     x10           1.21981       0.0594211     20.53      5.08e-06 ***


Mean dependent var    63.41867    S.D. dependent var    17.71913
Sum squared resid      6.207937   S.E. of regression     1.114265
R-squared              0.998588   Adjusted R-squared     0.996045
F(9, 5)              392.8070     P-value(F)             1.39e-06
Log-likelihood       -14.66742    Akaike criterion      49.33483
Schwarz criterion     56.41533    Hannan-Quinn          49.25941
rho                   -0.123168   Durbin-Watson          2.234158

Excluding the constant, p-value was highest for variable 5 (x41stdiff)
```

Source: own processing

Table 19 above shows that the model has 2 statistically significant variables, however there are variables that have a large p-value listing which is decreasing the significance values of other variables. In this case the ones with the highest p-values, especially the variables with p-value = 0.6 and higher will be taken out of the model as they are viewed as especially statistically insignificant. This will allow estimation of a stronger econometrics model with more statistically significant variables. This means that variables x4 1st difference, x6 and x8 1st difference will be removed from the model due to significance usage.

Table 20: Coefficient estimation post data preparation with optimized significance testing

```
Model 8: OLS, using observations 2008-2022 (T = 15)
Dependent variable: y1

                coefficient   std. error   t-ratio    p-value
     ------------------------------------------------------------
     const       10.1791       8.09757      1.257      0.2442
     x21stdiff   -0.0356843    0.0121669   -2.933      0.0189    **
     x3           0.384992     0.0972495    3.959      0.0042    ***
     x5          -1.33140      1.09362     -1.217      0.2581
     x7           0.276570     0.145720     1.898      0.0943    *
     x9           0.0681568    0.0308624    2.208      0.0582    *
     x10          1.23948      0.0301818   41.07       1.36e-010 ***

Mean dependent var    63.41867    S.D. dependent var    17.71913
Sum squared resid      6.568427   S.E. of regression     0.906120
R-squared              0.998506   Adjusted R-squared     0.997385
F(6, 8)              890.9241     P-value(F)             7.46e-11
Log-likelihood       -15.09076    Akaike criterion      44.18152
Schwarz criterion     49.13787    Hannan-Quinn          44.12872
rho                    0.002893   Durbin-Watson          1.963901

Excluding the constant, p-value was highest for variable 6 (x5)
```

Source: own processing

Table 20 above shows an improved statistical significance test with a higher amount of statistically significant variables. The adjusted R^2 is equal to 0.9973 meaning that the endogenous variable is explained by the exogenous variables by 99.73%, which is a higher value than in table 19 which leads to an understanding that the variables removed were Insignificant to the model. The econometrics equation utilizing the estimated coefficients is listed below.

$$Export\ of\ Kazakhstan_{1t}$$
$$= 10.1791 - 0.0356_{x2\ 1st\ diff.t} + 0.3849_{x3t} - 1.3314_{x5t} + 0.2765_{x7t}$$
$$+ 0.0681_{x9t} + 1.2394_{x10t} + \epsilon_{1t}$$

5.7.5 Economic Verification

- In case that all the other variables are equal to 0, then the Export of Kazakhstan will be equal to 10.1791 billion USD ceteris paribus.
- When the exchange rate of the Kazakh Tenge increases by 1 in the ratio of USD to KZT, meaning the Kazakh Tenge loses value, the export of Kazakhstan decreases by 0.0356 billion USD ceteris paribus. There might be several reasons for this

unexpected result. The most probable one is that the prevailing influence of export of Kazakhstan on the exchange rate, rather than in the opposite direction. This makes sense taking into account the major percentage of oil and gas making up the majority of the export of Kazakhstan. Those commodities are traded for world wide prices. This means that in the case of a decrease of Kazakhstan's export, it will lead to a depreciation of the Kazakh Tenge while changes of the exchange rate of the Kazakh Tenge has limited influence on the export price of Kazakh oil and gas. Thus the relationship is inversed for this variable.

- When the inflation rate in Kazakhstan goes up by 1%, then the Export of Kazakhstan increases by 0.3849 billion USD ceteris paribus. For this variables the following applies, in case of the increased export and because of its composition, resulting revenues end up on the market of Kazakhstan. As a result the increased demand leads to higher inflation. This means that the export of Kazakhstan yet again is a driving force of the macro economical situation of the country including the financial stability.

- When the exchange rate of the Chinese Yuan increases by 1 in the ratio of USD to CNY, meaning the Chinese Yuan loses value, the export of Kazakhstan decreases by 1.3314 billion USD ceteris paribus. This estimated relationship is as expected, since in the case of the depreciation of the Chinese Yuan, exports from Kazakhstan become more expensive (from the point of view of the Chinese importers), while the Chinese exports to Kazakhstan become cheaper leading to the assumption that for that year the import rises and the net export decreases.

- When the exchange rate of the Turkish Lira increases by 1 in the ratio of USD to Lira, meaning the Turkish Lira loses value, the export of Kazakhstan increases by 0.2765 billion USD ceteris paribus. This goes against the initial expectation which also leads to an understanding in this case, that the share of Turkey in the trade of Kazakhstan is relatively limited. In the case the share of Turkey in the trade of Kazakhstan would have been greater, such a coefficient would not have been possible.

- When the exchange rate of the Russian Ruble increases by 1 in the ratio of USD to Ruble, meaning the Russian Ruble loses value, the export of Kazakhstan increases by 0.0681 billion USD ceteris paribus. Concerning this unexpected result it is important to keep in mind that especially during the years the strongest devaluation

of the Russian Ruble took place, those were the same years when the international sanctions against Russia were imposed and or strengthened. This led to an increased demand for Kazakh good on the Russian market and created instances such as is seen from this model, where Russia was forced to withdraw from some third country markets (EU) which Kazakhstan took advantage of and replaced the Russian exports to some sense. Additionally, due to many sanctions, many importing that Russia did, had to be done from Kazakhstan.

- When the export of raw materials of Kazakhstan increases by 1 bill USD, the export of Kazakhstan increases by 1.2394 billion USD ceteris paribus. This shows that the export of raw materials is a major factor contributing to the economy of Kazakhstan. Increased profits from raw materials result in the acceleration of the economy of the country, leading to additional export opportunities.

5.7.6 Statistical verification

From the table 20 it can be seen that out of the model the variables deemed as statistically significant are:

- X2 1st difference, standing for exchange rate of the Kazakh Tenge, which has a statistical significance for alpha 0.05 so 95%.
- X3, standing for Inflation rate in Kazakhstan in percentages, which has a statistical significance for alpha 0.01 so 99%.
- X7, standing for the exchange rate of the Turkish Lira, which has a statistical significance for alpha 0.1 so 90%.
- X9, standing for the exchange rate of the Russian Ruble, which has a statistical significance for alpha 0.1 so 90%.
- X10, standing for raw material exported from Kazakhstan, which has a statistical significance for alpha 0.01 so 99%.

Leaving the variable x5, standing for Chinese Yuan exchange rate, which is statistically insignificant for this model.

5.7.7 Heteroskedasticity

Using the data of the model, the results of the testing for heteroskedasticity can be seen in table 21 below. With the resulting p-value entailing the outcome of which of the hypothesis is rejected and which is true.

Table 21: Heteroskedasticity testing for export of Kazakhstan model

```
White's test for heteroskedasticity
OLS, using observations 2008-2022 (T = 15)
Dependent variable: uhat^2

                   coefficient      std. error    t-ratio   p-value
     ---------------------------------------------------------------
     const          -269.663         157.652       -1.710    0.2293
     x21stdiff         0.0573280       0.0283313     2.023    0.1803
     x3                1.21832         0.658551      1.850    0.2055
     x5               78.6223         48.6687        1.615    0.2476
     x7               -0.803427        0.713761     -1.126    0.3772
     x9                0.279716        0.181128      1.544    0.2625
     x10              -0.324048        0.260888     -1.242    0.3401
     sq_x21stdiff     -0.000885810     0.000408404  -2.169    0.1623
     sq_x3            -0.0365639       0.0335246    -1.091    0.3893
     sq_x5            -5.87570         3.72274      -1.578    0.2552
     sq_x7             0.0221702       0.0346122     0.6405   0.5874
     sq_x9            -0.00194320      0.00204302   -0.9511   0.4419
     sq_x10            0.00428144      0.00282216    1.517    0.2685

     Unadjusted R-squared = 0.896044

Test statistic: TR^2 = 13.440658,
with p-value = P(Chi-square(12) > 13.440658) = 0.337841
```

Source: own processing

From the results of table 21, the tested model gives the result of the p-value being equal to 0.337841. This means that the calculated p-value is larger than the set alpha (0.05) threshold, which leads to the understanding that the null hypothesis is not rejected, and the performed white's test is without the presence of heteroskedasticity. There isn't a significant systematic relationship between the independent variables and the squared residuals.

5.7.8 Shwarz criterion

Utilizing the information supplied in table 20 above, the schwarz criterion gives an indicator value of 49.137 which takes into account the number of parameters that are used in the model as well as the closeness of fit of the model. The estimated value gives a value

below 50, thus the model can be seen as a potential candidate for future data modelling with the use of the model scheme.

6 Results and Discussion

6.1 External effects on Kazakhstan internally

According to the data models in regard to Russia and Kazakhstan, both countries express strong shifts in values concerning the country's GDP and foreign currency exchange rates. In regard to the GDP it is strongly affected due to the impact of the dramatic change in the countries' currencies affecting their ability to import materials that are in demand from foreign currencies for further processing and possible re-exporting, due to the foreign prices being too high to the value of the debated countries. In regard to the foreign exchange rates both the Russian Ruble and the Kazakh Tenge experienced a rapid depreciation of their currencies with both having the initial wave of depreciation occur post the year 2014 and lasting until 2016 with the currencies stabilizing afterwards.

These findings support the findings discussed in the literature analysis in the chapter on the topic of the annexation of Crimea in 2014. From the source it was mentioned that heavy sanction fell upon Russia due to the action it took. These sanctions led to a significant downturn in the growth of the Russian economy. This downturn was accompanied by a decline in exports and a restricted access to international financial markets. Subsequently, the devaluation of the Russian Ruble exacerbated these challenges, transmitting economic difficulties to Kazakhstan. Eventually, the National Bank of Kazakhstan was compelled to cease interventions and permit the devaluation of the Kazakh Tenge to mitigate the surge in imports from Russia.

This means that the intertwined history of these two countries reveals a mutual susceptibility to external influences among each other. It becomes evident that developments in one country have repercussions on the other. This fact was visible in the high correlations between the exchange rates and GDPs of Kazakhstan and Russia which were conducted during the correlation testing where the coefficient before data modification resulted in r = 0.96 which is a very strong positive correlation and proves the strong influence of theses two countries and the heavily linked factors between their currencies.

In the present terms, the war in Ukraine is another event that is greatly affecting the economy of Kazakhstan as was the case for the annexation of Crimea. This incident although registered briefly in the data set is another factor that is affecting the foreign exchange rate of the Kazakh Tenge. In regards to this statement the forecasting produced for the exchange

rate of the Kazakh Tenge for the years 2023 and 2024, meaning 2 years upfront, shows an expected decrease in the exchange of Kazakh Tenge per US Dollar with the forecasted estimation of 1USD = 418.7 KZT following the last observed period where the rate is stated at 461.71 Kazakh Tenge per USD in 2022. However, the value in 2022 was already a relative maximum in the data set, with initial signs of the first influences of the event. Due to this, the data through calculation will tend to bring the model back to the trend line which resulted this lowering. While the REF analysed the data prediction to be set on an accurate basis, this forecasting testing cannot take into account an abnormality such as this, that majorly takes place in the years the forecasting is being created for. From the discussion of how Russian actions affect Kazakhstan in terms of internal economy and currency, it can be expected that this prediction will be less reliable than previously expected and effects of similar fashion in terms of shifts in the value of the Kazakh Tenge, such as in the event during the annexation of Crimea in 2014.

6.2 External effects on Kazakhstan in terms of foreign trade

As is discussed in the research analysis, the sanctions placed upon Russia due to the actions towards Ukraine are definitely affecting Kazakhstan, as stated above, in addition to the fact of affecting foreign trade of the country. Due to the decrease of potential partners for trade with Kazakhstan, due to fear of further trade or passed on re-export to Russia, it would be expected that the export of Kazakhstan would suffer. The data concerning the events of the invasion of Ukraine by Russia does not support this expectation with the export of Kazakhstan in 2022 seeing an undisturbed growth since 2016. This is however a possible short-term effect that may be temporary, due to many Kazakhstan efficiently allocating new partners for trade alongside many short-term export destinations to countries that previously were trading partners with Russia and in a sense it is possible that Kazakhstan became substitute for the time being, as Kazakhstan has a strong export in raw materials among which are also oil. Among these changes, foreign investment is on the rise, as many companies relocate their stationed firms to Kazakhstan seeing it as the safest option for the time being. In the instance of the event in 2014, the data supports the listed expectation where the export of Kazakhstan was cut in half, from 79 billion US Dollars in 2014 to 45 billion USD in 2015 with a drastic relative minimum being experienced in the year 2016 with 36 billion US Dollars. Judging from this course of events, it can be debated that the year 2014

didn't have enough time to experience the decline in export so as the year 2022 did not provide the adequate change to the situation, with the actual effects being visible in 2023.

6.2.1 Assumptions from the data model results

The results for the calculated coefficients of China and Kazakhstan go by the expected value of having a strong relationship on the terms of Kazakhstan's Net-Export and China's GDP in the first econometrics model. This means that the expectation forms the literature review where the basic assumptions of foreign trade values are being recognised, it can be seen that the GDP of China greatly affects the exports being sent to China from Kazakhstan. As the variable of the first model was selected due to China being the main trading partner of Kazakhstan along side being the top export destination for Kazakhstan, this shows a strong influence of China over the foreign trade of Kazakhstan. This means that relations with China greatly affect the inflows of foreign currency to Kazakhstan along side an overall boost to Kazakhstan's economy, these factors hold great influence over the value of the Kazakh Tenge. As seen in the practical part focusing on the exchange rates of the Kazakh Tenge and the Chinese Yuan, it is visible that the Chinese Yuan is stronger against the US Dollar than the Kazakh Tenge is, meaning that for China it is cheaper to import from Kazakhstan and it can be expected to do so up until the dynamic changes, such as the devaluation of the Yuan or a sudden appreciation of the Kazakh Tenge which in the present years is less likely due to the influences on the Kazakh Tenge from the depreciating Russian Ruble.

In terms of the relations and effects of the Russian Ruble on the effect of the Export of Kazakhstan it is clear that there is a vast connection between the two currencies of the countries which premodifications showcased an immensely strong positive correlation proving a undeniable connection between the two countries economies, which matches the expectation as analysed in the research on Kazakhstan's past with Russia. While the currencies definitely have a strong correlation the outcome of the Russian Ruble and its effect on the econometric model for the export of Kazakhstan states an increase in Kazakh export when the Russian Ruble depreciates. These values are on one side in line with the assumptions discussed in the foreign trade expectations during the research analysis, however it is not as simple as these two countries have strongly linked economies especially in the case of the Kazakh Tenge which is expected to in quote "follow" the development of the Russian Ruble. By this expectation the Kazakh Tenge would be experiencing a

depreciation alongside the Russian Ruble which would make it more attractive to the foreign trade partners and would indicate an expected increase in exports of the country. However these exports are lifted not only by the nature of foreign trade, but also by the relations of Russia to it's trade partners. As discussed in the research analysis, Russia experienced numerous sanctions in the two events, annexation of Crimea and war in Ukraine, in both cases Russia suffered a loss of potential and or existing trading partners. Trading partners which could then view Kazakhstan as a suitable substitute partner for trade, thus leading to an even larger increase in Kazakh Exports for the term of the duration of the event causing the sanctions being put on Russia.

One of the surprising results was the observed relation, between the Kazakh export and the foreign exchange rate of the Turkish Lira, where the depreciation of the Turkish Lira indicated an increase in export values from Kazakhstan. This points to a rather small share of Turkey in the total exports of Kazakhstan as well as an unfulfilled potential on the Turkish market.

7 Conclusion

The models applied in this thesis are in some cases in line with the expectations while in other they deviate from the assumed results. The main reason for these deviations seem to be the prevailing influence of the events and the relations that are not of economic origin. This is mainly the case of the correlation of Kazakhstan export to the economic situation of Russia. In short, this relation is far from a standard trade that would be expected between other countries. In case this situation would be addressed properly in Kazakhstan, this action could very likely lead to interesting results. This means for instance a possible focus on investments from the third countries in the sectors where the Russai market is facing shortages in the present time. This would be possible as a result of a nearly neutral approach of Kazakhstan towards the conflict between Russia and Ukraine, resulting in the situation where the country of Kazakhstan is not subjected to western sanctions that fall upon Russia and Belarus.

Resulting diversification of the export from Kazakhstan to Russia should end up in a more independent position of the Kazakh Tenge compared to the Russian Ruble and in the long run an opening in export possibilities regarding other Turkic nations for Kazakhstan, in this case mainly Turkey. At the present, it seems that the economic relations between Kazakhstan and Turkey are far from its potential which explains the low correlations between the economic indicators of the two countries.

The most expected results are registered in the relations between Kazakhstan and China. As proven by the correlation between the GDP of China and the Net Export of Kazakhstan. This seems to indicate that the bilateral trade has reached significant values as well as signalling a standardised characteristic of these relations between the two countries. As a result, concerning China, further acts to liberalize the trade may prove to be efficient in terms of export for Kazakhstan to China. However, such an approach seems to be limited by the enormous difference in the economic strengths of these countries with major gaps between annual GDP and or the foreign exchange rate of the local currency. It seems that Kazakhstan is fully aware of the danger of being flooded by the imports from China resulting in the destruction of the production sector of Kazakhstan with the exclusion of the raw material sector, because China is one of the largest raw material importers in the world, thus a situation would take hold where Kazakhstan is exporting mainly oil, gas, ores and or

agricultural production without higher added value (not processed) to China and import high quantities of cheap Chinese products.

In conclusion, foreign trade and mainly export of raw materials was so far the main resource of economic strengthening of Kazakhstan in the last 16 years. Due to this dependence, Kazakhstan has strived and so far majorly succeeded in balancing its economic interest with different partners. A part of possibilities arising from the present weakness of the Russian economy, the crucial challenge is going to be to find an alternative market for Kazakhstan's production, if possible, more processed goods and not solely raw materials (the models used in this thesis show an enormous correlation and thus influence dependence on the raw materials on the export of Kazakhstan). This would allow Kazakhstan to access other international markets concerning the export of processed goods more easily and assist in a more diverse export pool which would further promote a steady and healthy economy that is more independent from Russia.

8 References

1. Aidarkhanova, E., 2023. Why Is the Eurasian Economic Union Broken? [WWW Document]. URL https://thediplomat.com/2023/11/why-is-the-eurasian-economic-union-broken/ (accessed 3.18.24).

2. Allais, M., Balassa, B., Trent J., B., 2024. Britannica Money [WWW Document]. URL https://www.britannica.com/money/international-trade/The-new-mercantilism (accessed 3.18.24).

3. Allworth, E., Sinor, D., Hambly, R.G.G., 2024. Kazakhstan - Culture, Traditions, Cuisine | Britannica [WWW Document]. URL https://www.britannica.com/place/Kazakhstan/Cultural-life (accessed 3.19.24).

4. Amadeo, K., 2022. What Is Trade Protectionism? [WWW Document]. The Balance. URL https://www.thebalancemoney.com/what-is-trade-protectionism-3305896 (accessed 3.19.24).

5. Britannica Money [WWW Document], n.d. URL https://www.britannica.com/money/international-trade/The-new-mercantilism (accessed 3.18.24).

6. EURASIAN ECONOMIC UNION [WWW Document], 2023. URL https://www.mfa.am/en/international-organisations/6 (accessed 3.18.24).

7. Hayes, A., 2024. What Is Comparative Advantage? [WWW Document]. Investopedia. URL https://www.investopedia.com/terms/c/comparativeadvantage.asp (accessed 3.18.24).

8. International Trade Centre, 2014. Regulatory and Procedural Barriers to Trade in Kazakhstan: Needs Assessment. United Nations. https://doi.org/10.18356/857d5de5-en

9. Kazakhstan: Changes regarding monitoring of goods re-exported to Russia – EUROBAK, 2024. URL https://eurobak.kz/kazakhstan-changes-regarding-monitoring-of-goods-re-exported-to-russia/ (accessed 3.18.24).

10. Kramer, L., Kelly, C.R., Rathburn, P., 2023. How Importing and Exporting Impacts the Economy [WWW Document]. Investopedia. URL https://www.investopedia.com/articles/investing/100813/interesting-facts-about-imports-and-exports.asp (accessed 3.19.24).

11. Mami, E., Kenzeali, A., 2022. What is the economic impact of the war in Ukraine on Kazakhstan? [WWW Document]. ODI: Think change. URL https://odi.org/en/insights/what-is-the-economic-impact-of-the-war-in-ukraine-on-kazakhstan/ (accessed 3.19.24).

12. Martinuzzi, B., 2023. What Are the Advantages of International Trade? [WWW Document]. Business Class: Trends and Insights | American Express. URL https://www.americanexpress.com/en-us/business/trends-and-insights/articles/advantages-international-trade/ (accessed 3.19.24).

13. Moltz, B., 2022. Disadvantages of International Trade [WWW Document]. Business Class: Trends and Insights | American Express. URL https://www.americanexpress.com/en-us/business/trends-and-insights/articles/6-disadvantages-of-international-trade-and-tips-that-may-help-solve-them/ (accessed 3.19.24).

14. Official exchange rates on selected date | Bank of Russia [WWW Document], n.d. URL https://www.cbr.ru/eng/currency_base/daily/?UniDbQuery.Posted=True&UniDbQuery.To=01.01.2007 (accessed 3.27.24).

15. Potters, C., 2021. Overview of the Eurasion Economic Union (EAEU) [WWW Document]. Investopedia. URL https://www.investopedia.com/terms/e/eurasian-economic-union-eeu.asp (accessed 3.18.24).

16. Representative Exchange Rates for Selected Currencies for January 2007 [WWW Document], n.d. URL https://www.imf.org/external/np/fin/data/rms_mth.aspx?SelectDate=2007-01-31&reportType=REP (accessed 3.19.24).

17. Russia Trade Balance 1989-2024 [WWW Document], n.d. URL https://www.macrotrends.net/global-metrics/countries/RUS/russia/trade-balance-deficit (accessed 3.19.24).

18. US Dollar to Kazakhstan Tenge Spot Exchange Rates for 2022 [WWW Document], n.d. URL https://www.exchangerates.org.uk/USD-KZT-spot-exchange-rates-history-2022.html (accessed 3.19.24).

19. What is Foreign Trade? What Are The Types? | Perra Logistics [WWW Document], 2020. URL https://perralojistik.com/en/what-is-foreign-trade (accessed 3.18.24).

20. Wolczuk, K., Wallace, J., 2022. What is the Eurasian Economic Union? | Chatham House – International Affairs Think Tank [WWW Document]. URL https://www.chathamhouse.org/2022/07/what-eurasian-economic-union (accessed 3.18.24).

9 List of pictures, tables, graphs and abbreviations

9.1 List of tables

9.2 List of graphs

9.3 List of abbreviations

GDP – Gross Domestic Product
REF – Relative Error Forecast
NX – Net Export
EU – European Union

Appendix

year	KZ Export bill. USD	Constant	KZT exchange rate	KZ inflation %	GDP of main trading partner China bill. USD	Chinese Yuan exchange rate	GDP of Turkey bill. USD
	y1	x1	x2	x3	x4	x5	x6
2007	47.748	1	127	10.85	3550.33	7.8073	681.32
2008	71.172	1	120.3	17.14	4594.34	7.2996	770.45
2009	43.196	1	120.79	7.32	5101.69	6.8367	649.29
2010	57.244	1	148.46	7.4	6087.19	6.8281	776.97
2011	88.108	1	146.73	8.42	7551.55	6.6215	838.79
2012	86.45	1	149.13	5.1	8532.19	6.3001	880.56
2013	84.7	1	152.2	5.85	9570.47	6.2897	957.8
2014	79.46	1	178.81	6.71	10475.62	6.099	938.93
2015	45.96	1	222.19	6.67	11061.57	6.1248	864.31
2016	36.69	1	341.9	14.55	11233.31	6.5126	869.68
2017	48.3	1	326.17	7.44	12310.49	6.9552	858.99
2018	60.96	1	345.09	6.02	13894.91	6.4959	778.48
2019	57.31	1	383.04	5.25	14279.97	6.8557	759.93
2020	46.45	1	414.08	6.77	14687.74	6.97	720.29
2021	60.62	1	426.7	8.04	17820.46	6.4682	819.03
2022	84.66	1	461.71	8	17963.17	6.37	905.99

Turkish Lira exchange rate	GDP of Russia bill. USD	Russian Ruble exchange rate	KZ raw material export bill. USD
x7	x8	x9	x10
1.41875	1299.7	26.3311	32.643
1.16864	1660.85	24.5462	50.282
1.60892	1222.65	29.3916	30.003
1.45542	1524.92	30.1851	41.56
1.56578	2045.92	30.3505	63.811
1.881275	2208.29	32.1961	64.961
1.7762	2292.47	30.3727	63.372
2.17448	2059.24	32.6587	59.31
2.314539	1363.48	56.2376	30.36
2.99268	1276.79	72.9299	22.734
3.59825	1574.2	60.6569	31.415
3.75345	1657.33	57.6002	43.451
5.39474	1693.11	69.4706	40.049
5.924539	1493.08	61.9057	30.473
7.365	1836.89	73.8757	39.573
13.6105	2240.42	74.2926	58.33

year	KZ NX bil USD	constant	exchange rate of KZT/USD	GDP of KZ	GDP of main trading partner China in bil. USD
	y	x1	x2	x3	x4
2007	15.061	1	127	104.85	3550.33
2008	33.357	1	120.3	133.44	4594.34
2009	14.787	1	120.79	115.31	5101.69
2010	33.22	1	148.46	148.05	6087.19
2011	50.098	1	146.73	192.63	7551.55
2012	41.912	1	149.13	208	8532.19
2013	35.895	1	152.2	236.63	9570.47
2014	38.165	1	178.81	221.42	10475.62
2015	15.393	1	222.19	184.39	11061.57
2016	11.515	1	341.9	137.28	11233.31
2017	18.701	1	326.17	166.81	12310.49
2018	27.613	1	345.09	179.34	13894.91
2019	17.601	1	383.04	181.67	14279.97
2020	7.522	1	414.08	171.08	14687.74
2021	19.205	1	426.7	197.11	17820.46
2022	35.07	1	461.71	220.62	17963.17

Source: Macrotrends.net

year	Kazakhstan GDP in bil. USD	Turkey GDP in bil. USD	Russia GDP in bil. USD	China GDP in bil. USD
2007	104.85	681.32	1299.7	3550.33
2008	133.44	770.45	1660.85	4594.34
2009	115.31	649.29	1222.65	5101.69
2010	148.05	776.97	1524.92	6087.19
2011	192.63	838.79	2045.92	7551.55
2012	208	880.56	2208.29	8532.19
2013	236.63	957.8	2292.47	9570.47
2014	221.42	938.93	2059.24	10475.62
2015	184.39	864.31	1363.48	11061.57
2016	137.28	869.68	1276.79	11233.31
2017	166.81	858.99	1574.2	12310.49
2018	179.34	778.48	1657.33	13894.91
2019	181.67	759.93	1693.11	14279.97
2020	171.08	720.29	1493.08	14687.74
2021	197.11	819.03	1836.89	17820.46
2022	220.62	905.99	2240.42	17963.17

Source: Macrotrends.net

year	KZT exchange rate per USD	Turkish Lira exchange rate per USD	Russian Ruble exchange rate per USD	Chinese Yuan exchange rate per USD
2007	127	1.41875	26.3311	7.8073
2008	120.3	1.16864	24.5462	7.2996
2009	120.79	1.60892	29.3916	6.8367
2010	148.46	1.45542	30.1851	6.8281
2011	146.73	1.56578	30.3505	6.6215
2012	149.13	1.881275	32.1961	6.3001
2013	152.2	1.7762	30.3727	6.2897
2014	178.81	2.17448	32.6587	6.099
2015	222.19	2.314539	56.2376	6.1248
2016	341.9	2.99268	72.9299	6.5126
2017	326.17	3.59825	60.6569	6.9552
2018	345.09	3.75345	57.6002	6.4959
2019	383.04	5.39474	69.4706	6.8557
2020	414.08	5.924539	61.9057	6.97
2021	426.7	7.365	73.8757	6.4682
2022	461.71	13.6105	74.2926	6.37

Source: Macrotrends. net