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**Bachelor's Thesis**

Analysis of the internal and external factors affecting the value of the company:

**The case of NAC Kazatomprom JSC**.

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**Analysis of the internal and external factors affecting the value of the company:**

**The case of NAC Kazatomprom JSC.**

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6B04104 Finance, 6B04106 Management, 6B04101 Accounting and Audit.


## Abstract

The particular research aims to review the uranium sector in Kazakhstan. Moreover, to accomplish business valuation and recent developments of the NAC Kazatomprom JSC and the benchmark company Cameco. The research paper will contain different tables, graphs and figures, which focuses on reviewing the approach of financial data and regression analysis. Such tools help to identify the current position of a particular company and the overall performance of the uranium sector at a given point of time. The research paper covers areas of finance, and business valuation with comparison of the benchmark company. As well as regression models, financial indicators that can be used in uranium's sustainability assessment. Different tools such as Bloomberg and Excel were used to determine deeper research of the financial statements.

Main purpose of the research is to apply theoretical knowledge on real-life case companies and provide the following: investment decision making, business valuation, comparative analysis and making conclusions.



**Keywords:** Uranium industry, business valuation, NAC Kazatomprom JSC, Cameco, financial analysis, benchmark, regression.

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**List of Abbreviations**

NAC Kazatomprom JSC - National Atomic Company Kazatomprom Joint Stock Company.

ISR - In-Situ Recovery.

EBITDA - Earnings Before Interest, Taxes, Depreciation, and Amortization.

SWOT - Strengths, Weaknesses, Opportunities, and Threats.

DCF - Discounted Cash Flow.

WACC - Weighted Average Cost of Capital.

FCF - Free Cash Flow.

NOPAT - Net Operating Profit After Tax.

NWC - Net Working Capital.

CIT - Corporate Income Tax.

NPV - Net Realizable Value.

R&D - Research and Development.

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## 1. Introduction

Over the past six decades, uranium has become one of the most important energy minerals in the World: It provides more than 1/3 of the World's primary uranium supply through its operations in Kazakhstan. This particular industry is an important area for scientific research that covers regulations, production, transportation, storage and mutual relations among different institutions. The conducted research covers areas of finance, and business valuation compared to the benchmark company - “Cameco”.

**Relevance of the research topic.** The purpose of the research is to review the current situation of the uranium industry and make assumptions regarding Kazatomprom's business valuation compared to the benchmark.

**The results of this research** grants an opportunity to get Kazatomprom's financial and annual statements processed, based on official reports. Current situation of the uranium industry in Kazakhstan shows that more than half of the proven reserves of uranium in the World are suitable for extraction by the commissioning method. Which gives a great potential base for conducting the research in this field. Consequently, the research is aimed to elaborate preclusive algorithms that will identify potential problems based on historical information. In particular, the following research question was considered: **What are the internal and external factors affecting the value of the company?**

The study provides a comprehensive review of the literature, financial analysis, conceptual frameworks and practice of Kazatomprom. The primary research method for this paper is quantitative, including observations of data and statistical performance. Databases of Kazatomprom’s annual reports, Bloomberg were used to identify current financial performance. Additional tools such as Excel were used to develop a business valuation model.

## 2. Literature review

Significant numbers of literature were made before starting the research. This literature review covers frameworks, key ideas, articles and methodologies related to the uranium industry and assessment of Kazatomprom. Thus, the areas of business valuation intersect when studying certain economic phenomena using modern teaching methods and software.

Koller T., Gödhart M. and Wessels D. investigated in terms of risk management, assessment, analysis of financial instruments. According to the book, the value of a company is determined, firstly, by its capability to generate returns on invested capital in excess of the weighted average cost of capital. Secondly, according to the ability to boost: higher profitability, result in high growth of cash flows, which, in turn, increases the value. (Koller T., Gödhart M. & Wessels D.)

Moreover, Kazatomprom and Cameco company's annual reports were reviewed as the main drive unit in this particular research. The current annual reports are intended for public disclosure of information about the operating and financial activities of the company for the last year. Through the report the firm's financial performance and investment decisions are clearly issued. Which gives a major advantage in computing the business valuation and deeper understanding of the firm's statements. As well as gives a clear understanding of the future perspectives. Annual report clearly shows how the company composes its strategy of development, operations, attains its financial results, and develops value for stakeholders and interested parties in a long-term perspective. This particular report is based mainly on the annual report, since it covers all necessary topics such as: the company and its subsidiaries, operational environment, which business model is used, main opportunities and risks affecting the ability and financial analysis of the company. (Integrated Annual Report, 2019)

## 3. Methodology

**Financial statement analysis.** We have divided the analysis of the company's financial statements into vertical and horizontal analysis:

Vertical: in the horizontal analysis, we looked at the company's structure for 2020. Here, we used statements such as the Income Statement, Balance Sheet, and Cash Flow Statement, and looked at their indicators of profitability, creditworthiness, and liquidity.

Horizontal: Financial analysis, which involves comparing indicators for different periods. It is based on the study of the dynamics over a certain period of time, which we have in 2011-2020.

**Discounted cash flow.** The discounted cash flow (DCF) approach and apply that information to make wiser business and investment decisions. With DCF, assumptions about a company's profits and cash flows years down the road determine a company's stock price. Companies thrive when they create real economic value for their shareholders.

To begin with, WACC (Weighted Average Cost of Capital) is the rate of return that investors expect to earn from investing in the company and therefore the appropriate discount rate for the free cash flow (FCF). We were able to use the traditional WACC formula, which we learned in our core subjects. Generally, all the necessary data for the calculation were taken from the financial statements from 2020, except for the calculations of market equity and debt were calculated with the average value for 5 years and the loan rate of the companies.

This study is limited to a chronological framework from 2016 to the present day. The calculation includes the components as net operating profit after tax (NOPAT), net working capital (NWC), capital expenditure, other financial areas like amortization and depreciation, and corporate income

tax (CIT) to achieve the FCF by summing up all above components. Predicting future growth and net cash flow has an approach that applies the historical cash flow. A known percentage of WACC, it consists of the formula of discounted FCF. Expected cash flow for the next 10 years requires, in this case, deep knowledge in MS Excel, using the formula “trend” for forecasting FCF and calculating the NPV in excel.

**Macroeconomic analysis.** We made a regression analysis using macro indicators and based on them we modeled Kazatomprom's revenue. In the first place, we decided to use the company's annual revenue as the dependent variable and model its value using GDP, Price of Uranium, and Volume of production and Exchange rate of Kazakhstani tenge. According to economists, those variables are one of the most important macroeconomic factors that can affect Kazatomprom’s revenue. We decided to use the linear relationship, Ordinary Least Squares (OLS) estimation. Firstly, we regressed each variable against revenue, and then we combined variables constructing multiple regression models. All the data was taken from open official sources, such as investing.com, the company's financial report for the last 10 years. According to the information, we started modelling. The tool for research was MS Excel, Analysis toolpak.

**Comparative analysis.** Comparative analysis is the research of two opposite companies, in other words comparing them on diverse indicators. In this analysis, we took a comparison of Kazatomprom and Cameco, identifying common points in different years. For example, a decrease in the price of uranium and compared the companies reaction to it. The main indicators were creditworthiness, profitability and liquidity.

## 4. Current issues in the uranium industry

In this particular chapter, the main strategic plan and COVID-19 impacts on the uranium sector will be analyzed.

### 4.1. Strategic plan

The mission of Kazatomprom company is to exploit uranium deposits and develop value chain components, creating long-term value for customers and become the preferred partner of the global atomic industry.

Kazatomprom committed to the long-term growth of sustainable development, strengthening its position as a leading uranium company, focusing on reliability, high technology and industrial safety. The company's strategy 2018-2028 is aimed on:

- Focus on the main activity: The main activity of the company is the production and sale of uranium and uranium products.
- Optimize production, processing and sales volumes based on market conditions: Kazatomprom is able to quickly respond to changes in the uranium market, and reduce production in a timely manner. From 2018 to 2020, the company has committed to the Government of Kazakhstan to reduce uranium production by 20%.
- Create value by strengthening the marketing function and expanding sales channels: Despite the COVID-19 pandemic, in 2020 the Company fulfilled all its obligations to customers and continues to strengthen its position in a number of areas regarding the organization of the sales and distribution system. The company is diversifying its portfolio of contracts.

- Apply best practices in business activities: The company has access to rich uranium deposits and intends to continue investing in the exploration of reserves and development of deposits to ensure sustainable low-cost production at its mines in the long term.
- Develop a corporate culture that matches the industry leader: During 2020, Kazatomprom continued to develop a corporate culture focused on creating a reliable environment, continuous improvement, clear interaction, strong corporate governance and a ubiquitous safety culture.

### 4.2. COVID - 19 Impact

In December 2019, news from China about the outbreak of a new virus first appeared. On 11 March 2020, the World Health Organization declared the outbreak of a new type of virus COVID-19. The COVID-19 epidemic has spread globally, with a sharp negative effect on the entire global economy. According to the Decree of the President of the Republic of Kazakhstan dated 15 March 2020 No. 285 “On the introduction of a state of emergency in the Republic of Kazakhstan”, a state of emergency was introduced for the period from 16 March 2020 until 15 April 2020 and later extended until 11 May 2020. Due to COVID-19 restrictive measures, it decreased its exploration activities and production volumes during the year.

In the last year, Covid-19 caused considerable disruption to uranium production as several producers shut down operations in order to limit spread of the disease. The company has made adjustments to its work in the context of the pandemic. The company planned for the upcoming 2020 to work on new blocks of geotechnological landfills, however, it had to postpone the work of new landfills and reduce the number of employees at existing landfills, which led to a reduction in uranium production for 2020 (UxC interview with the Chairman of the Management Board of JSC "NAC "Kazatomprom»). The reduction in production volumes is due to the reduced

production activity for three months (March, April, and May). Their forecasts for further volumes are also not optimistic, that there are not even pleasant forecasts for 2021. However, it is worth noting that the forecasts for 2021 are not fully based on the current situation, and are largely influenced by the work at the mines, taking into account the geology and production plans.

The main question of a large company is whether the company is able to fulfill its contractual obligations to customers and the state. The chairman of the Management Board has no doubts about cooperation with the state at the time of the pandemic and the company has revised its obligations to customers. After all, the company is focused on maintaining inventory, not on sales in this situation in the world. However, Kazatomprom announced a reduction in uranium production in August 2019, and with the current situation, there are no accurate forecasts for the potential impact on the level of uranium production for 2021. Despite this, transporting uranium abroad is less exciting than for other energy sources. The company's management Board notes that according to forecasts, work at the fields can be returned in full if the situation with the virus stabilizes. With the reduction of the current health and safety measures, the personnel will return to the production carried out by the method of underground well leaching, the resumption of drilling in new fields.

## 5. Overview of the uranium sector in Kazakhstan

Until the late 1960s, discoveries of uranium in Ili and Shu-Sarysu provinces were the World's largest reserves, according to the World Nuclear Association (WNA). Currently, 56 deposits have been identified in the Kazakhstan area, the reserves of which exceed approximately 450,000 tons of uranium. Moreover, 13 operating fields are additionally divided into 24 blocks collected into 13 mining subsidiaries of uranium with various structures of ownership. Therefore, 4 more fields are in an additional observation stage. Currently, the World's 43% of uranium reserves produced in Kazakhstan.

Based on general geological conditions and characteristics they are considered to be uranium fields located in six different provinces across Kazakhstan: Syrdarya, Shu-Sarysu, Northern Kazakhstan, Ili, Caspian Sea, Balkhash.

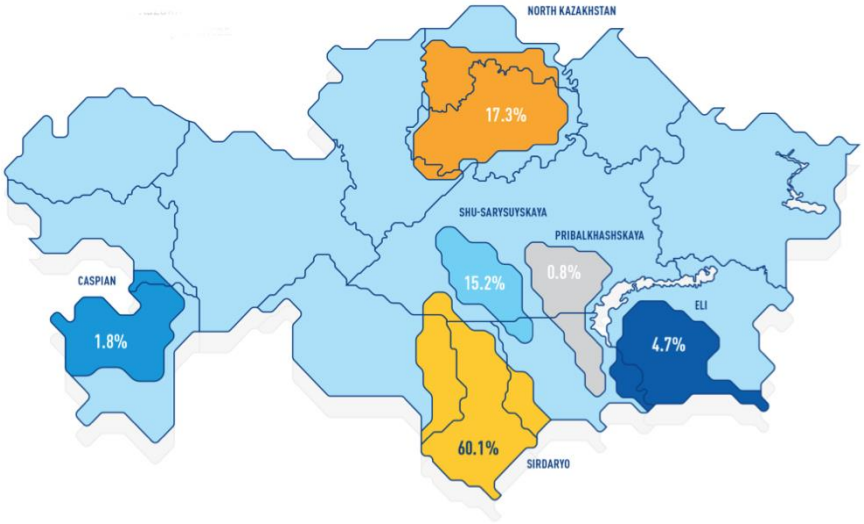


*Figure 1: Uranium provinces and distribution reserves in Kazakhstan. (Integrated Annual Report 2018)*

Thus, more than a half of the proven uranium deposits are located in Kazakhstan, which are acceptable for recovery by the commissioning method and developed by Kazatomprom. Moreover, it will be recovered by using the ISR method.

### 5.1. Background: Kazatomprom

The national operator for the export and import of uranium and its conjunctions is - Kazatomprom company. Which is delivering not only uranium but also fuel for nuclear power plants, specialized equipment and other compounds. Uranium from Kazatomprom is used to generate nuclear energy around the world. Moreover, Kazatomprom remains committed to global best practices in sustainable development and invests heavily in continuously improving the sustainability of their operations.

The main business model is based on combining the cost-effective technologies of in-situ recovery and a long-term reserve base. Through this model Kazatomprom remains one of the most advanced and low-cost uranium mining enterprises in the world. The location of main uranium deposits of Kazatomprom are founded in four administrative districts: Turkistan Region, Kyzylorda Region, Akmola Region and North Kazakhstan Region. More details about the volume, activities is provided in the next paragraph.

### 5.2. Key business activities and products

The company operates in the fields such as: Natural uranium mining, production of fuel pellets, uranium concentrate and uranium dioxide powders of ceramic purity, beryllium, tantalum, and niobium products, geological exploration, research and development, human resource development, and nuclear workforce training. The main products are states as following:

- Uranium production, processing and selling.
- Beryllium - sale, R&D.
- Manufacturing and conducting the research of tantalum products.
- Power resources - production, and sale. (Electric power)
- Providing services to primary production.

In 2019, 13 mining assets with 26 deposits/areas located across Kazakhstan, using the ISR method were operated by Kazatomprom (*Figure 2)*:

1. Three uranium producing subsidiaries - operating on eight uranium deposits.

2. Ten uranium-producing companies, partly owned by Kazatomprom - operating on eighteen uranium deposits.

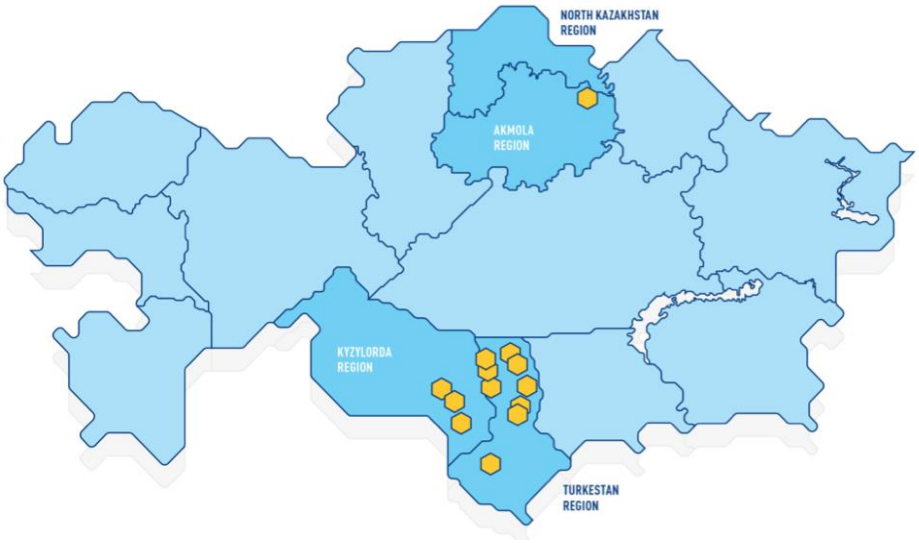


*Figure 2: Uranium deposits, mining and processing provision.(Integrated Annual Report 2018)*

### 5.3. SWOT analysis

Conducted SWOT analysis of Kazakhstan's uranium sector shows the strengths and weaknesses. As well, as evaluates threats and opportunities.

| ***Strength*** | ***Weakness*** |
|---|---|
| ● 12 % of the world's uranium resources.<br>● Leading uranium producer.<br>● A major plant making nuclear fuel pellets. | ● Lack of transparency in the global uranium market.<br>● Unpredictable market reaction.<br>● Lack of market of nuclear energy and power plant construction. |
| ***Opportunity*** | ***Threat*** |
| ● International collaboration.<br>● More than half of the world's uranium resources amenable to extraction are located in Kazakhstan. | ● High negative impacts on the environment.<br>● Dust and gas collection.<br>● Safety and security at uranium production sites.<br>● Radioactive wastes from uranium mining. |

*Table 1. SWOT – analysis of the uranium sector in Kazakhstan.*

As was indicated in the Chapter 4.1. Kazatomprom is oriented to long-term growth, strengthening its position as a leading uranium company in local and international arenas. To reinforce its position and avoid threats indicated in Table 3, the Company needs to focus on high technology, industrial safety, reliability and sustainable development. Moreover, local uranium resources give a large amount of opportunities to cover and integrate Kazatomprom's strategy.

## 6. Data analysis

Despite the uncertainty in the uranium market, Kazatomprom achieved excellent production and financial results in 2019 and confirmed its status as the largest supplier of natural uranium around the world. The company fulfilled its obligations and created value, due to the consistent implementation of its development strategy - maintaining a disciplined market approach and strengthening its presence in the global uranium market. Moreover, improved business efficiency and optimized costs, as well as made a clear focus on mining uranium as the main activity.

### 6.1. Financial statement

**Profitability.** Sales had increased at 8.5% in the year of 2019, but there was a fall in sales, at 35.2% since 2011, with a period of 10 years. The main blow came in 2011-2012 years due to the fact of the Fukushima accident, which led to a drop in uranium prices, as a result of which, sales in 2013 went down by 12%. Moreover, we can see the same picture in 2016, when the company's sales fell by 38% under the circumstances of a stop at Rabbit Lake. In 2020, sales in the first two quarters accounted for 27% of total sales in 2020, because of the global pandemic crisis. In the third quarter, sales increased by 122.4% with a contrast to sales in the second quarter of the same year (*Figure 7*). One of the main drivers of growth was the European Green Agreement (31 August 2020) aimed at climate mitigation, as well as the rise of President Joe Biden and his focus on a green economy. In connection with these two events, uranium prices rose sharply, which led to a rise in sales. The company's profitability declined by 2020 due to a decrease in the company's net profit, cost overruns and a slowdown in logistics. Furthermore, the return on equity fell from 20.38 to 17.81. **The return on assets depends** on the price of uranium futures, this is how in 2012 a certain leap in profitability fell from 26 to 16 *(Figure 3)*. The profitability of assets depends on the

company's margins, although the price of uranium fell in 2015, their profitability increased due to the reason of marginality *(Table 2)*. The company had a strong performance in 2018 with the sale of its $1 billion asset. The company's gross profit was growing every year, there was a strong jump in 2018, and at the moment the profit was 45.59% of sales (growth from 2018 by 17.5%), one of the reasons for the increase in profit was the development of uranium mining machines and the sale of its assets. *(Appendix 1)*

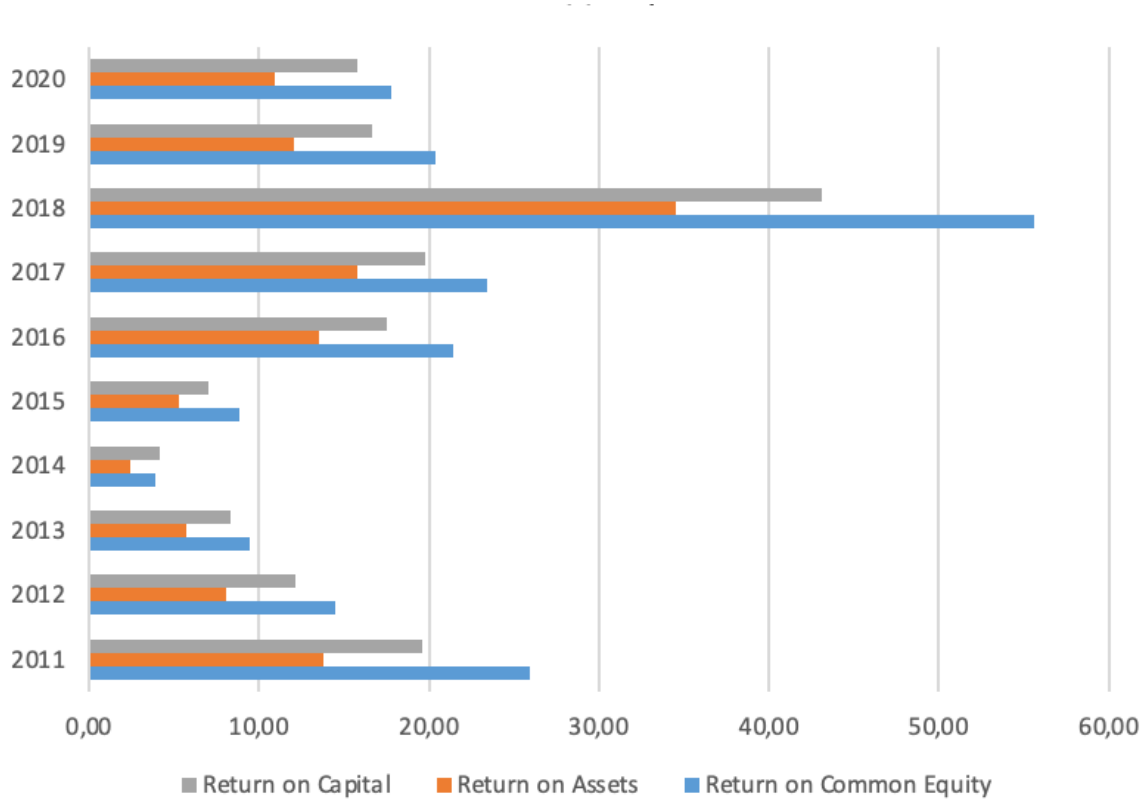


*Figure 3: Profitability.*

**Company margin.** The main drivers for the growth of the company's margins are: the price of uranium, the price of sulfur, changes in the exchange rate and the creation of new technologies for the extraction of uranium. (*Table 2*)

| In Millions of USD except Per Share<br>12 Months Ending | FY 2011<br>12/31/2011 | FY 2012<br>12/31/2012 | FY 2013<br>12/31/2013 | FY 2014<br>12/31/2014 | FY 2015<br>12/31/2015 | FY 2016<br>12/31/2016 | FY 2017<br>12/31/2017 | FY 2018<br>12/31/2018 | FY 2019<br>12/31/2019 | FY 2020<br>12/31/2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Margins** | | | | | | | | | | |
| Gross Margin | 26.90 | 24.19 | 20.25 | 19.87 | 25.99 | 28.01 | 24.22 | 28.13 | 38.78 | 45.59 |
| EBITDA Margin | 25.51 | 21.51 | 15.18 | 18.70 | 22.46 | 21.75 | 7.09 | 107.82 | 53.88 | 52.06 |
| Net Income Margin | 24.33 | 15.82 | 12.45 | 4.80 | 9.66 | 27.59 | 50.00 | 95.66 | 37.83 | 31.24 |

*Table 2: Company margin.*

Gross Margin, EBITDA margin and net profit margin were at 25.9, 25.61 and 24.33 in 2011 and 45.59, 52.06 and 31.24 in 2020, respectively. In 2011, due to the Fukushima accident, the company's margins began to fall for the next 4 years. In 2015, marginality rose sharply from 19.87% in 2014 to 25.99% in 2015 *(Table 2)*.

This year in Kazakhstan there was a change in the exchange rate, which led to a decrease in production costs in dollar terms. Further in 2019, the company developed a new profit-making system, which allowed it to reduce the company's size as well, and in 2020 the exchange rate fell again. In 2018, the net profit margin was at the level of 95.66%, this was as a result of the sale of its own asset *(Figure 4)*.

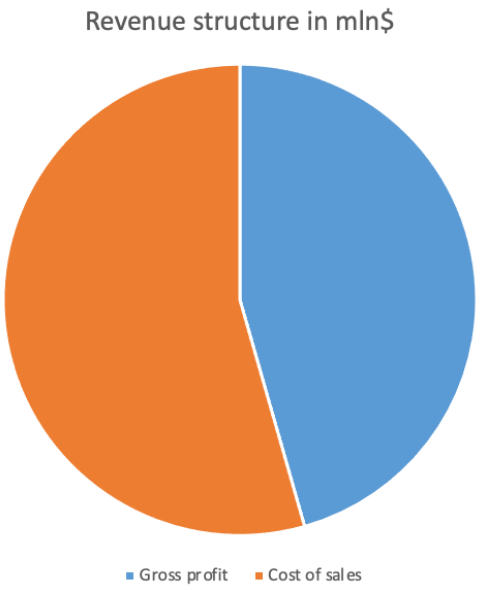


*Figure 4: Revenue Structure in mln $ (USD).*

Although EBITDA Margin and Operating margin were volatile, they have almost doubled over the past 10 years, breaking the level of 52.06 and 41.51. The tax rate was also unstable, but it increased in 2020 to 22.37.

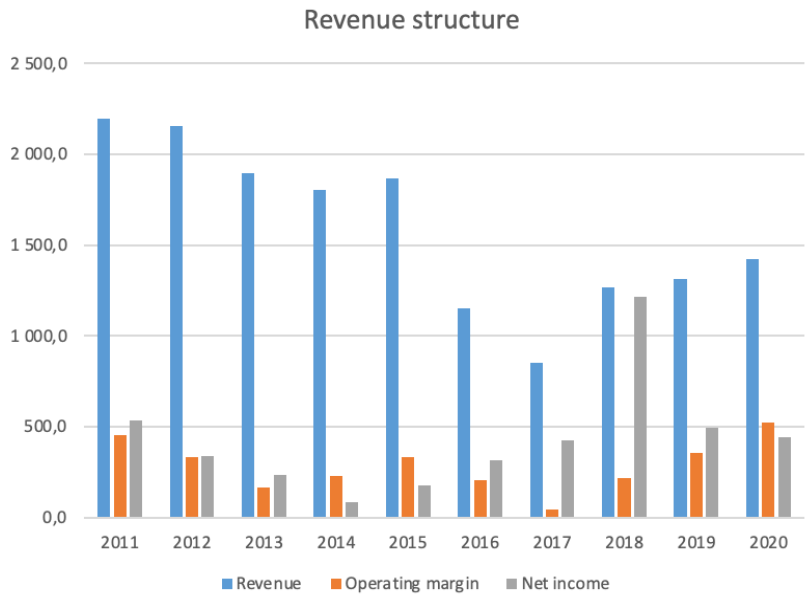


*Figure 5: Revenue Structure.*

**Credit indicators.**

**Vertical.** Kazatomprom is a company managed by the state holding Samruk Kazyna. Looking at its credit performance, the company has a low credit rating with a debt of $234 million, of which 77.7% is long-term debt of the company. Coverage ratios such as Total debt / EBITDA have a score of 0.4, which means that the company is able to pay off its debt in less than 5 months, and the Net debt / EBITDA indicator is negative (the company's cash is able to show debt). EBITDA Interest expense is 71.4. In other words, the company is doing just as well in paying interest to bondholders. Subtracting capital expenditures from EBITDA, the company also shows high indicators of 67.7, namely their investments are minimal in comparison with the yield that is being

worked out, and investors cannot be afraid to invest a lot of money in the company. The indicators, total debt to equity and the total debt to assets is 7.36 and 5.84, respectively. *(Appendix 2)*

**Horizontal.** Over the past decade, the company's debt decreased from $784 million to $ 234.1 million in 2020, while the total debt to equity ratio had fallen from 33.47 to 7.36 by 4.5 times. This means that the capital of the company is growing faster than the indicators of debt. Net debt to equity and net debt to capital had a decline from 13.58 and 11.96. The amount of money in the company has increased, which is just as good for the company's profitability. Total debt to EBITDA and net debt to EBITDA in 2011 were 1.42 and 0.58 and declined to 0.32 to -0.06 in 2020, the highest indicator with 6.2 and -6.45 in 2017 in consequence of a decrease in profitability. The company's short-term debt had the highest measure in 2014 with $ 671.1 million. In 2013, 2014 and 2017, the company had the lowest EBITDA to interest expense at 6.5, 6.66 and 3.58. *(Appendix 2)*

**Liquidity.**

**Vertical.** The company has a strong liquidity ratio, current ratio of 4.86, cash ratio of 1.06 and quick ratio of 2.11. The cash ratio shows us the amount of money in the company for short-term liabilities, thus the company can cover them all, the second quick ratio shows that the company is dominated by money and accounts receivable 2 times prevail over short-term liabilities. *(Table 3)*

| In Millions of USD except Per Share<br>12 Months Ending | FY 2011<br>12/31/2011 | FY 2012<br>12/31/2012 | FY 2013<br>12/31/2013 | FY 2014<br>12/31/2014 | FY 2015<br>12/31/2015 | FY 2016<br>12/31/2016 | FY 2017<br>12/31/2017 | FY 2018<br>12/31/2018 | FY 2019<br>12/31/2019 | FY 2020<br>12/31/2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash Ratio | 0.64 | 0.25 | 0.24 | 0.16 | 0.37 | 0.90 | 1.12 | 0.46 | 0.53 | 1.06 |
| Current Ratio | 2.23 | 1.49 | 2.03 | 1.02 | 1.83 | 2.49 | 2.38 | 1.63 | 2.69 | 4.86 |
| Quick Ratio | 1.21 | 0.75 | 0.67 | 0.43 | 0.99 | 1.37 | 1.39 | 0.79 | 1.02 | 2.11 |

*Table 3: Liquidity ratio.*

As we can see on the chart, there was a sharp increase in short-term liabilities in 2012, 2014 and 2018. This was due to an increase in short-term debt in those years. In 2017, the company's cash also increased due to the sale of its assets. (*Figure 6)*

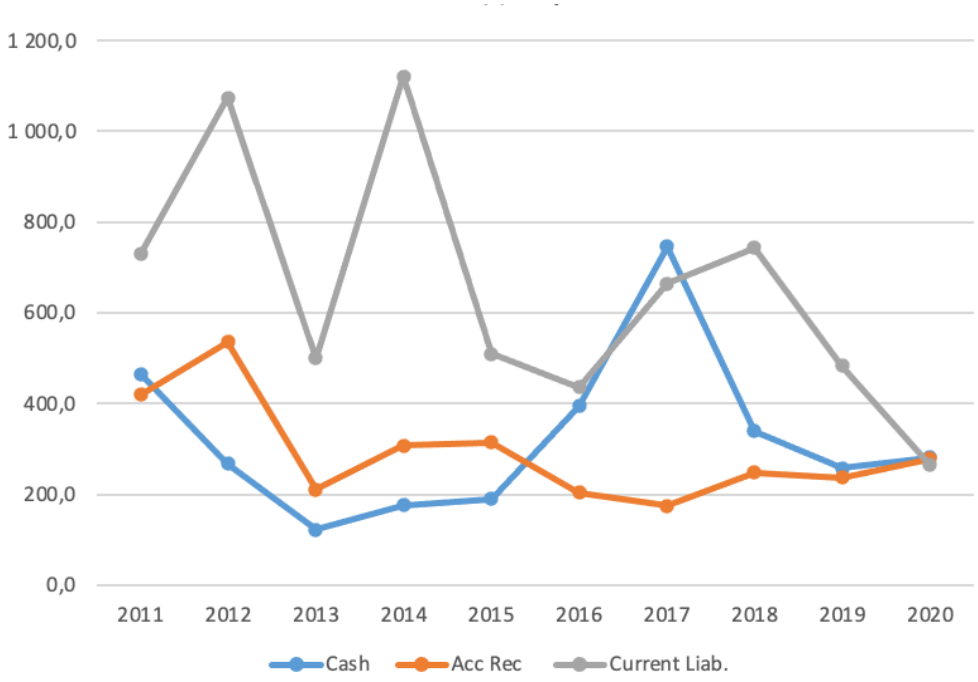


*Figure 6: Cash, Account Receivable, Current liabilities.*

### 6.2. Macroeconomic analysis

The objective is to evaluate the effects of macroeconomic factors, namely independent variables to annual revenue of Kazatomprom based on theoretical and methodological research.

To create the regression model, we took such macroeconomic factors as GDP, Price of uranium, Exchange rate of Kazakhstani tenge and Volume of production of uranium in Kazakhstan.

The following external economic factors have been chosen for the regression models:

- Uranium price

Obviously, we need to understand how changes of the market price of uranium (major revenue generating product) affects Kazatomprom's revenue. The higher the price - the higher the revenue.

- Production volume (uranium)

It is essential to know how the production volume of uranium affects the company's revenue.

- Exchange rate (USD/KZT)

Kazatomprom receives revenue in dollars. Therefore, we need to find out how a change in currency affects revenue in dollar terms. Knowing the expectations for the exchange rate, the relationship between the data and predicting the future revenue can be seen.

- Gross Domestic Product (GDP) of Kazakhstan

In order to understand the interrelationship of the main economic indicator of the performance and economic efficiency of the country, it is essential to include this factor to the regression model. It allows us to predict the revenue of the company in the future more accurately, taking into account the growth rate of the country and at the same time look at how changes in the country's economy affect Kazatomprom's revenue.

In the process of this particular research, four hypotheses were conducted to give a better understanding of macroeconomic analysis:

1. H0: uranium prices do not affect KAP revenue

   H1: uranium prices affect KAP revenue
2. H0: volume of production does not affect KAP revenue

   H1: volume of production affects KAP revenue

3. H0: exchange rate does not affect KAP revenue

   H1: exchange rate affects KAP revenue

4. H0: GDP does not affect KAP revenue

   H1: GDP affects KAP revenue

**Correlation matrix**

A correlation matrix was created for better understanding how one variable moves in comparison to another.

| Correlation matrix | | | | | |
|---|---|---|---|---|---|
| | Revenue | Volume | Exchange rate | Price of uranium | GDP |
| Revenue | 1 | -0,476004 | -0,8174402 | 0,51956876 | 0,62718485 |
| Volume | -0,476004 | 1 | 0,57419806 | -0,8698881 | -0,0275607 |
| Exchange rate | -0,8174402 | 0,57419806 | 1 | -0,7359946 | -0,5066312 |
| Price of Uranium | 0,51956876 | -0,8698881 | -0,7359946 | 1 | -0,0621975 |
| GDP | 0,62718485 | -0,0275607 | -0,5066312 | -0,0621975 | 1 |

*Table 4: A correlation matrix.*

According to the correlation matrix, the Volume of production of uranium and Exchange rate have a negative impact on revenues, while the Price of uranium and the GDP are positive. Everything

is clear with the exchange rate of Kazakhstani tenge: the more expensive the dollar, the less the company's revenue in dollars.

The cell of Price of Uranium and Volume of production shows that the larger the production volume, the lower the price of uranium. This makes sense because the supply in the market is increasing and prices are falling. It can be clearly seen that our demand in the uranium market is inelastic, that is, a drop in price has a bad effect on our revenue.

**Exchange rate factor**

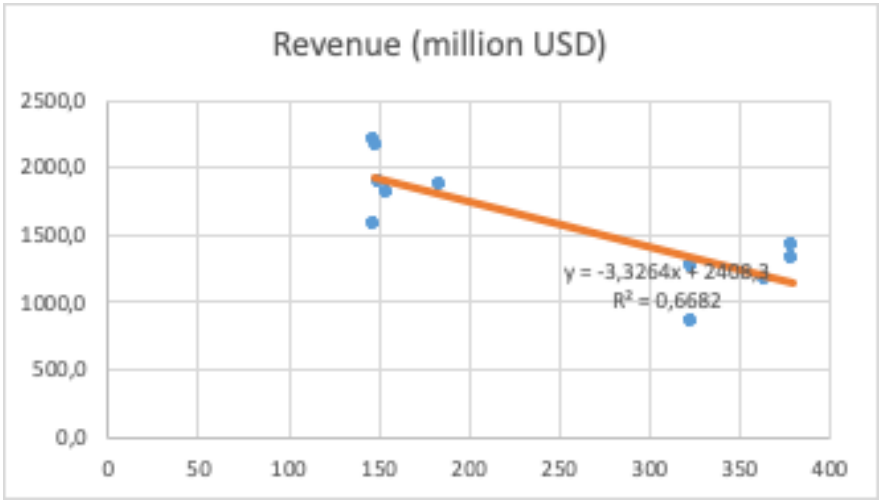


*Figure 7: Single factor model. Revenue- Exchange rate of Kazakhstani tenge.*

According to Appendix 4, the model showed a good R-squared which equals 66,82%. However, the data in this case is quite scattered: the period before and after devaluation.

**Price of Uranium factor**

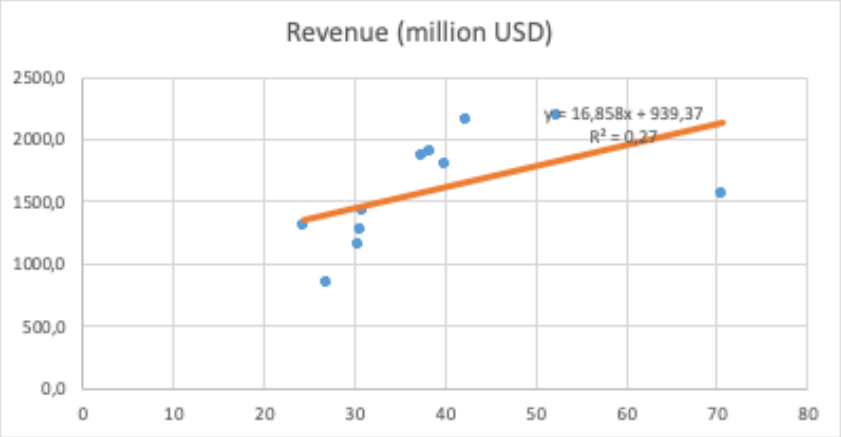


*Figure 8: Single factor model. Uranium price.*

The result of this model (Appendix 5) showed low R-squared which equals to 27%. In the early 2010s, revenues were growing, while uranium prices did not change much.

Next, we started experimenting with different variables. We started to take 2-3 variables in the model to identify the model with the maximum R-squared and adjusted R-squared. Here we built a Multiple regression model - Uranium price and Exchange rate of Kazakhstani tenge which is shown on Appendix 6. In this model we obtained R^2 of 0.68 which is a good estimation. Looking at the coefficient, we can see that the revenue model is: Revenue = 2764 – 3.86*USD KZT – 5.8* Price. We see that the exchange rate is still negatively related to the revenue, however, in this model we obtain an inverse relationship between price on uranium. Such a relationship may be due to the fact that uranium prices decline with time and exchange rate declines, but the revenue increased during different years.

**Volume of production of Uranium factor**

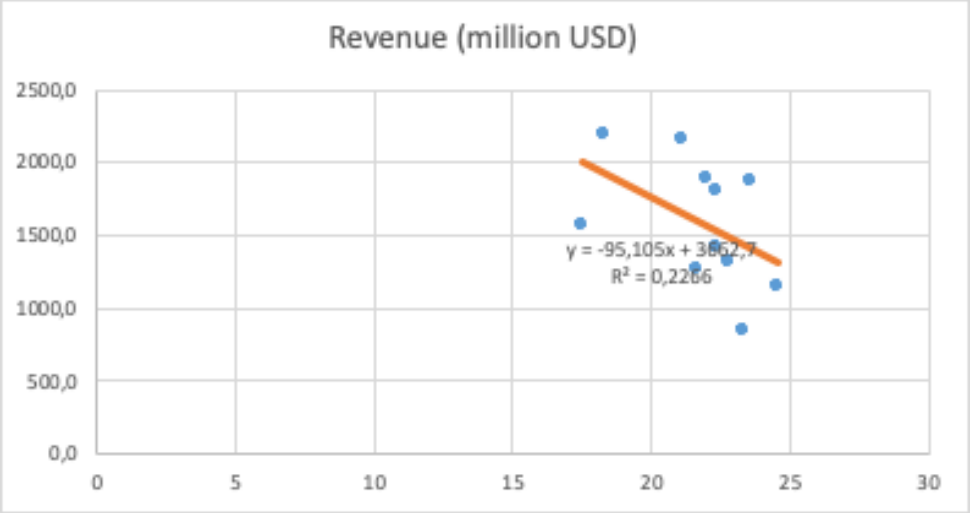


*Figure 9: Single factor model - Revenue - Volume of production.*

As can be seen clearly, in the early 2010s, revenues were high, but then began to decline. At the same time, the volumes of production only grew during this time. This means that there are other factors that play a role in generating revenue. This is also evidenced by the low R-squared which equals to 23% (Appendix 7).

Now we build multiple regression models - Volume and USD/KZT to see whether the model shows the maximum R-squared and adjusted R-squared (Appendix 8). The regression statistics is R^2 of 0.668. The model's equation is: Revenue = 2445 – 1.98*Volume – 3.3 *USD KZT rate. This model is not really logically explained to the revenue. As we need to make sure the price is either increasing or falling. Also, in the model we see that P-value of volume is large, which makes the variable insignificant.

**Gross Domestic Production factor**

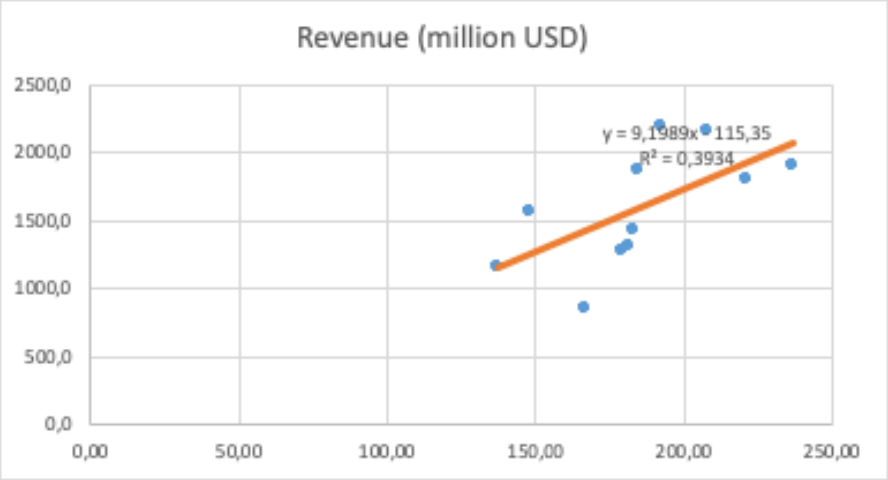


*Figure 10: Single factor model. Revenue - GDP KZ*

In this model we obtained R^2 of 40% which is not high under Appendix 9. Then we build the multiple regression model - GDP and Volume which is shown in Appendix 10. This model gave a very low estimation with R^2 of 0.6 and adjusted R^2 of 0.5. It makes sense, as the volume has little correlation with actual revenue. Hence, using volume will most probably give misleading results.

**Multiple regression model - USD KZT / Volume / Price**

Relying on Appendix 11, there is a good model for revenue. However, both R-squared and Adjusted R-squared are slightly lower. This model also gives a good approximation. The equation is: Revenue = 4886.5 – 74 * Volume – 4* USD KZT – 17* Price. All the coefficients are negative. This is probably due to the fact that revenue of Kazatomprom increased, whereas the volume and the price decreased over time.

**Multiple regression model with all factors**

In this section, we build a model considering all the variables. This time we got a high R^2 of 74% and adjusted R^2 of 57%. However, the problem with the model is that P-values are large, from which we can make a conclusion that some variables may covariate with each other (see correlation matrix). For scientific purposes, we decided to test a different mix of variables with each other to see which model gives the highest R^2 and lowest error which you can see in Appendix 13.

### 6.3. Benchmark: Cameco

The figure 11 provides data about the sales growth rate of two companies between 2011 and 2020 years. As, it can be seen that the figures reveal some variation in sales that changed over the period. There was a negative growth rate of -44.3% in Cameco, and -35.16% in Kazatomprom from 2011 to 2020. Overall, Kazatomprom's sales decreased gradually. However, starting from the year of 2015, the company had a rapid decline until 2017, from roughly $1900 million to $900 million, as a consequence of the decline in uranium prices. After that, the firm's revenue increased significantly till 2020 year. Such growth from year to year was associated with the implementation of the put option in 2017 and change in the investment value, as a result of the inclusion of JV Inkai LLP, LLP Karatau and JV Akbastau. Whereas Cameco’s sales illustrate a downward trend. Although the company’s revenue began to fall in 2016 from the figure of $2156.8 million to $1836.6 million. This explains that the system of insurance price risks in Cameco was highly developed, and the number of long-term contracts was more than in Kazatomprom.

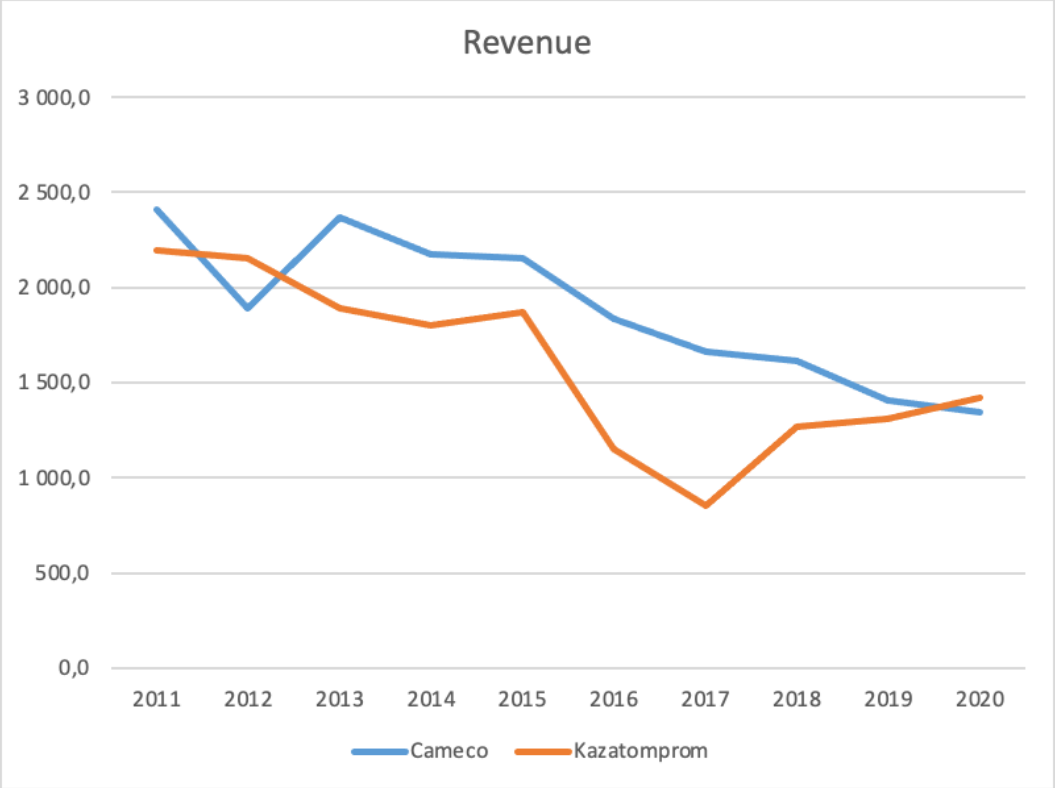


*Figure 11: Revenue: Cameco and Kazatomprom.*

**Company margin.**

The margin of Cameco company is considerably lower than in Kazatomprom during the period of 2018 and 2020. Overall, the growth of margin in Kazatomprom had an upward trend, as a result of the reduced transportation costs and an increase in the sales and profit. While Cameco maintained a downward trend, due to lower pricing.

Cameco's gross margin 44.08%, EBITDA margin 33.4% and net income margin 18.9% was significantly higher in 2011 than gross margin 5.91%, EBITDA margin 7.22% and net income margin - 2.95% in the year of 2020 that was relatively low. Uranium prices decreased and costs of the company remained unchanged over the years, that is why the overall margin dropped. (Appendix 13)

Kazakhstan is a cheaper country for production and operating expenses, as well as a weak currency make production costs more affordable on the background of sales in dollars.

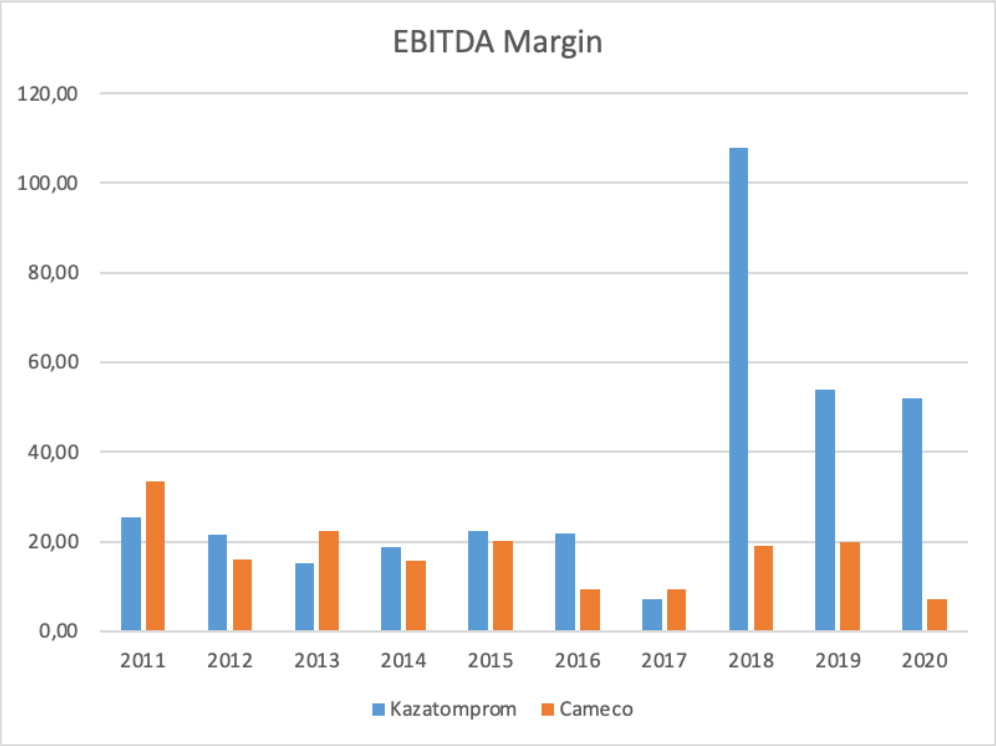


*Figure 12: EBITDA Margin: Kazatomprom vs. Cameco.*

**Debt load.**

The debt of Kazatomprom was $232 million, which is $547 million less than Cameco. Cameco's debt fluctuated over the past 10 years until it reached a peak in 2012 with an indicator of $1365 million, and fell to $779.7 million in 2020. Nevertheless, such a drop in debt was higher than in Kazatomprom. The total debt / EBITDA coefficient at Cameco was 7.66, which had a substantial high point with comparison of Kazatomprom at 0.32. Historically, this figure changed due to a reduction in sales number, but comparing this figure in different years, when the company's profit was similar (for example, in 2012 Cameco with sales up $1892 million, and 2013 in Kazatomprom $1894 million) coefficient Total debt / EBITDA of Cameco was equal to 4.48, and Kazatomprom

was 2.76. Net debt / EBITDA Kazatomprom is -0.07, while Cameco was 0.40 in 2020. Although the indicator displays that Kazatomprom is better insured with debt, it is clear that the money supply is much higher in Cameco. Interest payments of Cameco company in dynamic indicated a negative growth. In general, Kazatomprom showed a positive value of growth, with a dramatic rise of EBITDA margin in 2018. EBITDA to Interest Expense was 71.33 in 2020 at Kazatomprom and 3.0 at Cameco. Overall, the main strengths of Kazatomprom was a high level of EBITDA margin, which makes the company more creditworthy.

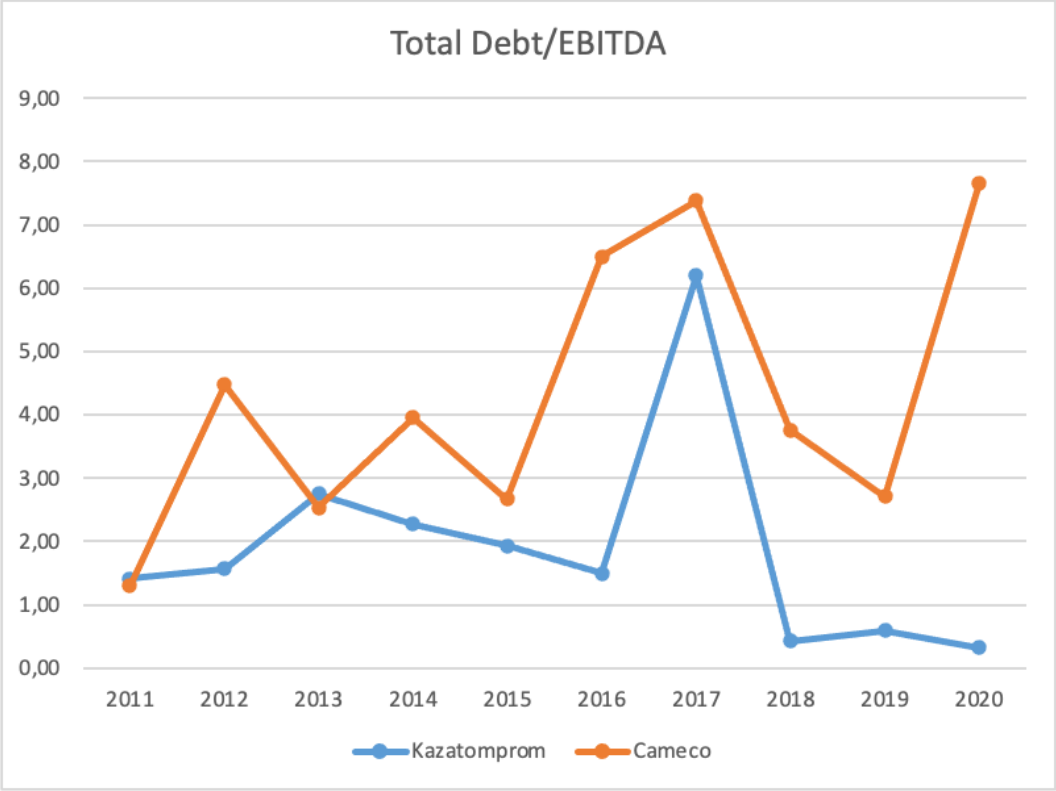


*Figure 13: Total Debt / EBITDA: Kazatomprom vs. Cameco.*

Liquidity indicators were historically higher than in Cameco. According to the data in 2020, the cash funds of the company Kazatomprom make up $281 million, compared with Cameco $739

million. Though the Cameco company had a large size of cash reserves, we believe that Kazatomprom also has the entire value of cash, and Cameco will incorrectly spread funds.

### 6.4 Valuation

The aim of this group project is to assess the Kazatomprom company's condition for future cash flow, taking into account the current circumstances with the pandemic. Having built a model of DCF, we used data from financial statements such as balance sheet, income statements and data from Bloomberg (growth, credit) for the last 5 years, 2016 - 2020 years to forecast cash inflows for the next 10 years.

**Hypotheses.**

Our hypotheses are as follows: “How much the company estimated the value of its own shares in the market, despite the fact that the company listed its shares in November 2018 y.” and “Should users and potential investors invest in this company and what indicators influence the decision-making process?” The study was made in MS Excel for the convenience of calculations.

**WACC calculation.**

| | |
|---|---|
| Value of equity | 0.9812393957 |
| Value of debt | 0.01876060431 |
| Equity value % | 13.8% |
| Debt value % | 8.50% |
| CIT (corporate income tax) | 20% |
| **WACC** | **13.66%** |

*Table 5: WACC Calculation.*

According to Table 5, the result of WACC calculation. Kazatomprom's WACC is 13.66% today, which is quite a good indicator at the beginning of the company's valuation. The applications for calculations as components of the market value of equity and debt and changes in share price percentage are shown in appendices 14 and 14.1. Speaking of each step, the market value of the debt was calculated when calculating the average debt value from the financial statements. The IPO launch strengthened the company's position in the uranium market in 2019 and we had two share prices at our disposal to obtain changes. (Integrated Annual Report 2019) The components as Risk free rate, beta of equity and changes of share price were used to reach the equity value in percentage. The table 5 shows the WACC formula, which consists of the equity and debt values (ratios), debt value in percentage (interest expense), equity value in percentage and CIT.

**Discounted FCF to firm.**

We analysed the historical data for forecasting free cash flow for 10 years. The method of calculation described in methodology. The point that should be highlighted in appendix 15 is that the NPV was based on historical FCF and we compared the excel formula to investigate the amount. Next is the FCF for 10 years, which is calculated by the formula “trend”, where we take into account the period starting from 2016 till each forecasting year and the historical FCF. It shows us the growth of cash flow, while discounted FCF shows an equal number for each period.

**Revalued share price.**

Bringing this into totality from Table 6, we see a full discounted free cash flow about $4.9 bln. However, at this stage, we subtracted the average value of the company's debt of $151 mln. and obtained a fair value of $4.7 bln. The total cash inflows and fair value were divided by the number of shares issued 260 bln. and thus revealed the real value of the company's shares according to our

calculations. For the total discounted cash flow the share price is $19 per and for fair value is $18 per.

| | |
|---|---|
| Net debt (2020) | 151616 |
| Time | 10 years |
| WACC | 13.66% |
| Total discounted FCF | 4,944,822 |
| Revalued share price | 19.01854577 |

| | |
|---|---|
| Total DCF - net debt | 4,793,206 |
| Revalued share price | 18.43540731 |
| Conclusion | overvalued |

*Table 6: Total discounted FCF and revalued share price.*

### 6.5 Risks

**Price risks.**

Kazatomprom is a poorly diversified company in which 87% of production is engaged in uranium, as a result of which the company's sales are highly dependent on uranium prices. Uranium prices vulnerable to a number of factors such as:

- An accident at large nuclear power plants could lead to a drop in uranium prices. A good example is the Fukushima accident in 2011, when the price of uranium fell;
- Demands for other sources of electricity may lead to a decrease in demand for uranium.However, at the moment, due to the Paris agreement, the policy of Joseph Biden, China and the EU, in which countries want to reduce the amount of emissions into the atmosphere. We are of the view that nuclear power plants will be more suitable source of electricity, so that prices should not go down;
- Nuclear energy suffers from public opinion risks, which could have a material adverse effect on the demand for nuclear energy and lead to increased regulation of nuclear power.

**Risk mitigation measures.**

- Elaboration of the possibility of hedging uranium prices
- Conclusion of medium and contracts for the supply of uranium products on a long-term basis.

**Currency risks.**

On the basis of the financial statements, Kazatomprom is less exposed to currency risk due to the fact that the company's uranium is sold in dollars, and the company's expenses are in tenge. This factor suggests that when the tenge falls, the company's margins increase.

| Year | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| Gross margin | 20,25% | 19.87% | 25.99% | 28,01% |
| EBITDA margin | 15,18% | 18.7% | 22.46% | 21,75% |
| Operating margin | 8,71% | 12.69% | 17.91% | 17,71% |

*Table 7: Currency risk.*

In 2014, there was a collapse of the tenge in Kazakhstan, at which the exchange dropped from 180 tenge per dollar to 360 tenge per dollar. Selling in a stronger currency like the dollar and spending in a weaker one like tenge perfectly insures the company against unwanted lower margins and reduced profits.

**Operational risks.**

Major operational risks of the company include: industrial injuries, non-fulfillment of the implementation plan and increase in stocks of finished products.

The most important operational risk is occupational injuries. In relation to the activities that Kazatomprom is engaged in, accidents had repeatedly happened at the enterprise. For instances, the fatal accident in the year of 2019. For this purpose, the company should hold meetings to develop measures to prevent accidents, implement a Behavioral Audit, or conduct scheduled audits.

**Credit risk to counterparties banks.**

Kazatomprom has bank accounts in which it places its funds for safekeeping. This risk lies in the fact that the counterparty bank may not be able to pay the funds as necessary or go bankrupt. In order to reduce this risk, the company must:

- Diversify funds across different second-tier banks;
- Constant monitoring of compliance with the limits of the counterparty bank;
- Continuous monitoring of the financial condition of the bank.

## 7. Conclusion

The Uranium sector is one of the most important areas that connect units of the economy. Based on the conducted research, Kazatomprom is one of the largest manufacturers of uranium with the top priority access to World's largest uranium resources. Conducted research provides the results of which even during the COVID-19 pandemic situation, in 2020 the company fulfilled its obligations and strengthened its positions in a number of areas for organizing the sales and distribution system.

Nevertheless, looking at the company's financial statements, we can see a negative trend in sales growth due to the fall in the price of uranium since 2011, but conducting a vertical analysis, we noticed an improvement in the company's structure. The marginality and profitability of Kazatomprom increases annually, as well as the costs decreasing. The company's creditworthiness is also high and the company's debt decreases over time, and a high cash reserve insures the company against the risk of default. Due to the high marginality of the company, the coverage ratios are also very high. The company's liquidity is at a high level due to high cash reserves and low short-term debt.

In connection with the industry that Kazatomprom is engaged in, the company has certain risks. The main risk for the company is price risk. Falling uranium prices over the past 10 years are a frequent practice, which has severely curtailed the company's short-term sales. Medium and long-term contracts for uranium help the company to insure this risk for a certain time. The second major risk for the company is operational risks. In 2019, one employee died at the factory during the work, which makes the industry and working conditions unsafe for employee life. Companies often have to pay for safety workshops and other events, which increase the cost of operating expenses.

Taking everything into consideration, the comparative analysis of these two uranium-mining companies showed that Kazatomprom had considerably better performance than Cameco. In 2011, the sales of Cameco were higher than Kazatomprom. However, the growth of sales in dynamics depicted worse values in Cameco. The profitability and margin of two companies were similar in the year of 2011, but the indicators were changed over the period. Moreover, Kazatomprom represented better results in 2020. It was mainly, due to the fact of high production costs in Canada compared to Kazakhstan. Cameco's creditworthiness, the coverage ratio were lower and debt was higher than in the main competitor Kazatomprom. To conclude, Cameco had a high debt load and a low income for its repayment.

One fact to be taken into account is that the study of valuation has the result as the company overestimated the value of the shares in half. Today the price is $30.5 per, however according to our calculations, which is based on the company's financial statements, it consists of $18 per. Through the research, connection with the IPO and the positive dynamics of the shares since the placement can be clearly seen. Moreover, there is a comprehensive growing interest in the activities of Kazatomprom. These factors increase the importance of the committees, as they have their own specialization and the members of the committees pay more attention to the issues of development strategy, international cooperation and investment promotion.

According to the performed regression analysis of multi factor model which is based on the chosen external factors and on results of a single factor regressions that proves the interdependence of the revenue of the uranium industry world leader company and such factors as Exchange rate, volume production and uranium price and Gross Domestic product of Kazakhstan. The result shows the best model is multiple regression model with all variables where it can be clearly seen in the paragraphs of Macroeconomic analysis.

## 8. Appendix

Appendix 1. Profitability.

| In Millions of USD except Per Share<br><br>12 Months Ending | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Revenue** | **2,195.4** | **2,157.3** | **1,894.1** | **1,803.7** | **1,867.5** | **1,154.1** | **850.2** | **1,269.3** | **1,311.6** | **1,423.2** |
| **Net Income, GAAP** | **534.2** | **341.4** | **235.9** | **86.6** | **180.5** | **318.4** | **425.1** | **1,214.2** | **496.2** | **444.6** |
| **Returns** | | | | | | | | | | |
| Return on Common Equity | 25.91 | 14.47 | 9.45 | 3.87 | 8.88 | 21.44 | 23.44 | 55.58 | 20.38 | 17.81 |
| Return on Assets | 13.74 | 8.03 | 5.70 | 2.44 | 5.27 | 13.49 | 15.76 | 34.52 | 12.04 | 10.91 |
| Return on Capital | 19.61 | 12.11 | 8.32 | 4.12 | 7.02 | 17.49 | 19.75 | 43.11 | 16.62 | 15.81 |
| **Margins** | | | | | | | | | | |
| Gross Margin | 26.90 | 24.19 | 20.25 | 19.87 | 25.99 | 28.01 | 24.22 | 28.13 | 38.78 | 45.59 |
| EBITDA Margin | 25.51 | 21.51 | 15.18 | 18.70 | 22.46 | 21.75 | 7.09 | 107.82 | 53.88 | 52.06 |
| Operating Margin | 20.63 | 15.49 | 8.71 | 12.69 | 17.91 | 17.71 | 1.87 | 98.47 | 41.57 | 41.51 |
| Net Income Margin | 24.33 | 15.82 | 12.45 | 4.80 | 9.66 | 27.59 | 50.00 | 95.66 | 37.83 | 31.24 |

Appendix 2. Credit indicators

| In Millions of USD except Per Share<br><br>12 Months Ending | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Debt | 784.0 | 720.2 | 781.7 | 751.7 | 506.8 | 383.4 | 365.8 | 525.3 | 421.5 | 234.1 |
| Short-Term Debt | 146.4 | 93.2 | 193.1 | 671.2 | 155.2 | 151.7 | 248.0 | 481.7 | 238.4 | 52.2 |
| Long Term Debt | 637.6 | 627.0 | 588.6 | 80.5 | 351.7 | 231.7 | 117.8 | 43.6 | 183.1 | 181.8 |
| Total Debt/T12M EBITDA | 1.42 | 1.57 | 2.76 | 2.27 | 1.93 | 1.49 | 6.20 | 0.43 | 0.60 | 0.32 |
| Net Debt/EBITDA | 0.58 | 0.99 | 2.33 | 1.74 | 1.21 | -0.04 | -6.45 | 0.15 | 0.23 | -0.06 |
| EBITDA to Interest Expense | 13.01 | 10.43 | 6.50 | 6.66 | 11.87 | 13.66 | 3.58 | 55.01 | 36.88 | 71.40 |
| EBITDA/Cash Interest Paid | 12.52 | 11.10 | 6.63 | 8.23 | 14.58 | 15.70 | 4.43 | 70.24 | 37.67 | 71.51 |
| Cash Interest Paid | 44.7 | 41.8 | 43.4 | 41.0 | 28.8 | 16.0 | 13.6 | 19.5 | 18.8 | 10.4 |
| Interest Expense | 43.0 | 44.5 | 44.2 | 50.6 | 35.3 | 18.4 | 16.9 | 24.9 | 19.2 | 10.4 |
| Total Debt/Equity | 33.47 | 28.71 | 29.66 | 32.73 | 36.77 | 22.53 | 18.98 | 19.16 | 12.99 | 7.36 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Debt/Capital | 25.08 | 22.31 | 22.88 | 24.66 | 26.89 | 18.39 | 15.95 | 16.08 | 11.50 | 6.85 |
| Total Debt/Total Assets | 19.03 | 16.49 | 19.99 | 20.58 | 21.76 | 15.60 | 12.97 | 13.51 | 9.64 | 5.84 |
| | | | | | | | | | | |
| Net Debt/Equity | 13.58 | 18.06 | 25.05 | 25.09 | 22.95 | -0.63 | -19.76 | 6.81 | 5.06 | -1.48 |
| Net Debt/Capital | 11.96 | 15.30 | 20.03 | 20.06 | 18.67 | -0.64 | -24.63 | 6.38 | 4.81 | -1.50 |

Appendix 3. Liquidity.

| In Millions of USD except Per Share<br><br>12 Months Ending | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| Cash, Cash Equivalents & STI | 465.8 | 267.2 | 121.6 | 175.5 | 190.5 | 394.2 | 746.7 | 338.6 | 257.5 | 281.1 |
| Cash & Cash Equivalents | 281.8 | 252.9 | 111.1 | 161.4 | 164.0 | 224.9 | 721.2 | 338.6 | 257.5 | 269.1 |
| ST Investments | 184.0 | 14.4 | 10.5 | 14.1 | 26.5 | 169.3 | 25.5 | 0.0 | 0.0 | 12.0 |
| Cash Ratio | 0.64 | 0.25 | 0.24 | 0.16 | 0.37 | 0.90 | 1.12 | 0.46 | 0.53 | 1.06 |
| Current Ratio | 2.23 | 1.49 | 2.03 | 1.02 | 1.83 | 2.49 | 2.38 | 1.63 | 2.69 | 4.86 |
| Quick Ratio | 1.21 | 0.75 | 0.67 | 0.43 | 0.99 | 1.37 | 1.39 | 0.79 | 1.02 | 2.11 |
| CFO/Avg Current Liab | 0.77 | 0.42 | 0.21 | 0.48 | 0.26 | 0.91 | 0.13 | 0.28 | 0.74 | 1.41 |
| CFO/Total Liabilities | 28.14 | 20.04 | 12.47 | 27.07 | 15.17 | 57.76 | 7.87 | 16.25 | 40.00 | 59.94 |
| CFO/CapEx | 5.37 | 11.90 | 0.91 | 2.99 | 3.85 | 10.16 | 1.15 | 2.18 | 6.48 | 13.24 |

Appendix 4. Single factor model. Revenue- Exchange rate of Kazakhstani tenge.

| *Regression statistics* | |
|---|---|
| Multiple R | 0,817440185 |
| R-square | 0,668208457 |
| Adjusted R Square | 0,631342729 |
| Standard Error | 261,1139746 |
| Observation | 11 |

| | *Coefficients* |
|---|---|
| Y-intercept | 2408,264171 |
| USD/KZT rate | -3,326428564 |

Appendix 5. Single factor model. Revenue - Price of Uranium.

| *Regression statistics* | |
|---|---|
| Multiple R | 0,519568759 |
| R-Square | 0,269951695 |
| Adjusted R-square | 0,188835216 |
| Standard error | 387,3229738 |
| Observation | 11 |

| | *Coefficients* |
|---|---|
| Y-intercept | 939,3701424 |
| Uranium prices (in dollars) | 16,85762055 |

Appendix 6. Multiple regression model - Uranium price and Exchange rate of Kazakhstani tenge.

| *Regression Statistics* | |
|---|---|
| Multiple R | 0,82637895 |
| R Square | 0,68290217 |
| Adjusted R Square | 0,60362772 |
| Standard Error | 270,751177 |
| Observations | 11 |

| | *Coefficients* |
|---|---|
| Intercept | 2764,46083 |
| USD/KZT rate | -3,8626968 |
| uranium prices (in dollars) | -5,8094963 |

Appendix 7. Single factor model - Revenue - Volume of production.

| *Regression statistics* | |
|---|---|
| Multiple R | 0,476004008 |
| R-square | 0,226579815 |
| Adjusted R-square | 0,140644239 |
| Standard error | 398,6623386 |
| Observation | 11 |
| | *Coefficients* |
| Y- intercept | 3662,745665 |
| Volume (thousands of tons) | -95,1047994 |

Appendix 8. Multiple regression models - Volume and USD/KZT.

| *Regression Statistics* | |
|---|---|
| Multiple R | 0,81748031 |
| R Square | 0,66827406 |
| Adjusted R Square | 0,58534258 |
| Standard Error | 276,92581 |
| Observations | 11 |

| | *Coefficients* |
|---|---|
| Intercept | 2445,65329 |
| Volume(thousands of tons) | -1,9766633 |
| USD/KZT rate | -3,3033119 |

Appendix 9. Single factor model. Revenue - GDP KZ.

| *Regression statistics* | |
|---|---|
| Multiple R | 0,627184854 |
| R-square | 0,393360842 |
| Adjusted R-square | 0,325956491 |
| Standard error | 353,0715135 |
| Observation | 11 |
| | *Coefficients* |
| Y-intercept | -115,3508299 |
| GDP (Billions of US $) | 9,198893811 |

Appendix 10. Multiple regression model - GDP KZ/ Volume of production

| *Regression Statistics* | |
|---|---|
| Multiple R | 0,77713791 |
| R Square | 0,60394333 |
| Adjusted R Square | 0,50492917 |
| Standard Error | 302,588476 |
| Observations | 11 |
| | *Coefficients* |
| Intercept | 1917,73799 |
| GDP ( Billions of US $) | 9,01332448 |
| Volume (thousands of tons) | -91,720827 |

Appendix 11. Multiple regression model - USD/KZT / Volume / Price.

| *Regression Statistics* | |
|---|---|
| Multiple R | 0,84561817 |
| R Square | 0,71507009 |
| Adjusted R Square | 0,59295727 |
| Standard Error | 274,37132 |
| Observations | 11 |

| | *Coefficients* |
|---|---|
| Intercept | 4886,50983 |
| Volume (thousands of tons) | -74,113878 |
| USD/KZT rate | -4,0801884 |
| Uranium prices (in dollars) | -17,555245 |

Appendix 12. Multiple regression models with all variables.

| *Regression Statistics* | |
|---|---|
| Multiple R | 0,8591822 |
| R Square | 0,73819405 |
| Adjusted R Square | 0,62599151 |
| Standard Error | 263,002239 |
| Observations | 11 |

| | *Coefficients* |
|---|---|
| Intercept | 671,723557 |
| USD/KZT rate | -1,8559513 |
| Uranium prices (in dollars) | 6,79216066 |
| GDP (Billions of US $) | 6,00082784 |

Appendix 13. Comparable analysis.

| Cameco | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Revenue** | **2,411.8** | **1,892.0** | **2,368.2** | **2,171.6** | **2,156.8** | **1,836.6** | **1,662.8** | **1,614.4** | **1,404.1** | **1,343.6** |
| Return on Assets | 6.08 | 3.37 | 4.12 | 2.24 | 0.76 | -0.72 | -2.56 | 2.11 | 0.96 | -0.71 |
| Return on Common Equity | 9.37 | 5.14 | 6.19 | 3.43 | 1.19 | -1.14 | -4.05 | 3.38 | 1.48 | -1.07 |
| Gross Margin | 44.08 | 28.56 | 24.88 | 26.60 | 25.31 | 19.06 | 20.23 | 14.14 | 12.97 | 5.91 |
| EBITDA Margin | 33.40 | 16.06 | 22.45 | 15.74 | 20.26 | 9.46 | 9.39 | 19.04 | 19.76 | 7.22 |
| Operating Margin | 21.88 | 4.56 | 10.85 | 1.60 | 8.92 | -5.83 | -5.92 | 3.36 | 4.96 | -4.37 |
| Net Income Margin | 18.89 | 13.40 | 13.06 | 7.73 | 2.37 | -2.53 | -9.50 | 7.95 | 3.97 | -2.95 |
| Total Debt | 1,021.8 | 1,366.5 | 1,303.0 | 1,283.9 | 1,079.1 | 1,110.3 | 1,193.0 | 1,097.8 | 768.0 | 779.7 |
| Total Debt/T12M EBITDA | 1.30 | 4.48 | 2.53 | 3.95 | 2.67 | 6.50 | 7.38 | 3.76 | 2.71 | 7.66 |
| Net Debt/EBITDA | -0.21 | 1.85 | 2.11 | 2.45 | 1.85 | 5.10 | 4.46 | 0.99 | -0.18 | 0.40 |
| EBITDA to Interest Expense | 10.81 | 4.49 | 8.81 | 4.89 | 7.43 | 3.09 | 2.77 | 5.45 | 5.83 | 3.00 |
| Total Debt/Equity | 21.10 | 27.51 | 25.89 | 27.39 | 26.91 | 28.40 | 30.75 | 29.95 | 19.95 | 20.08 |
| Cash Ratio | 1.69 | 1.42 | 0.33 | 1.10 | 0.68 | 0.68 | 1.44 | 1.26 | 3.83 | 3.11 |
| Current Ratio | 3.63 | 3.39 | 2.50 | 4.01 | 3.25 | 4.35 | 5.20 | 2.38 | 6.51 | 6.40 |
| Quick Ratio | 2.55 | 2.14 | 0.88 | 1.93 | 1.04 | 1.19 | 2.40 | 1.71 | 4.99 | 3.65 |

| Kazatomprom | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Revenue** | **2,195.4** | **2,157.3** | **1,894.1** | **1,803.7** | **1,867.5** | **1,154.1** | **850.2** | **1,269.3** | **1,311.6** | **1,423.2** |
| Return on Assets | 13.74 | 8.03 | 5.70 | 2.44 | 5.27 | 13.49 | 15.76 | 34.52 | 12.04 | 10.91 |
| Return on Common Equity | 25.91 | 14.47 | 9.45 | 3.87 | 8.88 | 21.44 | 23.44 | 55.58 | 20.38 | 17.81 |
| Gross Margin | 26.90 | 24.19 | 20.25 | 19.87 | 25.99 | 28.01 | 24.22 | 28.13 | 38.78 | 45.59 |
| EBITDA Margin | 25.51 | 21.51 | 15.18 | 18.70 | 22.46 | 21.75 | 7.09 | 107.82 | 53.88 | 52.06 |
| Operating Margin | 20.63 | 15.49 | 8.71 | 12.69 | 17.91 | 17.71 | 1.87 | 98.47 | 41.57 | 41.51 |
| Net Income Margin | 24.33 | 15.82 | 12.45 | 4.80 | 9.66 | 27.59 | 50.00 | 95.66 | 37.83 | 31.24 |
| Total Debt | 784.0 | 720.2 | 781.7 | 751.7 | 506.8 | 383.4 | 365.8 | 525.3 | 417.9 | 232.3 |
| Total Debt/T12M EBITDA | 1.42 | 1.57 | 2.76 | 2.27 | 1.93 | 1.49 | 6.20 | 0.43 | 0.59 | 0.32 |
| Net Debt/EBITDA | 0.58 | 0.99 | 2.33 | 1.74 | 1.21 | -0.04 | -6.45 | 0.15 | 0.23 | -0.07 |
| EBITDA to Interest Expense | 13.01 | 10.43 | 6.50 | 6.66 | 11.87 | 13.66 | 3.58 | 55.01 | 36.84 | 71.33 |
| Total Debt/Equity | 33.47 | 28.71 | 29.66 | 32.73 | 36.77 | 22.53 | 18.98 | 19.16 | 12.88 | 7.30 |
| Cash Ratio | 0.64 | 0.25 | 0.24 | 0.16 | 0.37 | 0.90 | 1.12 | 0.46 | 0.53 | 1.06 |
| Current Ratio | 2.23 | 1.49 | 2.03 | 1.02 | 1.83 | 2.49 | 2.38 | 1.63 | 2.69 | 4.86 |
| Quick Ratio | 1.21 | 0.75 | 0.67 | 0.43 | 0.99 | 1.37 | 1.39 | 0.79 | 1.02 | 2.11 |

Appendix 14. Components for WACC calculation.

| | 000 |
|---|---|
| Shares outstanding 2021y. | 260000 |
| Market price of share at 9 may 2021y. | 30.5 |
| Market value of Equity | 7,930,000 |
| Market value of Debt = Book value | 151,616 |
| Equity + Debt | 8,081,616 |

Appendix 14.1. Changes in share price.

| | |
|---|---|
| Equity | 7860 |
| Debt | 38911 |
| B(equity) | 4.95 |
| B(asset) | 0.998 |
| | |
| Beta of Equity | 1.01 |
| Risk free rate | 9.8% |

| Date | 01/2019 | 01/2020 |
|---|---|---|
| Share price | 11.69 | 12.15 |
| | changes in share price | **3.93%** |

Appendix 15. Discounted free cash flow.

| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FCF (free cash flow)** | | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** |
| periods | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| **NOPAT** | | 165,827 | 34,809 | 185,997 | 292,714 | 429,668 | 0 | | | | | | | | | |
| amortization | | 341,543 | 52,310 | 196,927 | 31,551 | 10,061 | -78,639 | | | | | | | | | |
| NWC | | -343,688 | -13,713 | -208,349 | -88,095 | -78,901 | 732,746 | | | | | | | | | |
| capex | | -351,639 | -15,606 | -148,644 | -8,137 | 50,722 | 473,304 | | | | | | | | | |
| FCF (free cash flow) | | **-187,957** | **57,800** | **25,930** | **228,033** | **411,550** | **496,667** | **623,002** | **749,338** | **875,673** | **1,002,008** | **1,128,344** | **1,254,679** | **1,381,014** | **1,507,350** | **1,633,685** |
| | | | | | | | | | | | | | | | | |
| **total FCF to firm** | | **-187,957** | **57,800** | **25,930** | **228,033** | **411,550** | **496,667** | **623,002** | **749,338** | **875,673** | **1,002,008** | **1,128,344** | **1,254,679** | **1,381,014** | **1,507,350** | **1,633,685** |
| **WACC** | **13.66 %** | | | | | | | | | | | | | | | |
| discounted FCF to firm (FCFF) | **284,922** | **-187,957** | **50,855** | **20,073** | **155,317** | **246,633** | **436,991** | **482,285** | **510,386** | **524,772** | **528,332** | **523,461** | **512,133** | **495,970** | **476,298** | **454,193** |
| **NPV** | | **96,965** | | | | | | | | | | | | | | |
| **or NPV by excel** | | **284,922** | | | | | | | | | | | | | | |

## 9. References


1. *Kazatomprom*. Retrieved from 2021, https://www.kazatomprom.kz
2. *Integrated Annual Report 2019.* Retrieved from 2021, https://www.kazatomprom.kz/storage/78/kazatomprom_ar_2019_en_full_final.pdf
3. *Investing.com.* Retrieved from 2021, https://www.investing.com
4. *Integrated Annual Report 2018*. Retrieved from 2021, https://kazatomprom.kz/storage/7a/ar2018_kap_eng_site_full.pdf
5. *Интервью UxC с Председателем Правления АО «НАК «Казатомпром».* Retrieved from 2021, https://www.kazatomprom.kz/storage/5d/uxw3417_apr_27_cover_final_07_05_dmir.pdf
6. Koller T., Gödhart M. & Wessels D, *Valuation: Measuring and Managing the Value of Companies 2005*. Retrieved from 2021, http://equity-research.com/wp-content/uploads/2010/04/Wiley-Valuation-Measuring-and-Managing-the-Value-of-Companies-Fourth-Edition-University-Edition-2005.pdf
7. *World Nuclear Association. Uranium and Nuclear Power in Kazakhstan 2021.* Retrieved from 2021, https://world-nuclear.org/information-library/country-profiles/countries-g-n/kazakhstan.aspx
8. *Bloomberg. Kazatomprom Financial Statements from Bloomberg.* Retrieved from 2021, https://www.bloomberg.com