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# Major factors affecting Foreign Exchange rates

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Major factors affecting Foreign Exchange rates

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Astana, Kazakhstan – 2017

## **Abstract**

This research held for revealing changes in exchange rates as one of the usual daily event. Nowadays this changes significantly affect to the entire Kazakhstan economy. We have understood which factors are directly affecting to the exchange rate. The main goal of this research was the analysis of the current situation on the market based on the historical data basis. For achievement of our purpose, we have determined certain steps as follow: searching for specialized literature and researches with different approaches, which was used in our research; developing the data base as main part of this research based on statistical data and samples; running regression models using specific software for macroeconomic analysis; elaborating certain strategies and recommendations.

During the research we have determined certain factors such as current account balance, gross domestic product (GDP), consumer price index (CPI) which are influenced to the exchange rate immediatly. Also we have considered devaluation processes and currency interventions on the market. This research allows to examine how the whole system works and how to make forecasts for the future periods through computer modeling.

## **1. Factors affecting to the national currency tenge**

The Kazakhstan tenge (KZT) is a national currency which is traded on the Kazakhstan Stock Exchange. The first level bank - National Bank of the Republic of Kazakhstan has been issued first tenge on 15th November in 1993. From this moment tenge fell under several devaluation processes. In this reason we have tried to understand and reveal significant factors causing depreciation of the national currency.

Based on previous researches that were held in th UK, USA and EU we have highlighted factors such as current account balance, gross domestic product (GDP), consumer price index (CPI) which are influenced to the exchange rate. During the research we considered dependence between Kazakhstan tenge and American dollar.

The balance of payments is a statistical measurement that reflects transactions between residents and non-residents during a certain period. Export and import of goods and services are represented as follow of real resources and data of country's financial flows which are independent from each other. Those performances are considered in the balance of payments. While current account also considers flows between residents and non-residents and consist of goods, services, primary income and secondary income and immediately reflects the balance of investment of the Kazakhstan economy and domestic savings. In general, a current account surplus affects positively for the home currency because more capital is flowing into the currency than leaving. Therefore in different case a deficit is negative for the currency.

The monetary value of finished goods and services manufactured and produced on the territory of certain country, during the certain period of time is considered as a Gross domestic product (GDP). GDP is a widely used economic measurement and includes: public consumption, government expenditures, investments and net amount of export.

Consumer Price Index is a measurement of prices of a basket of consumer goods and services based on weighted average value by calculating price changed for items included in consumer's basket. This measurement helps us identify timelines of inflation and deflation processes.

CPI is one of the most crucial factor which plays role in form the value of tenge. Tenge is depreciated more respect to dollar due to changes in currency. On the other hand, National bank undertakes actions to target inflation through monetary policy tools. Inflation target allows to avoid fluctuations and unwanted events affecting to the exchange rate.

Overall, variables which were described above had allow to determine accurate value of national currency and reveal factors which are positively and negatively affect exchange rate in certain conditions. This model gives opportunity to analyze and make forecasts data for future periods with respect to the World macroeconomic situation and market risks. Moreover getting results from regression model sufficiently shows directions for development of different sectors of national economy. Recommendations based on the results of modeling process will be appropriate for subsequent applying on practice.

## 2. Regression analysis

Statistic data base has been prepared with four variables. This regression equation consist of different variables such as Gross domestic product (gdp) represented in percentage growth rate, Consumer Price Index (cpi) and Current account balance (balance). We have run regression analysis and derived equation as presented below:

$$\text{exchange rate} = 44,18 - 0,0043*\text{balance} + 1,66*\text{gdp} + 1,16*\text{cpi}$$

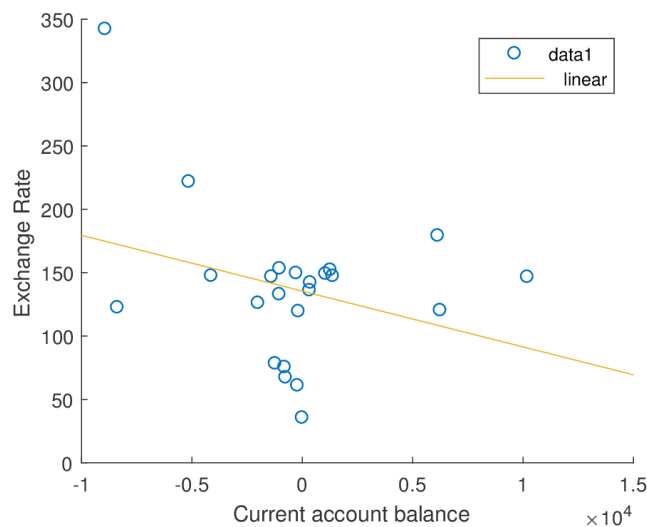
Source	SS	df	MS	Number of obs	=	23
				F(3, 19)	=	23.51
Model	64111.1208	3	21370.3736	Prob > F	=	0.0000
Residual	17269.2318	19	908.906938	R-squared	=	0.7878
				Adj R-squared	=	0.7543
Total	81380.3526	22	3699.10694	Root MSE	=	30.148

exchangerate	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
balance	-.0043913	.0015362	-2.86	0.010	-.0076066	-.0011759
gdp	1.661064	1.0668	1.56	0.136	-.5717732	3.893901
cpi	1.159758	.1616852	7.17	0.000	.8213465	1.498169
_cons	44.17569	13.17828	3.35	0.003	16.59323	71.75815

**Figure 1: Regression analysis results**

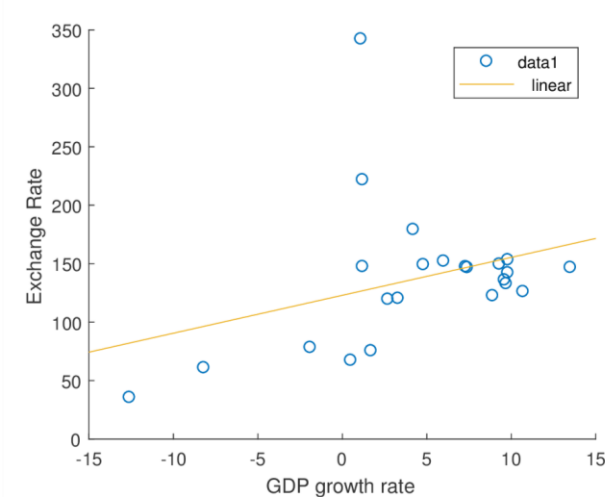
With regards to the regression results represented in the Figure 1,  $R^2 = 80\%$  which is the sufficient indicator of regression quality. On the other hand, p – coefficient appropriate for the all variables. Therefore we have explain that



**Figure 2: Current account balance vs Exchange rate**

As we can see on the graph above Current account balance during the period from 1991 to 2016 basically had little amount of surplus and deficit, but in different periods of time we had excess balance account in growth periods. However due to the crises 2008 and 2014 we had negative current accounts.

In addition, beta coefficient with Current balance variable equals -0,0043. It means that if our current balance will be increased by 1 mln USD, KZT tenge will be strengthened by 0,0043 tenge. For instance for making our currency strengthened by 43 our Current balance should be in surplus by 10 bln US dollars.

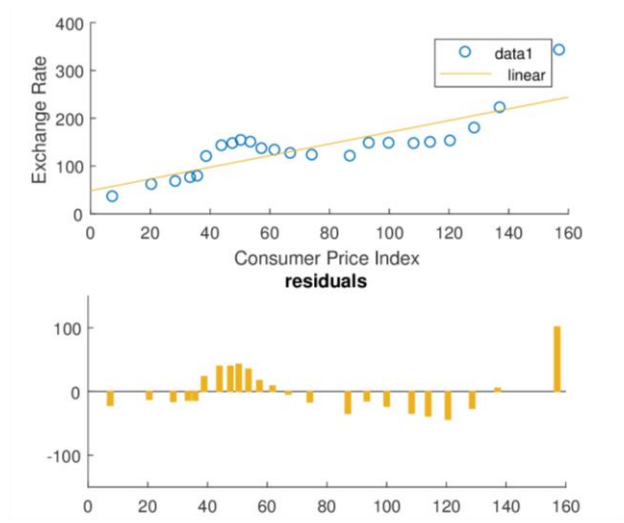


**Figure 3:** GDP growth rate vs Exchange rate

The graph above represents relation between GDP growth rate and Exchange rate during the period given. Overall growth rates are above 0% and basically plotted within interval from 5% and 10%. Negative values caused by crisis in 1991th – 1995 th. However we are able to conclude that historical data represented the economic growth oh Kazakhstan had been started from 1997. And economic growth was caused by exporting crude oil and high prices for this item.

In our regression analysis we used GDP growth rate variable. Therefore if GDP will increase by 1% then tenge will be depreciated by 1,66 KZT. Increasing in GDP affects positively for entire economy and has advantages as well as disadvantages such as depreciation of national currency and inflation growth.

The charts below (Figure 4) shows the relationship between two variables CPI and Exchange rate. Those performances illustrate positive correlation from 1991 to 2016. During the period given slight fluctuations have been observed between 50 and 60 CPI indexes. In addition we have modeled residuals that show deviation from best fitted value. Standard deviation from average value is 42.

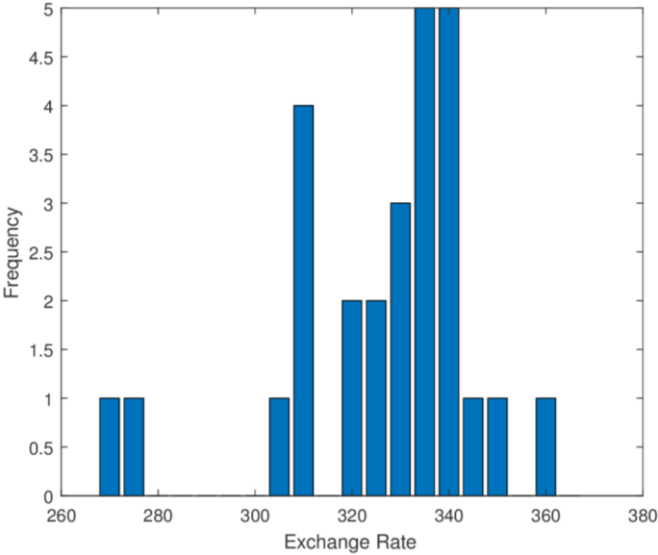


**Table 4:** Consumer Price Index vs Exchange Rate

The beta coefficient of CPI variable is equal 1,16. Each increasing in CPI by 1 unit changes Exchange rate by 1,16 tenge recognized as depreciation. On the other words, we have observed that CPI was increasing during 25 year with stable growth rate it's related to economic growth of country.

**2.1.Currency interventions**

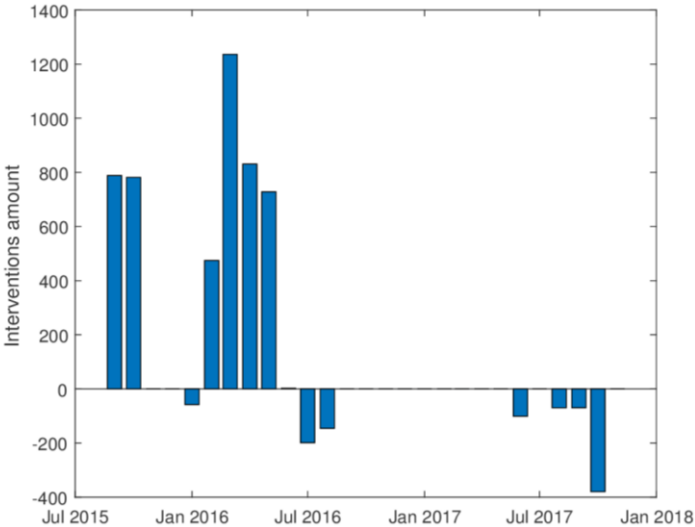
Currency interventions one of the widely used tool in the monetary policy conducting. Within the action of this policy National Bank of the Republic of Kazakhstan sells USD for national currency with intention to stabilize home currency and set equilibrium in the foreign exchange market. As we can see on the histogram below that representing distribution of USD per KZT exchange rate from September 2015 to November 2016.



**Table 5:** Histogram of Distribution of KZT

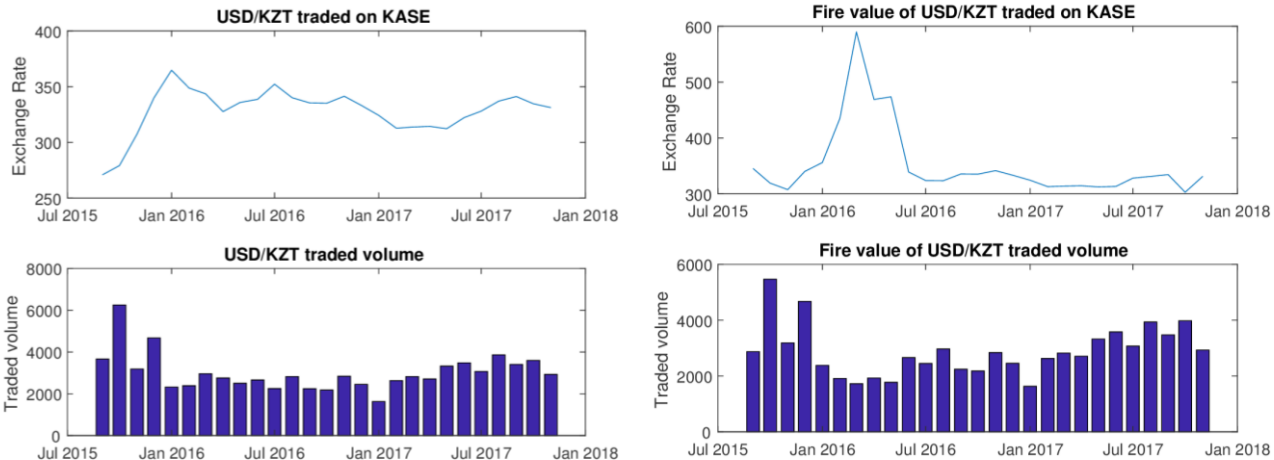
Therefore exchange rate was mostly fluctuated in the interval between 310 – 360 KZT per USD. It was event with high frequency. Due to the falling of the oil price, tenge has been devaluated in 2015 and changed from fixed rate to flexible rate based on trading and conditions of demand for money.

The **Figure 6** illustrates amount of currency interventions from September 2015 to November 2017. Total currency interventions have been estimated in amount of 3,82 bln dollars. Positive value describes net position of purchases, while negative net position of sales of foreign exchange.



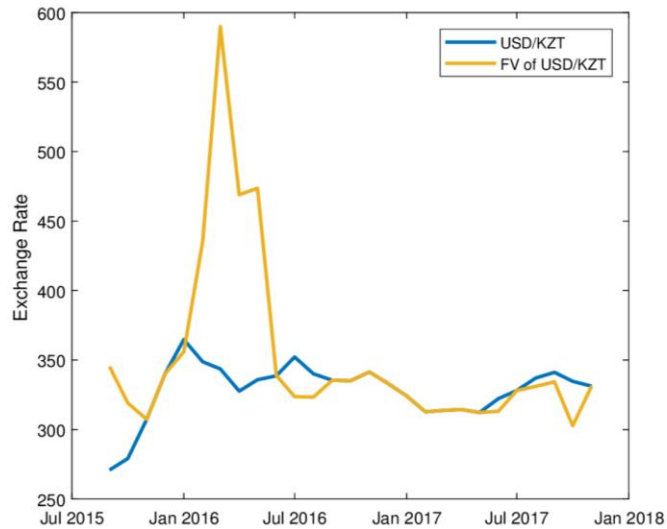
**Figure 6:** Currency interventions in (mln USD)

The graphs below show past situation in the foreign exchange market. We have compared foreign exchange rates with sterilization of currency and without interventions. Fire value of exchange rate 1USD per KZT has been picked at 590 tenge per 1 dollar. However National Bank of the Republic of Kazakhstan overcame this problem through currency interventions.



**Figure 7:** USD / KZT exchange rates and trade volumes





**Figure 8:** Exchange rates USD/KZT

The line chart above demonstrates Exchange rate with intervention and without interventions. Yellow line illustrates fire value of tenge per dollar. If we would faced with this situation it can be become threat of national security.

In conclusion, all changes in the markets and in the whole economic system is the indicators which allow to reveal the weakest sides and come up with new approaches to resolve problems. In our case we can affect through current account balance especially through positive net export which will be developed when country would have been industrialized.

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