

ASSESSMENT OF FACTORS AFFECTING INTEREST INCOME OF BANKS IN KAZAKHSTAN

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Abstract. Second-tier banks play an important role in the development of the economy of Kazakhstan. In this regard, their influence on macroeconomics is velocity. At the same time, it is possible to judge the influence of macroeconomic factors on the performance of banks. The article assesses the impact of macroeconomic factors on the interest income of second-tier banks in Kazakhstan.

Key words: banks, interest income, macroeconomic factors, regression analysis, income estimation, β - coefficient, net income

ОЦЕНКА ФАКТОРОВ, ВЛИЯЮЩИХ НА ПРОЦЕНТНЫЕ ДОХОДЫ БАНКОВ КАЗАХСТАНА

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Аннотация. Банки второго уровня играют важную роль в развитии экономики Казахстана. В связи с этим их влияние на макроэкономику велико. Вместе с тем, можно судить и о влиянии макроэкономических факторов на результаты деятельности банков. В статье проведена оценка влияния макроэкономических факторов на процентные доходы банков второго уровня Казахстана.

Ключевые слова: банки, процентные доходы, макроэкономические

факторы, регрессионный анализ, оценка доходов, β – коэффициент, чистые доходы

ҚАЗАҚСТАН БАНКТЕРІНІҢ ПАЙЫЗДЫҚ КІРІСТЕРІНЕ ӘСЕР ЕТЕТІН ФАКТОРЛАРДЫ БАҒАЛАУ

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Аңдатпа. Екінші деңгейлі банктер Қазақстан экономикасының дамуында маңызды рөл атқарады. Осыған байланысты олардың макроэкономикаға әсері *veloso* болып табылады. Сонымен бірге, банктердің қызметіне макроэкономикалық факторлардың әсерін бағалауға болады. Мақалада Қазақстандағы екінші деңгейлі банктердің пайыздық кірісіне макроэкономикалық факторлардың әсері бағаланады.

Түйін сөздер: *банктер, пайыздық кірістер, макроэкономикалық факторлар, регрессиялық талдау, кірісті бағалау, β – коэффициент, таза кіріс*

Introduction

Second-tier banks represent the most significant part of the financial sector of any country. In particular, at the beginning of 2022, the banking sector of the Republic of Kazakhstan showed a large margin of safety. Thus, the capitalization of the banking sector amounted to 23.4%, which indicates the presence of a significant capital buffer in relation to the current level of risks and allows absorbing possible risks in the future. The share of highly liquid assets amounted to 31.1% in relation to the assets of the banking sector. Similarly, at the beginning of 2022, banks showed an increase in operating efficiency: the net profit of banks increased by 78% and amounted to T1.3 KZT [1].

Due to the high volatility of the financial market, the incomes of second-tier banks are subject to changes disproportionately relative to external factors, due to which there is an ambiguous reaction between variables. The complexity of establishing a linear relationship is explained by the anarchic distribution of the sample, which creates a problem in studying the impact of factors on bank remuneration income.

The question of the dependence of bank income on macroeconomic factors was considered by various authors. Thus, Deitch and Lozano-Vivas were among the first to study the impact of macroeconomics on the performance of European banks [2], in which compared the performance of French and Spanish banks, taking

into account macroeconomic variables. M.Mamonov and A.Vernikov considered inflation, the exchange rate, GDP per capita, demand density and the level of financial intermediation as macroeconomic indicators, most of which turned out to be significant and had a positive effect on the efficiency of banks [3].

In the work of V.Yu. Belousova and I.O. Kozyr analyzed the impact of macroeconomic factors on the profitability of Russian banks, based on the analysis of profitability indicators and an assessment of the structure of banks' expenses, as well as the inclusion of a pairwise product of population density with a cyclic indicator [4].

Mustafa K. Mujeri and Sayera Younus analyzed 48 banks and assessed the impact of both macro and internal factors on their results. The analysis showed that inflation, the reserve rate, the share of the deposit market, taxes have the strongest impact on the interest income of banks [5]. Research by Endri E. and etc. was aimed at assessing the impact of banking factors and macroeconomic indicators on the net interest margin of commercial banks in Indonesia. The results prove that NPL, Loan to Deposit Ratio (LDR), Return on Assets (ROA), Interest Rate (SBI) and Exchange Rate variables affect NIM [6].

P. Alessandrini and B. Nelson found a strong influence of market rates, the yield curve on the net interest margin and profitability in the UK [7]. According to this, Cruz-García et al. showed that lower interest rates and flattening of the yield curve have a negative and non-linear impact on the net interest margin of banks [8]. This result is likely due to the loosening of the tight policy on deposit rates, which explains why policy rate cuts have a more negative impact on interest margins when deposit rates are closer to zero.

Allen N. Berger and others noted that real GDP growth has a negative impact on the net interest margin of banks as the creditworthiness of borrowers and equity decline during recessions and higher lending rates [9].

Despite a significant amount of research on the impact of macroeconomics on the performance of banks in the world literature, a similar kind of work on Kazakhstani banks is not observed. At the same time, the issues of the impact of macro factors on the interest income of banks in Kazakhstan were practically not considered.

Aim

The aim of the study is to study the influence of various factors on the profitability of operations related to the receipt of remuneration by banks. Thus, the authors aim to assess the sensitivity of the income of active operations of banks to the impact of external macroeconomic factors.

Materials and methods

Identification of the influence of exogenous factors will be carried out through a correlation analysis. The dependent variable will be the interest income of second-tier banks, while the independent variables will be represented by macroeconomic factors that presumably affect the amount of bank interest income. Analysis of

changes in interest income depending on changes in exogenous factors will be carried out through the use of a multiple regression model. Based on the study, the dynamics of changes in income from the remuneration of second-tier banks of the Republic of Kazakhstan will be identified, a pair of highly correlated indicators will be presented, and the results of a regression analysis will be displayed.

For the regression analysis, quarterly data for the last 5 years from 2017 to 2021 were taken. Data on exchange rates are taken from the official website of the National Bank of the Republic of Kazakhstan, other indicators are from the Bureau of Statistics of the Republic of Kazakhstan.

Results and discussion

An analysis of the overall structure and dynamics of interest income showed that the changes taking place in the economic market of Kazakhstan lead to significant changes in the banking sector. The establishment of certain standards by the financial regulator, including the base interest rate and reserve requirements, is one of the main factors for amending the internal standards of second-tier banks. Thus, it is advisable to consider the influence of the main macroeconomic factors, which to a greater extent demonstrate the development of the state economy as a whole.

As a rule, certain calculations make it possible to determine the relationship between indicators in order to make forecasts, conduct a more sensitive factor analysis and apply other methods. The peculiarity of the financial sector is, in our opinion, that in some cases it becomes very difficult to identify a linear relationship between certain indicators. In this regard, the polynomial regression model was taken as a basis, which is a method for identifying a non-linear relationship between two or more factors and is used to build models of complex dependencies. The main macroeconomic factors were considered, including the unemployment rate in the country and the average income level of the population. We assume that these factors may have an impact on the level of interest income of banks, since it is the availability of a job and the amount of wages that determine the overall solvency of an individual. We also analyzed such factors as the USD/KZT and RUB/KZT currency pairs, the price of Brent oil, which reflect the dynamics of the national currency, thereby leading to a decrease in income or expenses on interest charged in foreign currency. Thus, 9 macroeconomic factors were analyzed and their impact on the level of income from the remuneration of STBs of the Republic of Kazakhstan (Table 1).

Table 1 - Results of the regression analysis of the impact of macroeconomic factors on net income from remuneration of STBs in Kazakhstan

Indicators	Corr	R ²	β – coeff	α	F-criteria
USD/KZT	0,91	0,84	0,94	4,54	25,37
RUB/KZT	0,68	0,46	0,66	9,21	4,28
Size of GDP	0,47	0,22	-0,56	10,82	1,38
inflation index	0,40	0,16	-0,41	10,51	0,96

Base % rate	0,84	0,70	0,86	5,78	11,68
Incomes of the population (average)	0,94	0,88	0,94	4,82	37,91
Oil Brent, USD barrel	0,62	0,36	-0,63	10,91	2,81
Number of unemployed	0,31	0,10	-0,41	10,97	0,53
Consumer prices	0,11	0,01	-0,11	12,69	0,06
Note: compiled by the authors based on the data [10]					

Among the main indicators of the adequacy of the obtained model were taken the correlation coefficient, the coefficient of determination, β - coefficient, approximation error and Fisher's criterion. All these indicators reflect the significance of the results obtained and the feasibility of using the resulting polynomial regression model. The first, third and fourth indicators demonstrate the correctness of the selected factors and their connection with the effective factor. The second and fifth indicators determine the significance of the exact fitted model. Together, the values of all indicators of the polynomial regression determine the effectiveness of the analysis of the influence of factors on the interest income of banks.

The calculations showed that a significant positive impact on the interest income of second-tier banks of the Republic of Kazakhstan is exerted by such external factors as the income of the population of the country (0.94), the exchange rate of foreign currency against the national USD/KZT (0.91) and the base interest rate of the National Bank of the Republic of Kazakhstan (0.84). The listed external factors have a direct positive impact on interest income due to an increase in the general interest rate on loans and the amount of interest charged on loans in foreign currency, as well as an increase in the solvency of the population and a decrease in overdue debts.

The coefficient of determination (R^2) made it possible to determine the significance of the polynomial regression equation, as well as the quality of the fitted models. The value of this coefficient for the USD/KZT currency pair, the average income of the population and the base % rate was 0.84, 0.88 and 0.70, respectively, which demonstrated a fairly high accuracy of the selection of models.

The strength of the relationship between dependent and independent factors is measured by the value of β - coefficient. For such external factors as household income, the USD/KZT currency pair and the base interest rate, the value of this coefficient was 0.94, 0.94 and 0.86, respectively. This clearly showed the presence of a strong connection between these indicators and income from remuneration of STBs of the Republic of Kazakhstan.

The approximation error allows you to determine the deviation of the calculated indicators from the actual ones. For the analyzed highly correlated factors, the error value in all cases was less than 7%, which demonstrated the feasibility of using these regression equations for further analysis and forecasting.

The significance of the polynomial regression model is determined by the value of the F-test. The Fisher criterion for the USD/KZT currency pair and the average income of the population was 25.37 and 37.91, and for the base interest rate it is

11.68, which indicates a fairly high reliability of the model obtained.

A moderate positive relationship can be seen between interest income and the RUB/KZT currency pair (0.68) and the Brent oil price (0.62).

The value of the coefficient of determination for such external factors as RUB/KZT and the price of Brent oil was 0.46 and 0.36, respectively. These values demonstrate the low quality of the fitted non-linear regression equation.

The presence of a moderately strong positive relationship between RUB/KZT and interest income of banks is explained by the value of β - coefficient equal to 0.62. However, a moderate negative relationship can be traced between the price of Brent oil and the resulting factor and is equal to -0.63. That is, an average increase in the price of oil leads to a decrease in remuneration income by 63%.

The approximation error for moderately correlated factors demonstrates the inexpediency of using the obtained regression equations, since the deviation of the calculated values from the actual ones was 9.21 for the RUB/KZT currency pair indicator and 10.91% for the Brent oil price indicator. The maximum allowable value of this indicator is 7%.

The values of the F-criterion for both moderately correlated external factors are quite low, which indicates the unreliability of the fitted polynomial regression equations. This also demonstrates the low significance of the coefficients of determination of these factors and the impossibility of using the resulting equations for further analysis.

A low correlation of interest income can be traced with the rest of the studied factors. Also, there are rather low values of the adequacy indicators of the model and the selected factors, which indicates the inappropriateness of using these factors to construct a polynomial regression equation.

Conclusion

The conducted non-linear regression analysis showed a low dependence of interest income of banks on most macroeconomic factors. As it was assumed earlier, a fairly close relationship was found among such factors as exchange rates, the price of Brent oil, the base interest rate and household income, the change in which had a direct impact on the change in the amount of bank income from remuneration. Exchange rates and the price of Brent oil demonstrated the stability of the national currency and contributed to a change in the structure of interest income, as well as influenced the choice of a strategy for active operations by banks. The average income of the population of the country influenced the level of repayment of bank loans and the setting of limits by banks on lending. Having a strong relationship with the dependent variable, these factors can be used to further study the dependence and build a trend.

Based on the results obtained, it is worth noting that the income of banks is directly dependent on some macroeconomic factors that are somehow amenable to regulation through the country's largest economic system. In the market, there is competition between banks for a client, the effectiveness of which is assessed

by the quality and quantity of services provided. The assessment of the impact of external factors on interest income clearly demonstrated the priority areas for the development of the banking sector, including helping to see a change in the strategy for active operations and the transition from traditional banking instruments to more modern ones. The increase in the share of operations with securities indicates the active activity of banks on the stock exchange and the investment of funds, through which the retail business is supported.

The high impact of household wages on remuneration income allows banks to consider the possibility of increasing the share of lending to small and medium-sized businesses. The issuance of loans for commercial purposes will increase the level of employment and solvency of the population and develop the economic situation of the country, due to which there will also be an overall increase in GDP. Increasing overall competitiveness, banks should be interested in creating more comfortable conditions for doing business, developing infrastructure capabilities, introducing information products and intelligent digital platforms.

The change in the amount of interest income of banks is also influenced by the exchange rate of the national currency. The identified relationship allows banks to consider the possibility of introducing currency swap operations to extract interest income. These operations imply the completion of conversion transactions between two banks at the agreed rates. Income is formed by acquiring currency at one rate and selling it in the future period at a higher rate. The mechanism of the transaction is based on the transfer of ownership of foreign currency, which contributes to the effective reduction of credit risk and the risk of default in comparison with other transactions (secured loans, deposits). In this case, banks receive foreign currency, while the national currency becomes the collateral for the transaction. Due to the exchange rate difference, banks are able to maximize profits and provide foreign exchange liquidity.

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