DOES FOREIGN OWNERSHIP IMPROVE THE CREDIT RISK MANAGEMENT?

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Abstract. *This paper examines the main determinants of non-performing loans (NPL) in commercial banks of Uzbekistan using dynamic panel approach. The research includes the quarterly banking data for the period 2020 – 2023 and investigates whether foreign ownership improves the credit risk management while controlling for other bank-specific and macroeconomic factors. According to the findings, there is a negative association between being foreign-owned and NPL. The econometric results indicate that on average NPL rate is 0.12% lower in foreign banks compared to local ones, while holding other variables constant. These findings suggest implementing the best practices of foreign-owned banks in the field of credit risk management to the local commercial banks.*

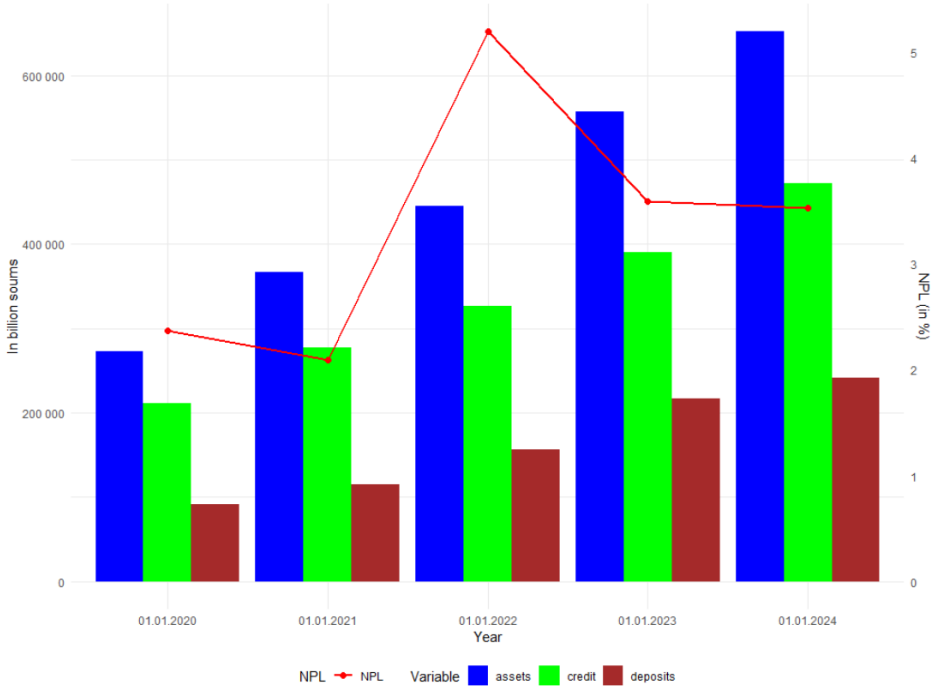
Keywords: *credit risk, non-performing loans, loan delinquency, Uzbekistan*

Introduction

Banking system of a country is one of the integral parts of the economic development. It serves as a backbone in facilitating the flow of capital and money between various stakeholders of the economy. By providing financial resources in the form of loans and credits the commercial banks expose themselves to the risk of default by the borrowers. If the banks do not take a comprehensive and prudent approach in mitigating these risks, then the consequences of not repaying the loans might have detrimental effect to the financial health of the banking system. Therefore, the banks need to take very careful approach in extending loan activities. Consequently, commercial banks take bold steps in credit risk management which is largely directed at reducing the likelihood that borrowers will default on loan repayments, especially to the extent of creating nonperforming loans (NPL). NPL is a loan that is on the brink of default due to the fact that the borrower has not made the scheduled payments for a specified period. According to banks for international settlements, a default or non-performing loan is deemed to have happened for a specific borrower if any bank credit to any financial institution is past due for more than 90 days.

During the last 5 years, a significant growth in total outstanding credit has been observed in the banking system of Uzbekistan. As of January 1st, 2020, total credit portfolio of commercial banks amounted to 212 trillion soums which comprised of approximately 78% of their total assets. As of January 1st, 2024, total credit was grown 2.4 times and amounted to 471 trillion soums (72% of total assets). Even though the rate of growth has slowed down slightly compared to asset growth, the gap between total credit and total deposits has been widening (see Picture 1). This trend is worrisome because the loan-to-deposit ratio (LDR), which is derived by dividing total loans to total deposits, is a key indicator of a bank's liquidity and lending capacity. It measures the proportion of loans funded by deposits, and is an important factor in determining a bank's ability to meet its obligations and manage risk. If the ratio is too high, it means that the bank may not have enough liquidity to cover any unforeseen fund requirements and it suggests that a bank is

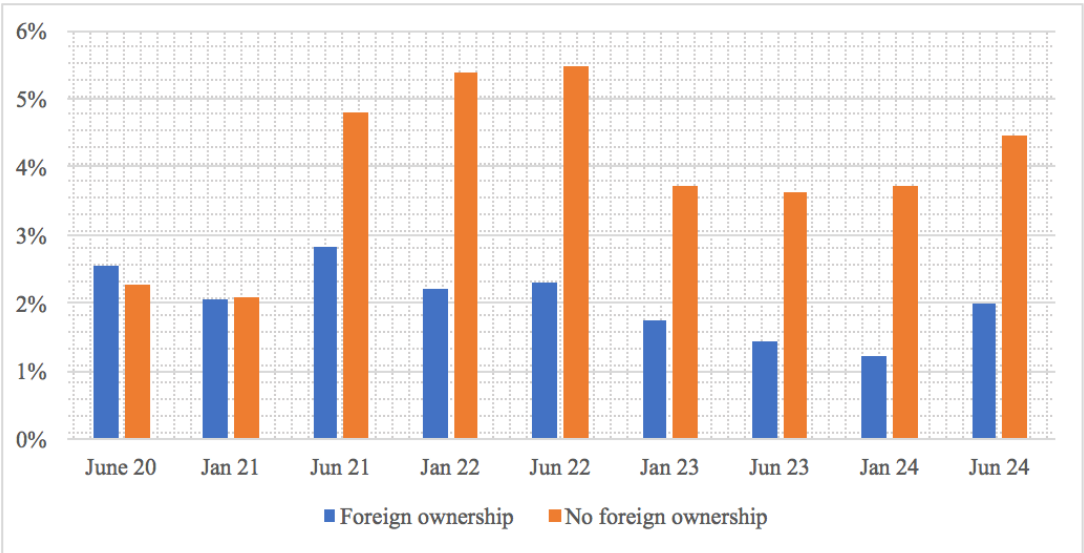
over-leveraging its deposits, which can increase the risk of default, especially during economic downturns. On the other hand, if the ratio is too low, the bank may not be earning as much as it could be. It might indicate inefficient use of deposits. But in all cases, it is safe to have this ratio under 1.



Picture 1. Comparative financial indicators of commercial banks in Uzbekistan.

The relationship between LDR and NPL has been the subject of much debate in the literature, with some studies finding a positive relationship and others finding a negative relationship. For example, a study by Demirgüç-Kunt and Huizinga (1999) found that higher LDRs were associated with higher levels of NPL in a sample of 80 countries. On the other hand, Berger and DeYoung (1997) found that higher LDRs were associated with lower levels of NPL in a sample of US banks.

Another factor which might plays important role in explaining the growth of non-performing loans is the ownership type of the commercial banks. Several authors have reported



Picture 2. Comparison of NPL ratios for foreign-owned and non-foreign-owned banks in Uzbekistan.

negative association between NPL rate and having foreign ownership of the bank. The Picture 2 illustrates the comparison of NPL ratios of commercial banks with foreign ownership to banks with no foreign ownership. According to the clustered bar graph, NPL ratios have been approximately the same until January 2021 (around 2% for both types of banks).

However, this ratio has increased dramatically for banks with no foreign ownership, while the rate has been steady for foreign-owned banks. This can be explained by the following factors:

- *Enhanced risk management.* Foreign ownership can bring in international expertise and best practices in risk management, leading to improved loan underwriting standards and risk assessment processes. International banks have already gained experience in adopting best credit risk management practices and they are more cautious in lending and better equipped in identifying potential non-payment risks. They often operate under stricter governance and transparency standards imposed by their home country regulators.
- *Access to capital and liquidity.* Commercial banks with foreign ownership have broader access to capital and liquidity from overseas markets. This additional funding can strengthen the bank's balance sheet and provide a cushion to absorb potential loan losses, thus reducing the NPL ratio.

Data and Methodology

This study examines the main factors affecting the non-performing loans of commercial banks, both bank-specific factors, such as leverage, size, loan-to-deposit ratio, ownership type, as well as macroeconomic factors, such as annual GDP growth rate and exchange rate. Using panel data of 35 commercial banks of Uzbekistan on quarterly basis over the period 2019-2023, I estimate the impact of aforementioned variables on NPL.

The formula to calculate NPL can be expressed as follows:

$$NPL = \frac{Total\ non-performing\ loans}{Total\ loans} * 100\% \qquad (1)$$

NPL is taken as a dependent variable in this research and the list of independent variables along with their description is provided in Table 1.

Table 1. The description of variables being used for the analysis.

Variable	Description	Expected Sign
Dependent variable		
Non-performing loans (NPL)	Troubled loans/Total loans	
Independent variables		
Bank-specific		
Loan-deposit ratio (LDR)	Total loans/ Total deposits	Negative/Positive
Size	Natural logarithm of total assets	Negative/Positive
Leverage	Total liabilities/Total assets	Negative/Positive
State-ownership	= 1 if state ownership, 0 otherwise	Positive
Foreign-ownership	= 1 if foreign ownership, 0 otherwise	Negative

Macroeconomic		
Exchange rate	Change in UZS/USD exchange rate, %	Negative
GDP growth rate	Annual GDP growth rate, %	Negative

By consolidating the quarterly data of bank-specific factors, exchange rate and annual GDP growth rates of Uzbekistan, the following descriptive statistics (see Table 2) were obtained for dependent and independent variables. This research covered the period from January 2020 to December 2023 because the Central Bank of Uzbekistan (CBU) has started releasing NPL data since 2020. According to the given summary statistics, NPL ratio has ranged from 0% to a maximum of 96% with a weighted average of 7%. The highest NPL ratios correspond to High-Tech, Turkiston and Uzagroexport banks. Since October 2022, High-Tech and Turkiston banks have ceased their operations. According to the same statistics, approximately 36% of commercial banks are state-owned and about 26% of them are operating with foreign ownership.

This research paper covers the quarterly data of all commercial banks for the period from January 2020 to December 2023. All bank-specific data and historical exchange rates were obtained from the official website of the Central Bank of Uzbekistan (https://cbu.uz/oz/statistics/bankstats) and GDP growth data were obtained from the World Bank data (https://data.worldbank.org/country/UZ). These data were validated using other third party sources such as World Bank, IMF, Moody's BankFocus, etc.

Considering a dynamic panel data analysis in this study helps us to examine the relationship between variables over time while taking into account individual-specific effects and potential endogeneity issues. It also allows for the inclusion of multiple time periods and considers the dynamic nature of the data, capturing both the cross-sectional and time-series dimensions. This technique became more prominent with the introduction of the Generalized Method of Moments (GMM) estimators by Arellano and Bond in 1991. They introduced a GMM estimator for dynamic panel data models, addressing issues like autocorrelation, heteroskedasticity, and the presence of lagged dependent variables. Later, Blundell and Bond (1998) proposed a system GMM estimator,

Table 2. Descriptive statistics of variables used in the model. Source: Author's calculations.

Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*	*Source*
NPL	493	0.07	0.15	0.00	0.96	Central Bank of Uzbekistan
LDR	493	2.06	2.83	0.00	33.49	Central Bank of Uzbekistan
Size	493	8.41	1.84	3.36	11.76	Central Bank of Uzbekistan
Leverage	493	0.74	0.23	0.00	1.00	Central Bank of Uzbekistan
State_ownership	493	0.36	0.48	0.00	1.00	Central Bank of Uzbekistan
Foreign_ownership	493	0.26	0.44	0.00	1.00	Central Bank of Uzbekistan
Exchange rate	493	0.02	0.02	-0.02	0.06	Central Bank of Uzbekistan
GDP growth	493	0.05	0.02	0.02	0.07	World Bank

which combines equations in levels and first differences to improve efficiency, especially in cases with persistent data.

The specified regression model used in the study is as follows:

$$NPL_{i,t} = \beta_0 NPL_{i,t-1} + \beta'_i X_{i,t} + \varepsilon_{i,t} \quad (2)$$

with $\varepsilon_{i,t} = \eta_i + \nu_{i,t}$

here the subscript i denotes the cross-sectional (banks) and t denotes time dimension of the panel sample. $NPL_{i,t}$ is non-performing loan ratio, $NPL_{i,t-1}$ is its lagged value, β'_i is a 1xk vector of parameters, $X_{i,t}$ is a vector of independent variables including their lagged values and $\varepsilon_{i,t}$ is the error term. $\varepsilon_{i,t}$ has two orthogonal components: η_i are the unobserved individual effects and $\nu_{i,t}$ are the observed specific errors.

I included the first order difference as proposed by Arellano and Bond (1991) to avoid the correlation between unobserved individual effects (ηi) and lagged variable (NPLt-1). Therefore, difference GMM estimations took the following equation:

$$\Delta NPLit = \beta 0 \Delta NPLit\text{-}1 + \beta' \Delta Xi,t + \Delta \varepsilon it, \quad (3)$$

where Δ is the first difference operator.

The estimation results are given on the first column of Table 3. The second column of the dataset was provided for system GMM estimations as proposed by Blundell and Bond (1998). Both models are used to address the issue of endogeneity in dynamic panel models. They are particularly useful when dealing with panel data that has a large number of cross-sectional units (e.g., banks) and relatively few time periods.

Results and Discussion

According to the STATA results in Table 3, the regression coefficient and standard errors are very similar in both models. The coefficients are approximately 0.7194 and 0.7473 for difference GMM and system GMM, respectively. While the standard errors are 0.0318 and 0.0299 in the same respect. The positive and significant coefficients in both models indicate that past values of NPL significantly influence current values of NPL. Specifically, a 1% increase in the previous period's NPL is associated with a 0.7194% (Difference GMM) and 0.7473% (System GMM) increase in the current period's NPL.

Table 3. Estimation results using difference and system GMM. Source: Author's calculations.

	Difference GMM		System GMM	
Variable	Coefficient	Std. Error	Coefficient	Std. Error
$NPL_{(i-1)}$	0.7194***	0.0318	0.7473***	0.0299
LDR	0.0017	0.0022	0.0003	0.0019
Size	-0.0027	0.0129	-0.0146	0.0117
Leverage	0.0429	0.0577	0.0664	0.0531
Exchange	0.1921	0.1451	0.0969	0.1398
GDP	0.9079***	0.1739	0.9225***	0.1695
ROE	0.0015	0.0017	0.0021	0.0018
State-own	-	-	0.0648	0.0704
Foreign-own	-	-	-0.1222***	0.0391
Constant	-0.0533	0.101	0.0343	0.0594
Obs	421		454	
Wald Chi Square	787.67***		1145.56***	

*, **, *** indicate significance at 10%, 5% and 1%, respectively.

GDP growth rate is also found to be statistically significant in both models. Difference GMM produced a coefficient of 0.9079, while system GMM has a coefficient of 0.9225. The positive and significant coefficients indicate that higher GDP growth is associated with higher NPL. A 1% increase in GDP growth is associated with approximately a 0.908% (Difference GMM) and 0.923% (System GMM) increase in NPL. This is counterintuitive result and in contradiction to the previous findings for other countries and periods. Chaibi and Ftiti (2015) have found negative relationship for commercial banks in Germany and France, Louzis et. al (2012) found similar relationship for Greek banks. However, Radivojević et al (2019) have also found positive relationship between GDP growth and NPL rate for emerging economies in Latin America. The positive association between GDP growth and NPL ratio could suggest that economic growth may lead to more aggressive lending and risk-taking by banks, potentially increasing NPL. Similar theory was reported in Beck et al (2015) who studied the NPL ratios across 75 countries for over 10 years. According to their results, NPL rate was negatively correlated with real GDP growth, but positively correlated with the lagged version of GDP growth. They explain this finding with a theory that bank asset quality deteriorates with a lag in response to positive growth due to loose credit standards applied during the boom period.

According to the results in Table 3, the dummy variable for foreign ownership produced a coefficient of -0.1222 with a standard error of 0.0391. This negative and statistically significant (at 1%) coefficient indicates that foreign-owned banks tend to have lower NPL compared to commercial banks with no foreign ownership. Being a foreign-owned bank is associated with a 0.1222% decrease, on average, in NPL rate, while holding other variables constant. Several authors have reported similar negative association between these two factors and this can be understood through several key factors that highlight the strengths of foreign-owned banks in credit risk management. This relationship is often observed in empirical research and can be attributed to various aspects of bank management, regulatory environment, and operational strategy. First of all, foreign-owned banks typically bring with them superior risk management frameworks and technological resources. The foreign-owned banks often have more advanced and sophisticated risk assessment tools developed in their home countries, where banking regulations might be stricter. They also implement cutting-edge technologies for monitoring and managing loan performance. Many studies indicate that these institutions capitalize on their international expertise to implement effective risk management practices in host countries, which helps to reduce the likelihood of loan defaults and NPL (De Haas & Van Lelyveld, 2006; Cull & Peria, 2013). Second, foreign-owned banks benefit from diversified loan portfolios, which spread risk across different sectors and regions. This diversification reduces the impact of sector-specific economic downturns on the overall quality of the loan portfolio. Consequently, a diversified portfolio is less likely to experience high NPL ratios compared to a more concentrated portfolio (Mian, 2006). In contrast, historically, local commercial banks in Uzbekistan were established to serve a certain industry such as foreign trade, agriculture, mortgage loans, microcredits etc. This policy forced these banks to concentrate their loans into specific industry and left them exposed to higher credit risk. Even though this policy has been abandoned, the local banks still suffer from narrow concentration of their loan portfolio. Third, foreign banks usually adhere to stringent credit assessment and underwriting standards. These banks are generally more cautious in their lending practices, ensuring that loans are granted to borrowers with lower risk profiles. This approach minimizes the probability of loans becoming non-performing. Research suggests that foreign banks' rigorous

credit assessments contribute significantly to lower NPL ratios (Claessens & Horen, 2014). Finally, foreign banks often bring international management expertise and stronger corporate governance structures. These elements enhance the overall efficiency and effectiveness of the bank's operations, leading to better credit risk management and lower incidences of NPLs. High standards of corporate governance ensure that decisions are made with a long-term perspective, avoiding risky lending practices that could lead to an increase in NPLs (Micco, Panizza, & Yañez, 2007).

Other variables were not statistically significant at 10% when the dynamic econometric model was applied.

Conclusion

The research results of this dissertation allow us to provide the following conclusions:

The positive growing trend of the share of non-performing loans in the credit portfolio at lending institutions of Uzbekistan is of a concern to the financial professionals and policymakers. In order to mitigate this risk, they have to take proactive measures. One of the important aspects in tackling this issue is the implementation of a robust credit risk management system that ensures the stability and health of the lending sector.

The developed economies have been widely adopting the Basel standards. These standards provide a wide range of frameworks to mitigate the risk. Integrating them into our credit risk management practices would enhance the resilience and credibility of our financial system. Some of the BASEL regulatory frameworks that are relevant in credit risk management are risk-based capital requirements, calculation of risk-weighted assets (RWA) and set standards for financial ratios. By adopting BASEL standards, our financial institutions can improve in managing credit risk, transform into more transparent organizations, and ensure a more stable and secure banking environment. This adoption will not only strengthen our domestic financial system but also foster greater confidence among international investors and stakeholders.

The growing gap between total loans and total deposits in our financial system is increasingly concerning. In comparison, Western banks typically maintain an average loan-to-deposit ratio of around 70-80%, which is considered a healthy balance. When this ratio rises excessively, it can signal that banks are overextending themselves by lending more than they can sustain through their deposits. This can lead to liquidity issues, increased funding costs, and ultimately, a higher risk of default. For commercial banks, maintaining a balanced loan-to-deposit ratio is crucial for ensuring financial stability, managing liquidity effectively, and safeguarding their overall financial performance. There are several policies which can help to reduce this gap in our banking sector. To increase the supply of deposits from the population the following strategies can be implemented:

- *Building customer trust.* According to the Global Findex survey conducted by World Bank in 2021, approximately 9% of the adults with no banking account do not trust the banking system. It is very important that the banking customers trust in the financial system of our country. To build and maintain this customer trust, the financial institutions must provide reliable and high-quality services to the population through transparent and excellent cybersecurity measures.
- *Attractive interest rates and personalized banking solutions.* Offering competitive interest rates on savings accounts and time deposits can attract more customers to deposit their money in the bank. Different terms can be offered to accommodate the savers based on their

financial needs. In addition, offering personalized banking solutions and advisory services can cater to the specific needs of customers, making them more likely to choose the bank for their deposits.

- *Innovative products.* Developing innovative savings products tailored to different customer segments, such as youth savings accounts, retirement savings plans, and high-yield savings options, can attract diverse groups of depositors. According to the financial inclusion survey. Approximately, 2% of the respondents in the Global Findex survey of 2021 have stated that they do not have a financial account because of religious reasons. Offering products based on Islamic financing can attract new customer base.
- *Financial literacy programs.* Educating the public about the importance of formal savings and financial planning through workshops, seminars, and online resources can encourage more people to deposit their money in banks. According to the same Global Findex survey data, less than 3% of the respondents have saved in a formal financial institution, but approximately 15% have saved using informal savings clubs. These numbers indicate that there is much work to do explaining the importance of saving in legally established institutions and not falling into scammers traps with hard-earned wealth.

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