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Factors Influencing Liquidity Creation among Commercial Banks in Uzbekistan: An Empirical Study

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Abstract

The banking industry regulators have imposed on commercial banks to maintain a certain level of liquidity to ensure that they can meet their obligations to the depositors and third parties. This study examines the factors influencing liquidity creation among commercial banks in Uzbekistan. Specifically, this study examines three internal factors namely, risk assets, deposits, and inter-bank loans on the creation of liquidity in commercial banks of Uzbekistan. This study uses content analysis on financial reports of 33 commercial banks in Uzbekistan over 21 years. This study shows all the factors chosen in this study significantly influence liquidity creation among the commercial banks in Uzbekistan. While deposits and inter-bank loans significantly and positively influence liquidity creation, this study shows that risk assets significantly and negatively influence liquidity creation. Further analysis shows that these three factors contribute to a 92.4% variance in liquidity creation among commercial banks in Uzbekistan. The findings of this study provide valuable insights to the stakeholders in the banking industry on the factors influencing liquidity creation in banks. In addition, this study adds to the existing literature by providing insight into the internal factors' role in influencing liquidity creation in the context of an emerging economy.

Keywords: High-Risk Assets, Deposits, Issued Securities, Inter-Bank Loan, Liquidity Creation, Commercial Banks

JEL Classification Code: G20, G21, G29

1. Introduction

Uzbekistan is a country that is well known for its rich resources of minerals such as natural gas, oil, and coal, and agriculture such as cattle raising and cultivation of cotton. Uzbekistan is also the main producer of machinery and heavy equipment in Central Asia (Primbetov, 1996). This has thus made Uzbekistan the leading export consisting largely of raw materials such as natural oil, gas, and cotton among others. The country also exports machines, cement, and textiles to countries such as Switzerland, China, Turkey, and Kazakhstan. Since its independence from Russia, Uzbekistan has transitioned from a planned economy to a market economy. However, economic modernization proceeded slowly until 2016, when it started structural reformation regarding how it managed its macroeconomic policy and provision of public services (Izvorski et al., 2021). Since 2007, Uzbekistan has made continuous market reform efforts. With its Growth Domestic Product (GDP) projected to expand by 5.3% in 2022, it is believed that Uzbekistan will be one of the fastest growing of the Europe and Central Asia region's 23 countries, along with Armenia, Croatia, Georgia, and Montenegro. Over the past 5 years, Uzbekistan has eased foreign exchange and trade restrictions, liberalized prices, and improved the business environment (Bjerde, 2022).

As a result of Uzbekistan's ongoing transition to a market economy, the country's banking industry plays an important role in the economy (Berger & Seunov, 2016; Ilmiani & Meliza, 2022). Uzbekistan's banking industry consists of 33 commercial banks. The majority of the

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commercial banks are state-owned commercial banks, responsible for 86% of the total credit extended to the economy by the time 2021 came to a close. In the past, the state-owned commercial banks were responsible for funds transfer from the government to priority industries and state-owned enterprises at interest rates that were lower than those offered by the market. Despite the significant part that commercial bank play in Uzbekistan's economy, the country's banking industry is currently facing many difficult challenges, many of which are interconnected (World Bank, 2022).

Studies have shown that commercial banks in countries with economies in transition (such as Uzbekistan), as well as in conditions where elements of centrally planned economies are present in the economy, the commercial banks do not pay serious attention to the deployment of financial resources based on their capabilities. As a result, other problems arise along with the violation of the liquidity of commercial banks when this situation occurs. In particular, the development and deepening of finance to meet the demand for financial resources for economic development and improve the efficiency of resource allocation in financial markets, shadow banking, and institutions have begun to emerge (Widarjono et al., 2020). This is being done to both meet the demand for financial resources and improve the efficiency of resource allocation (Qiu, 2020).

Traditionally, the commercial banks' main activity is to borrow and lend money (Do Rosario & Yuji, 2022), and they focus on profit orientation (Qayyum & Noreen, 2019). However, their activities have now extended to various banking activities such as lending and supporting population and enterprises, stimulating funds accumulation in the national economy, encouraging intermediation in payments, transfers, and financial transactions, and efficient allocation of investment resources (Dang et al., 2021, Rakhmonovich, 2021). All these activities reflect liquidity creation. The liquidity creation of a bank depends on both internal and external factors (Rakhmonovich, 2021). However, there is a limited number of studies that have examined such factors which, motivates this study to examine the factors that can influence the liquidity creation of commercial banks, with a specific focus on internal factors. The findings of this study can contribute to further insights into the role of internal factors in influencing liquidity creation. The next section, Section 2 presents the literature review. This is followed by Section 3 which explains the research design and Section 4 which presents the results and discussion. The final section, Section 5 concludes this study.

2. Literature Review and Hypotheses

According to Yeager and Seitz (1989), liquidity is defined as the ability of a financial organization to meet all of its financial demands, as well as the ease with which assets can be transformed into a method of payment. It refers to the ability of the bank to fund increases in assets and meet liabilities when they come due without incurring losses that are undesirable for the bank to tolerate (Edem, 2017). Liquidity portrays a bank's ability to fund increases in assets and meet commitments at short notice with tolerable losses (Do Rosario & Yuji, 2022). Liquidity is created when a bank turns illiquid assets, such as loans, into illiquid liabilities, such as deposits, liquidity is created in the financial system (Berger & Bouwman, 2016, Chernenko & Sunderam, 2016; Davydov et al., 2021). The deposits are held for a short period of time, and the bank is prepared to give depositors liquidity on demand. Meanwhile, the bank converts these deposits into loans to firms and households to support long-term illiquid assets. This transformation process, however, invariably results in a fragile capital structure with maturities that are mismatched between the asset and liability sides, leaving banks vulnerable to the danger of running out of liquid assets (Beladi et al., 2020). Liquidity creation is based on the double entry principles that involve an equal and opposite liability every time a bank creates a new asset (Do Rosario & Yuji, 2022). Bank liquidity consists of transactions related to bank loans, deposits, off-balance sheet guarantees, derives, and all other balance sheet and off-balance sheet financial activities that are theoretically linked to the economy. These transactions are seen to influence to reflect the effects of finance on the real economy (Berger & Sedunov, 2016).

A body of finance literature has examined liquidity creation. These studies examined various issues such as competition and liquidity creation (Jiang et al., 2016; Rahman et al., 2021), measurement of liquidity creation (Berger & Bouwman, 2009), financial fragility (Diamond & Dybvig, 1983), governance (Díaz & Huang, 2017) and bank capital (such as Horvath et al., 2016). For example, Berger and Bouwman (2009) construct a measure of bank liquidity generation as an all-encompassing proxy for overall bank production. They analyzed the characteristics of the top 25% and bottom 25% liquidity creators among large, medium, and small banks and demonstrated that the generation of liquidity in the United States experienced a major increase between the years 1993 and 2003. They found that multi-bank holding companies tend to be the most effective at creating liquidity, while retail banks tend to be the least effective at creating liquidity per dollar of assets or equity, and wholesale banks tend to be the least effective at creating liquidity overall. Banks that are actively involved in mergers and acquisitions (M&A) tend to generate more liquidity than banks that are not actively involved in M&A activity. Another body of the finance literature focuses on a bigger perspective, such as on the economy (Fungacova & Weill, 2012; Firdmuc et al., 2015) or cross countries analysis (Beck et al., 2022).

Further review of the literature shows that not many of these studies have examined the factors influencing liquidity creation. Most of these studies examined the effect of liquidity creation. For example, Firdmuc et al. (2015) examined whether bank liquidity creation fosters economic growth in a large emerging market, namely, Russia. To investigate theconnection between the production of liquidity and the expansion of economic activity across Russian regions throughout 2004–2012, they performed fixed effects and GMM estimations. They found that liquidity creation strengthened economic growth and suggested a positive impact of financial development on economic growth in Russia. However, not many studies have examined the factors that influence liquidity creation. One study that has conducted the factors influencing liquidity in commercial banks is by Morina and Qarri (2021). They conducted their study using commercial banks in Kosovo and found three factors influencing liquidity position non-performing loans, capital adequacy, and credit interest rate. Their study, however, focused on liquidity position rather than liquidity creation.

In his study, Rakhmonovich (2021) proposed two categories of factors influencing liquidity creation in commercial banks namely, internal factors and external factors. These categories, in turn, are subdivided into the extensive and intensive market and administrative parts. Extensive factors include things such as factors that reflect the size of resources, such as changes in the size of the resource base, the number of regional divisions, or the number of employees, use over time, as well as inefficient use of resources, significant diversion of capital to funds and reserves among others. In this study, the focus is on internal factors namely, risk assets, deposits, and inter-bank loans.

Risk assets refer to assets that carry a degree of risk that presents a significant degree of price volatility. Assets such as equities, high-yield bonds, commodities, and currencies are examples of high-risk assets (Stehle, 1977). Equity capital in a financially struggling company can also be considered a risk asset. This is because the claims of the company's shareholders would rank lower than those of the firm's bondholders and other lenders (Ghani & Che Azmi, 2022). In banking, the term "risk asset" refers to any asset that is owned by a bank and whose value has the potential to alter due to factors such as changing interest rates, variations in credit quality, the risk of repayment, and other factors (Wong, 2022). The Basel Committee on Banking Supervision (2008) suggested that holding too many risk assets can be detrimental to commercial banks since economic and financial disruptions can reduce the value of assets on a bank's balance sheet. As a consequence, the value of the bank's assets would drop below the value of the bank's liabilities, and there would be a chance that the bank would go bankrupt. However, there is yet a study that has provided empirical evidence on whether holding high-risk assets can influence liquidity creation. This study posits that holding high-risk assets can negatively influence liquidity creation. Therefore, the following hypothesis is developed:

H1: *Risk assets significantly and negatively influence liquidity creation among commercial banks in Uzbekistan.*

In banking, deposits refer to a transaction involving the transfer of money to another person for safekeeping (Brownbridge & Gockel, 2007). In general, commercial banks do depend on customers' deposits to advance their clients (Tuyishime et al., 2015). According to Sharma (2009), bank deposits and bank credit are tied to one another in such a way that they represent the balance sheets of banks. Bank promotes deposit mobilization to entice clients to deposit more cash with the bank, and in turn, the bank will use this money to give them more loans and create greater revenue for themselves. For financial institutions to attract more deposits, they provide customers with a variety of savings products that are suited to the specific needs of those customers. They provide the broadest selection of specialized savings products, giving consumers the option to choose immediately accessible, liquid goods, semi-liquid accounts, or term deposits with interest rates that are proportionately greater (Elser et al., 2009).

Studies believed that holding high deposits would instigate liquidity creation in commercial banks (Nguyen et al., 2022). However, a review of the finance literature shows examination on the effect of deposits on bank performance, particularly on liquidity creation, is under-researched. Thus, this motivates this study to examine the effect of deposits on liquidity creation among commercial banks in Uzbekistan. Therefore, the following hypothesis is developed.

H2: *Deposits significantly influence liquidity creation among commercial banks in Uzbekistan.*

The last factor chosen in this study is interbank loans. Inter-bank loan refers to inter-bank lending and borrowing between financial institutions that have the legal rights to engage in such operations (Dietrich & Hauck, 2020). The interbank loan is important to the transmission of monetary policy because it enables financial institutions to trade money provided by the central bank to share the risks associated with liquidity (Fricke & Lux, 2014). It is an essential component of a financial system that operates effectively (Heijmans et al., 2010).

A review of the financial literature shows that there are not many studies that have examined the link between inter-bank loans and liquidity creation. One study that has examined inter-bank loans and liquidity creation is by Beladi et al. (2020). They examined liquidity creation in terms of

whether or not the banks in the US were net borrowers or lenders of funds. They found that although typical borrowers had lower loan growth than typical lenders, there was no significant difference in how the crisis impacted typical borrowers and lenders with regard to loan growth. However, the crisis had opposite effects on the expansion of the liquid assets of banks that were borrowing money and banks that were lending out money. During the financial crisis, the average borrower cut back on the expansion of their liquid assets relative to lending banks. However, their study did not focus directly on the effect of inter-bank loans on liquidity creation. Other studies argued that the financing of illiquid assets with liquid liabilities can lead to a liquidity shortage that forces banks to curtail credit (Diamond & Dybvig, 1983; Calomiris, 2007), an indication that increased inter-bank loans can improve liquidity creation. Therefore, this study develops the following hypothesis.

H3: *Interbank loans significantly influence liquidity creation among commercial banks in Uzbekistan.*

3. Research Methods

3.1. Population

This study selects commercial banks in Uzbekistan. There are 33 commercial banks of which the majority of the commercial banks are state-owned commercial banks which accounted for 86 percent of total credit to the economy by the end of 2021. Most of the banks are located in Tashkent, which is the capital city of Uzbekistan. The banks also have mini-banks, offices, and branches across the Tashkent region. Due to its small population, this study considered all 33 commercial banks.

3.2. Research Instrument and Data Collection

This study utilized content analysis. The content analysis was performed on the annual reports of the 33 commercial banks in Uzbekistan. Mainly, this study extracted data on four items representing the variables, namely, the risk assets, deposits, inter-bank loans, and liquidity assets. Data on investments in shares and loans receivables are used to represent the risk assets whilst information on deposits consists of demand deposits, time deposits, and saving deposits from customers. Interbank loans, on the other hand, involve banks lending funds to one another for a specified term. The majority of interbank loans have terms of one week or less, with the vast majority being overnight. To determine liquidity creation, this study used liquid assets such as cash and bank balances. The majority of the collected data was derived from annual reports. The data was then analyzed using SPSS.

4. Results

4.1. Descriptive Statistics

Table 1 provides the descriptive statistics on variables chosen in this study. The descriptive statistics are based on the annual reports of the 33 companies over a period of 21 years, making a total number of *N* 693. Table 1 shows that for the independent variables, the mean score of risk assets is SOM41,378,376.20 with a standard deviation of 68,308,998.052 whilst for deposits, the mean score is SOM30,309,144.85 with a standard deviation of 37,791,625.192. The mean score for inter-bank loans is SOM20,691,302.80, with a standard deviation of 36,547,752.629. For the dependent variable, the mean score of liquidity creation is SOM10,801,285.30, with a standard deviation of 11,754,570.007.

4.2. Pearson Correlation Analysis

Correlation analysis measures the direction, magnitude, and significance of the bivariate relationship between independent and dependent variables. The correlation values (*r*) close to −1.0 or +1.0 indicate a strong negative or positive association between the variables. The correlation between the dependent variable (liquidity creation) and all independent variables (risk assets, deposits, and inter-bank loans) is greater than 0.90 as shown in Table 2. There is a strong positive correlation between liquidity creation and deposits and inter-bank loans, but a strong negative correlation with risk assets. The result indicates that when investments in risky assets increase, liquidity assets decrease. On the other hand, when customer deposits and interbank loans increase, banks' liquidity also increases.

4.3. Multiple Linear Regression Analysis

In this study, Multiple Linear Regression analysis was conducted to predict the variance value of several independent variables varying in the value of a single dependent variable. Table 3 presents the model summary

Table 1: Descriptive Statistics for all Variables *N* = 693

Variables	Mean	Std. Deviation
Dependent Variable		
Liquidity Creation	10,801,285.30	11,754,570.007
Independent Variables		
Risk Assets	41,378,376.20	68,308,998.052
Deposits	30,309,144.85	37,791,625.192
Inter-Bank Loan	20,691,302.80	36,547,752.629

of the multiple regression analysis. The *R*-squared value of 0.924 shown in Table 3 reveals that risk assets, deposits, and inter-bank loans could justify 92.4% of the variance in liquidity creation. The adjusted *R*-squared value of 0.921 summed up the model as it considers the number of factors in the model.

The Analysis of Variance (ANOVA) is shown in Table 4. It portrays the significant value where F (3,689) = 322.932, p-value < 0.05. The results show that a significant direct association between the dependent variable (liquidity creation) and all independent variables exists. Besides, the p-value showing below 0.001 confirms that the model is statistically significant and fit.

Based on the coefficient values in Table 2, the relationship between risk assets and liquidity creation is negative (r = –0.861). The significant value (p-value) is 0.000, less than 0.05, showing that risk assets have a significant and negative correlation with liquidity creation. In Table 5, the risk assets' parameter estimates reveal a negative beta weight (β-value = –0.206), indicating an adverse relationship between variables. This indicates that liquidity creation is likely to decrease by 0.206 when one unit of risk asset is increased. Furthermore, a p-value of less than 0.006 (<0.05), indicates a significant relationship between risk asset and liquidity creation. Such results support H1 that there is a significant and negative relationship between risk assets and liquidity creation. The finding in this study is consistent with the Basel Committee on Banking Supervision's (2008) report that holding too many risk assets can be detrimental to commercial banks' liquidity since economic and financial disruptions can reduce the value of assets on a bank's balance sheet.

The correlation analysis results in Table 2 show that the relationship between deposits and liquidity creation is positive (r = 0.957). The p-value of 0.000, less than 0.05, shows that deposits positively correlated to liquidity creation. The results in Table 5 show that the parameter estimates for deposits reveal a positive beta weight (β-value = 0.246), indicating that liquidity creation is likely to increase by 0.246 when deposits are increased by one unit. In addition, the p-value is less than 0.001 (<0.05) specifies that deposits have a significant influence on liquidity creation. Hence,

Table 2: Pearson Correlation Coefficients for Liquidity Creation Model

	Liquidity Creation	Risk Asset	Deposits	Inter-Bank Loans
Liquidity Creation	1			
Risk Assets		1		
Correlation	−0.861			
Sig. (2-tailed)	0.000			
Deposits			1	
Correlation	0.957	0.9000		
Sig. (2-tailed)	0.000	0.000		
Inter-Bank Loans				1
Correlation	0.900	0.989	0.929	
Sig. (2-tailed)	0.000	0.000	0.000	

Table 3: Model Summary of Multiple Linear Regression Analysis

Model	*R*-squared	Adjusted *R*-squared
1	0.924	0.921

[a]Predictors: (Constant), Risk Assets, Deposits, Inter-bank Loans; [b]Dependent Variable: Liquidity Creation.

Table 4: Analysis of Variance

Source	Df	Sum of Square	Mean Square	*F*-value	Sig.
Model	3	10593338670218342.000	3531112890072780.500	322.932	<0.001
Error	689	874764362445203.400	10934554530565.043		
Corrected Total	692	11468103032663546.000			

Table 5: Parameter Estimates

Variables	Unstandardized Coefficient		Standardized Coefficient	*t*-value	Sig.value
	Parameter Estimate (*β*)	Std. Error	Standardized Estimate (*β*)		
Constant	1921097.333	483405.175	0	3.974	<0.001
Risk Assets	−0.206	0.073	−0.641	−2.836	0.006
Deposits	0.246	0.028	0.791	8.832	<0.001
Inter-bank loans	0.137	0.046	0.799	2.990	0.004

H2 is supported. Such a finding is consistent with Nguyen et al. (2022) that found deposits can influence liquidity creation.

According to Table 2, interbank loans positively correlate with liquidity creation (r = 0.900). The p-value is 0.000, which is smaller than 0.05, showing that the correlation is significant. Such a result is consistent with the result in Table 5 that the inter-bank loans' parameter estimates indicate a positive beta weight (β-value = 0.137), indicating that when inter-bank loans are increased by one unit, then the liquidity creation would also increase by 0.137. Furthermore, the p-value of 0.004 (<0.05), indicates that inter-bank loans have a significant influence on liquidity creation. Hence, H3 is accepted.

The results of the regression coefficient in Table 5 interpret the multiple regression of the equation model for this study as follows.

Liquidity creation = 1921097 – 0.206 (Risk Asset)
+ 0.246 (deposits)
+ 0.137 (Inter-bank loans)

The positive t-values from independent variables (deposits and inter-bank loans) indicate a positive relationship with liquidity creation (dependent variable). Thus, the regression equation can be interpreted that a higher level of scores for each independent variable (deposits and inter-bank loans) will result in a greater level of liquidity creation. Such findings support the previous findings that funds availability such as deposits and inter-bank loans can have important implications for financial stability and the prudential supervision of financial institutions (Davydov et al., 2021). At the same time, these variables can also affect the financial efficiency of the bank since this process significantly increases the probability of bank failure (Fungacova et al., 2015). Hence, the findings showing a significant positive influence of deposits and inter-bank loans on liquidity creation provide an opportunity for commercial banks to fulfill their commitments to their customers and other financial partners. On the other hand, if commercial banks are unable to deploy their financial resources efficiently, this can lead to a reduction in the income that they bring in.

In contrast, the negative t-values for the independent variable (Risk Asset) indicate a negative impact on the creation of liquidity. This implies that the higher the level of risk assets, the lower the level of liquidity creation. Such findings are consistent with the Basel Committee on Banking Supervision (2008) that proposed commercial banks may suffer losses if they maintain an excessive amount of risk assets as economic and financial disturbances can lower the value of assets that are listed on a bank's balance sheet. As a direct result of this, the value of the bank's assets would fall below the value of the bank's liabilities, and there would be a possibility that the bank would fail to meet its financial obligations and go out of business.

5. Conclusion

This study aims to examine the influence of internal factors on liquidity creation among commercial banks in Uzbekistan. Specifically, three internal factors are chosen in this study. The three factors are risk assets, deposits, and inter-bank loans. This study is a consensus study utilizing all commercial banks in Uzbekistan. Content analysis was performed on the annual reports of 21 years of 33 commercial banks in Uzbekistan. This study shows that all three factors significantly influence liquidity creation among commercial banks in Uzbekistan. Further analyses show that deposits and inter-bank loans significantly and positively influence liquidity creation. On the other hand, the result shows that risk assets have a significant and negative influence on liquidity creation.

This study is not without limitations. First, this study limits its scope to only examining the internal factors, namely, risk assets, deposits, and inter-bank loans. Although these three variables can explain 92.4% of the model, the inclusion of other variables may strengthen the model fit. Secondly, liquidity creation in this study is measured using the liquidity assets available in commercial banks. There may have other forms of measuring liquidity creation. Future studies may include other forms of measurement.

This study adds to the extant theoretical knowledge by showing new and original insight into the different

elements of internal factors in examining commercial banks' performance in terms of liquidity creation. It also highlights how these factors influence liquidity creation. In addition, this study is among the first to provide insight into the internal factors' role in influencing liquidity creation in the context of an emerging economy.

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