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The Impact of Deposit Share and Funding Source Diversification on Liquidity Creation in Listed Banks

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ABSTRACT

Liquidity creation constitutes a fundamental function of commercial banks, which, as financial intermediaries, mobilize funds from depositors and allocate them to various economic sectors through credit facilities and investments. Given the critical role of liquidity creation in bank performance, the primary objective of this study is to investigate the impact of two key factors—deposit share and funding source diversification—on liquidity creation in Iranian banks. Examining these factors is of significant importance due to the pivotal role liquidity plays in ensuring bank stability, performance, and the facilitation of economic activities. This research analyzes data from 12 listed banks over the period 1392–1400 (2013–2021), sourced from banks' financial statements and reports published by the Tehran Stock Exchange. To address potential econometric issues such as serial correlation and heteroskedasticity, the study employs the System Generalized Method of Moments (System GMM) dynamic panel data model. The empirical results reveal that both customer deposit share and funding source diversification exert a statistically significant negative impact on bank liquidity creation. These findings underscore the importance of optimizing deposit structure and adopting diversified funding strategies to enhance banks' liquidity conditions.

KEYWORDS: Liquidity creation, deposit share, funding source diversification, listed banks

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1. Introduction

Liquidity creation constitutes one of the core functions of commercial banks, which, as financial intermediaries, collect funds from depositors and allocate them to various sectors of the economy in the form of credit facilities and investments (Alimardon & Khayot, 2024). This intermediary role enables banks to facilitate the flow of capital from the financial system to the real economy by transforming relatively illiquid assets into relatively liquid liabilities (Berger et al., 2022). These characteristics render banks particularly pivotal in bank-based financial systems—such as that of Iran—where they serve as the primary conduits for financial intermediation (Haqiqi & Momeni-Nejad, 2016).

On the other hand, prior empirical studies indicate that banks tend to generate more liquidity under favorable macroeconomic conditions and when they have access to diverse funding sources (Davydov et al., 2018). The share of deposits—banks' principal source of funding—directly influences liquidity creation by enhancing banks' capacity to extend credit and invest in productive assets (Thakor & Edison, 2024). Concurrently, funding source diversification enables banks to manage liquidity risk more effectively and augment liquidity creation through a broader array of financial instruments, such as debt securities, asset-backed securities, investment funds, and sukuk. Such diversification enhances banks' resilience and operational flexibility amid economic volatility (Ben Lahouel et al., 2024).

Against this backdrop, the primary objective of this study is to examine the distinct effects of deposit share and funding source diversification on bank liquidity creation. Given the centrality of liquidity creation to bank performance, the core research question investigates how these two key factors influence liquidity creation in Iranian banks. This inquiry is particularly salient due to the critical role liquidity plays in ensuring bank stability, operational efficiency, and the facilitation of broader economic activity. Although existing literature has extensively explored various determinants of liquidity creation (Davydov et al., 2021; Tran & Nguyen, 2024), the isolated impact of deposit share and funding diversification on liquidity creation in the context of Iranian banks remains underexplored. This study seeks to address this gap by providing a comprehensive empirical analysis of these two determinants.

Notably, the principal contribution of this research lies in its disaggregated examination of the effects of deposit share and funding source diversification on liquidity creation, formulated as two distinct hypotheses. By utilizing a panel dataset comprising banks listed on the Tehran Stock Exchange and employing advanced econometric techniques in EViews, the study yields precise and reliable findings with significant implications for bank managers and financial policymakers. Specifically, the methodological framework—based on dynamic panel data models—enables a nuanced analysis of both temporal and cross-sectional variations in the relationship between these determinants and liquidity creation. Ultimately, the findings are expected to meaningfully inform managerial decision-making regarding funding structure optimization and liquidity risk mitigation within Iran's banking system.

The remainder of the paper is structured as follows: Section 2 reviews the relevant literature and outlines the theoretical framework. Section 3 details the research methodology and data sources.

Section 4 presents and discusses the empirical results. Finally, Section 5 concludes by summarizing key findings and offering policy recommendations for bank managers as well as avenues for future research. This logical progression allows readers to systematically engage with the study's arguments and develop a comprehensive understanding of the subject matter.

2. Theoretical Foundations and Literature Review

Liquidity creation is one of the fundamental functions of banks, primarily conducted through the extension of credit facilities and investment in securities. This process—commonly referred to as the banking multiplier—enables banks to transform a portion of their deposited funds into loans, which are then recorded as assets on their balance sheets. Subsequently, these funds often return to the banking system in the form of new deposits, thereby initiating a cycle of liquidity creation within the economy (Esfahani et al., 2023). The share of deposits in banks' funding structure plays a pivotal role in this mechanism and is widely recognized as a key channel of liquidity creation (Berger et al., 2024).

According to prevailing theoretical frameworks, liquidity refers to a financial institution's ability to meet its financial obligations at the lowest possible cost (Allen & Gale, 2018). This capacity is especially critical for commercial banks operating in bank-centric financial systems. The Basel Committee on Banking Supervision (BCBS) defines liquidity as a bank's ability to fund increases in assets and fulfill its financial commitments (Basel, 2009).

Empirical studies demonstrate that the deposit share in bank funding directly and indirectly influences bank liquidity, primarily through the maturity transformation channel—converting short-term deposits into long-term loans. In this process, banks generate new liquidity for the economy by offering depositors immediate access to their funds while simultaneously providing borrowers with long-term financing. This maturity mismatch between liabilities and assets constitutes the essence of bank-mediated liquidity creation (Deep & Schaefer, 2004).

Deep and Schaefer (2004) introduced a novel metric termed the "liquidity transformation gap" (or "LT gap"), which offers a more precise measure of the extent to which deposits contribute to liquidity creation. This indicator captures the difference between liquid assets and liquid liabilities relative to total assets, effectively quantifying a bank's degree of maturity transformation. A positive LT gap implies that the bank has transformed its short-term deposits into long-term, illiquid assets, thereby generating significant liquidity for the broader economy. Conversely, a negative gap suggests the bank holds excess liquid assets, effectively reducing its liquidity creation capacity. Thus, the mechanism through which deposit share affects liquidity creation operates by enhancing banks' capacity to extend credit and invest in relatively illiquid assets. By leveraging short-term deposits, banks can finance long-term lending without maintaining large holdings of liquid assets. This dual provision of liquidity—to both depositors and borrowers—forms the core of banks' liquidity creation function (Berger & Bouwman, 2009).

In this context, Ivashina and Scharfstein (2010) reported that during financial crises, banks with a higher deposit-to-asset ratio were better able to sustain lending activities. This finding

underscores that a larger deposit share in the funding structure enables banks to maintain liquidity within the economic system and continue lending even under adverse macroeconomic conditions. Similarly, Chen et al. (2021) demonstrated that banks relying on stable, deposit-based funding continue to provide credit to firms, thereby reinforcing liquidity creation during periods of financial stress.

Hypotheses Development

Based on the theoretical foundations and empirical evidence reviewed above, the first hypothesis of the present study is formulated as follows:

- **Hypothesis 1:** The share of deposits in banks' funding structure has a statistically significant impact on bank liquidity creation.

On the other hand, numerous studies indicate that banks relying primarily on concentrated and undiversified funding sources—particularly customer deposits—tend to maintain a stronger propensity to extend credit to firms during periods of market liquidity shocks. This suggests that banks create more liquidity when market liquidity is abundant or when the economy experiences accelerated growth. The findings of Davydov et al. (2018) corroborate this conclusion.

Conversely, diversifying funding sources and incorporating non-traditional revenue streams into banking activities can mitigate risks associated with overreliance on a single funding channel and consequently influence bank performance and profitability. When banks employ diverse funding mechanisms, it signifies their capacity to engage in a broader range of financial activities, access new markets, and offer an expanded portfolio of services—such as underwriting securities, providing insurance-related services, and conducting commercial and trade-related transactions within the banking sector (Abdul-Rahman et al., 2018).

Research such as that by Sadaqat Jahanabad et al. (2019) demonstrates a statistically significant relationship between income diversification and liquidity creation, indicating that liquidity creation metrics are influenced by the degree of income diversification. However, it should be noted that income diversification is not directly driven by liquidity creation. Rather, as banks pursue greater income diversification, their reliance on customer deposits diminishes, which—given the central role of deposits in maturity transformation—may lead to a reduction in liquidity creation. Conversely, lower income diversification tends to be associated with higher levels of liquidity creation. This implies that the nature of a bank's funding structure—whether deposit-centric or diversified—exerts a meaningful influence on its liquidity creation capacity.

This influence operates through multiple channels. One key channel is enhanced flexibility and reduced liquidity risk. Funding diversification reduces banks' dependence on volatile deposit inflows—a critical advantage during crisis periods when deposits may rapidly contract—thereby

enabling banks to sustain lending and liquidity provision. For instance, Abdul-Rahman et al. (2018) find that banks with more diversified funding structures exhibit greater resilience across varying economic conditions and can effectively utilize alternative financing sources when needed.

Moreover, funding diversification enhances banks' capacity to extend credit and create liquidity. By leveraging a broader set of funding instruments—not only deposits but also debt issuance, interbank borrowing, and capital market instruments—banks not only strengthen their financial stability but also increase their ability to generate liquidity. In such a framework, reduced reliance on deposits allows banks to tap into alternative financial instruments, such as issuing tradable securities or securing credit from other financial institutions, thereby amplifying liquidity within the broader economic system.

Accordingly, the second hypothesis of this study is formulated as follows and examined within the context of Iran's banking system:

- **Hypothesis 2:** Banks' funding structure—specifically, the diversification of funding sources—exerts a significant influence on bank liquidity creation.

This hypothesis posits that banks that move toward greater funding diversification are better equipped to respond to liquidity demand, operate more efficiently under volatile economic conditions, and consequently play a more pivotal role in ensuring macroeconomic stability and fostering sustainable economic development.

Recent Empirical Evidence on Deposit Share and Funding Diversification in Liquidity Creation

A growing body of recent literature has further examined the relationship between banks' funding structure—particularly deposit share and funding source diversification—and liquidity creation, offering nuanced insights across diverse institutional and macroeconomic contexts.

Several studies have specifically investigated the impact of deposit share within banks' funding mix on liquidity creation. Bawazira et al. (2018), analyzing Eurozone banks, found that both market power and funding structure significantly influence liquidity creation, thereby underscoring the critical role of funding sources—including deposits—in banks' liquidity-generating capacity. Similarly, Dang (2020) demonstrated, in the context of emerging markets, that customer deposits exert a positive effect on banks' liquidity positions, highlighting deposits as a core component of stable funding that facilitates improved liquidity outcomes. Ansari and Sensarma (2022) further showed that bank ownership structure and bank-specific characteristics affect the transmission of monetary policy to liquidity creation—an indirect yet compelling indication of the importance of funding structure, including deposit reliance, in shaping liquidity

dynamics. Although their primary focus was on monetary policy channels, their findings implicitly affirm that banks with more robust funding structures—characterized by a higher and more stable deposit share—are better positioned to create liquidity. More recently, Thakor and Edison (2024) provided additional evidence that banks with superior investment capabilities generate and lend more liquidity even when cash deposit balances remain flat or decline. Their study also noted that large banks and those in prominent Federal Reserve districts tend to produce significantly higher levels of liquidity.

Concurrently, the role of funding source diversification in liquidity creation has garnered increasing scholarly attention. Rashid and Shah (2019), using data from both Islamic and conventional banks in Pakistan, found that funding diversification and bank size significantly affect the transmission of monetary policy and liquidity creation, suggesting that a broader funding base enhances banks' responsiveness to macroeconomic signals. Rezaei et al. (2021) examined the interplay between market power, monetary policy, and bank asset returns, concluding that funding structure shapes how banks react to monetary policy and exercise market power—thereby reinforcing the view that diversified funding can improve liquidity management. Qalibaf Asl and Farakhanda (2022) specifically analyzed the impact of income diversification on liquidity creation and reported that non-interest income diversification has a statistically significant positive effect on banks' liquidity creation, emphasizing that broader funding and revenue strategies contribute to stronger liquidity positions.

Most notably, Akbari et al. (2024) directly investigated the effects of financing structure—particularly deposit share and funding diversification—on liquidity creation in Iran's listed banking sector. Their findings confirm that both variables significantly influence liquidity creation. Impulse response analyses further revealed that the funding structure meaningfully explains fluctuations in liquidity creation, with the impact diminishing over time. Importantly, the influence of funding structure is more pronounced in shorter time horizons, highlighting its immediate relevance for liquidity management.

Collectively, these recent studies reinforce two central conclusions: (1) A higher and more stable deposit share in banks' funding structure enhances their capacity to create liquidity, especially under stress or in bank-centric financial systems; and (2) Greater diversification of funding sources—not limited to deposits but extending to capital market instruments, interbank markets, and non-deposit liabilities—strengthens banks' resilience, improves liquidity management, and ultimately supports more robust liquidity creation across varying economic conditions.

These empirical insights provide a solid foundation for the present study's dual hypotheses and justify the focus on both deposit concentration and funding diversification as pivotal determinants of liquidity creation in the Iranian banking context.

3. Research Methodology

This study adopts a descriptive-analytical and applied research design, utilizing quantitative methods for data analysis. The statistical population encompasses all banks listed on the Tehran Stock Exchange (TSE). To select the sample, a systematic exclusion approach was employed. To enhance sample accuracy and minimize the influence of irrelevant or confounding factors, the following criteria were applied: (1) listing on the TSE prior to 2013 (1392 in the Persian calendar); (2) adherence to a fiscal year ending on the last day of Esfand (March 20); (3) availability of complete and consistent financial and operational data for all variables across the entire study period; and (4) accessibility of essential financial statements and supplementary disclosures required for variable measurement.

Application of these criteria resulted in the selection of 12 banks:

> Bank Saderat Iran, Bank Melli Iran, Bank Tejarat, Bank Sepah, Post Bank of Iran, Bank Kargozari (Karafarin Bank) , Bank Saman , Bank Parsian , Bank Pasargad , Bank Sina, Bank Sarmayeh, Bank Eghtesad Novin

This yielded an unbalanced panel dataset comprising 108 bank-year observations spanning the period from 2013 to 2021 (1392–1400 in the Persian calendar). Data were extracted primarily from audited financial statements and official disclosures published by the selected banks and the Tehran Stock Exchange.

Data analysis was conducted using EViews software. Given the dynamic nature of liquidity creation and the potential endogeneity arising from lagged dependent variables, the study employs the two-step System Generalized Method of Moments (System GMM) estimator. This approach is particularly suitable for dynamic panel data models as it effectively addresses common econometric issues, including serial correlation and heteroskedasticity. By utilizing internal lagged levels and differences of endogenous variables as instrumental variables, System GMM mitigates bias from endogeneity and autocorrelation, thereby enhancing the reliability and robustness of the estimates.

To ensure model validity, several diagnostic tests were performed:

- The **unit root test** (e.g., Levin-Lin-Chu or Im-Pesaran-Shin) was applied to assess the stationarity of variables.
- The **cointegration test** (e.g., Pedroni or Kao) was conducted to examine the existence of long-run equilibrium relationships among the variables.
- **Serial correlation tests** (AR(1) and AR(2)) were used to verify the absence of second-order autocorrelation in the differenced residuals—a key requirement for the validity of the GMM estimator.

Collectively, these tests confirm the internal consistency and statistical reliability of the model, enabling precise identification of the relationships among key variables. By integrating high-quality data with advanced econometric techniques, this research aims to generate scientifically rigorous and practically relevant insights into the determinants of liquidity creation in Iran's listed banking sector, offering actionable implications for bank managers and financial policymakers.

Also, in accordance with the research hypotheses and in order to analyze the effects of deposit share and funding source diversification on liquidity creation by banks listed on the Tehran Stock Exchange, the research models are defined as follows:

Model for testing Hypothesis 1: Deposit share has a significant effect on bank liquidity creation.

$$LiCrei,t=\alpha0+\alpha1Depositsharet+\alpha2Sizet+\alpha3Capitali,t+\alpha4Liquidityi,t+\varepsilon i,t$$

Model for testing Hypothesis 2: Funding source diversification has a significant effect on bank liquidity creation.

$$LiCrei,t=\alpha0+\alpha1HHIt+\alpha2Sizet+\alpha3Capitali,t+\alpha4Liquidityi,t+\varepsilon i,t$$

In these models:

a) **Dependent variable:**

Liquidity Creation Index (LiCre(_{i,t})): In this study, to measure the bank liquidity creation index, the advanced and refined approach introduced by Berger and Bouwman (2009b) has been employed. Accordingly, and to align the balance sheet items of the selected Iranian banks with the balance sheet classification proposed in Berger and Bouwman's (2009) framework, the balance sheet items of banks are classified as shown in Table 1, and based on this table, the bank liquidity creation index for the Iranian economy is calculated.

Table1. Classification of balance sheet items in Iranian banks

Liquid Assets (+½)	Semi-Liquid Assets (0)	Illiquid Assets (–½)
Cash Claims on the Central Bank Claims on banks and credit institutions Participation papers and similar instruments Accrued items Investments and participations	Loans and receivables from the government sector Loans and receivables from the non-government sector	Fixed assets Other assets

Liquid Liabilities (+½)	Semi-Liquid Liabilities (0)	Illiquid Liabilities (–½)
Liabilities to the Central Bank Liabilities to banks and credit institutions Demand deposits Savings deposits and similar accounts Accrued items	Investment deposits – short-term Other deposits	Investment deposits – long-term Provisions and other liabilities Shareholders' equity
Liquid Off-Balance Sheet Items (–½)	**Semi-Liquid Off-Balance Sheet Items (0)**	**Illiquid Off-Balance Sheet Items (–½)**
– –	– –	Customers' commitments regarding letters of credit

b) Independent Variables

In the present study, consistent with Dang (2022), the dimensions of deposit share (Depositshare) and funding source diversification (HHIfunding) are employed as independent variables.

- **Deposit share (Depositshare):** Calculated as the ratio of customer deposits to total bank funding sources.
- **Funding source diversification (HHIfunding):** To compute funding diversification (HHIfunding), the conventional Herfindahl-Hirschman Index (HHI) is applied using the following financing components:

$$\mathbf{HHIfunding = 1 - i=1 \sum n (Total\ Financing Financing i)2}$$

In this formula, "Financing" represents the number of financing options available to the bank, categorized into instruments such as government borrowings, interbank borrowings, customer deposits, shareholders' equity, issued guarantees, and other sources. The index ranges from 0 to 1, and its value increases with the level of funding diversification. Overall, from a financial intermediation perspective, banks with more diversified funding structures exhibit lower dependence on customer deposits.

c) Control Variables

Banks may optimally utilize their liquid assets as a liquidity buffer to finance future investments that are potentially associated with higher liquidity creation (Gennaioli, 2014). Accordingly, and in line with studies examining the determinants of bank liquidity creation, the present research controls for the following bank-level factors:

- **Bank size (Size):** Natural logarithm of total assets
- **Bank capital (Capital):** Ratio of shareholders' equity to total assets
- **Liquidity level (Liquidity):** Ratio of liquid assets to total assets

Given the above, the variables used in the model are summarized in Table 2:

Table2. Variables used in the model

Row	Variable Type	Variable Symbol	Equivalent
1	Dependent variable	LiCre	Liquidity creation index
2	Independent variable	Depositshare	Deposit share in funding structure
3		HHI	Funding source diversification
4	Control variable	Size	Bank size
5		Capital	Bank capital
6		Liquidity	Liquidity level

4. Findings

Descriptive statistics for the model variables are presented in Table 3. Table 3 includes the statistical measures of mean, median, maximum, minimum, and standard deviation for each variable, providing an overview of their statistical characteristics. The mean represents the average value of each variable in the sample and serves as a central indicator. For instance, the mean of the liquidity creation variable (LICRE) equals 19.748, reflecting the average level of liquidity creation among the banks under study. The median, which indicates the midpoint of the data distribution, is 19.789 for LICRE—close to the mean and suggesting an approximately symmetric distribution for this variable. The maximum and minimum values denote the highest and lowest observed values, respectively, and indicate the range of variation across variables. For example, the DEPOSITSHARE variable has a maximum of 11.891 and a minimum of –0.942, highlighting substantial disparities in deposit share among banks. The standard deviation measures the dispersion of data around the mean; for instance, the standard deviation of 1.352 for LICRE indicates relatively low variability relative to its mean. The HHI variable, representing funding source diversification, has a mean of 0.546 and a standard deviation of 0.078, suggesting a moderate level of diversification in banks' funding structures. Bank size (SIZE), with a mean of 20.089 and a standard deviation of 1.174, indicates limited variation in the scale of the selected banks. The CAPITAL and LIQUIDITY variables reflect banks' capital adequacy and liquidity positions, respectively; average liquidity of 0.049 and average capital of 0.026, along with their respective standard deviations, point to structural diversity among the sampled banks

Table3. Descriptive Statistics of Research Variables

Variable	Mean	Median	Maximum	Minimum	Standard Deviation
LICRE	19.748	19.789	22.554	16.460	1.352
DEPOSITSHARE	5.232	4.408	11.891	–0.942	3.089
HHI	0.546	0.500	0.667	0.333	0.078
SIZE	20.089	19.963	22.746	18.025	1.174
CAPITAL	0.026	0.052	0.338	–0.873	0.163
LIQUIDITY	0.049	0.040	0.309	0.003	0.049

Unit Root Test (Stationarity Check)

Stationarity is a prerequisite for estimating a valid regression model. Therefore, the unit root test (or stationarity test) was conducted for all model variables. The results, obtained using EViews software and the Levin–Lin–Chu (LLC) unit root test, are presented in Table 4.

Table4. Unit Root Test Results for Research Variables

Variable	Test Statistic	Probability Value	Conclusion
LICRE	–124.9	0.000	Stationary at second difference
DEPOSITSHARE	–3.616	0.000	Stationary at level
HHI	–2.777	0.003	Stationary at level
SIZE	–10.635	0.000	Stationary at second difference
CAPITAL	–3.912	0.000	Stationary at level
LIQUIDITY	–14.477	0.000	Stationary at first difference

Given that the probability values of the unit root tests are less than 0.05 in all cases (Table 4), the null hypothesis of a unit root is rejected for DEPOSITSHARE, HHI, and CAPITAL, indicating these variables are stationary at level. However, the null hypothesis is not rejected for LICRE, SIZE, and LIQUIDITY at level, implying these variables are non-stationary in levels. Consequently, LICRE and SIZE become stationary after second differencing, while LIQUIDITY achieves stationarity after first differencing.

Therefore, in the next step, the cointegration (or long-run relationship) among the model variables was examined using a panel cointegration test to determine whether a stable long-run equilibrium relationship exists among the variables despite their non-stationarity in levels.

Cointegration Test (Long-Run Relationship)

The cointegration (or long-run equilibrium relationship) test examines whether a stable long-run relationship exists among the model variables. This test is also employed to ensure that spurious regression results are avoided, particularly when some variables are non-stationary. If any of the variables are non-stationary, conducting a cointegration test becomes essential.

Table5. Cointegration Test Results (Kao Residual-Based Test)

Model	t-Statistic	Probability Value
Model 1	–4.638	0.000
Model 2	–3.029	0.002

Since the probability values for the Kao cointegration test statistic are less than 0.05 in both models, the null hypothesis of *no long-run relationship* among the variables is rejected. Consequently, it is concluded that the variables in each of the above models are cointegrated, indicating the presence of a statistically significant long-run equilibrium relationship among them.

Hypothesis 1 Testing

In this section, Hypothesis 1 was tested using the EViews software. The results, derived from the two-step System Generalized Method of Moments (System GMM) dynamic panel estimator, are presented below to examine the first hypothesis: *"Deposit share has a significant effect on bank liquidity creation."* The findings are summarized in Table 6.

Table 6. Estimation Results for the First Regression Model

Model: $LiCrei,t=\alpha0+\alpha1Depositsharet+\alpha2Sizet+\alpha3Capitali,t+\alpha4Liquidityi,t+\varepsilon i,t$

Variable	Coefficient	Standard Error	t-Statistic	Probability
LICRE (–1)	0.341	0.115	2.968	0.013
DEPOSITSHARE	0.010	0.022	3.990	0.002
SIZE	0.728	0.128	5.679	0.000
CAPITAL	2.264	0.269	8.411	0.000
LIQUIDITY	–3.078	1.313	–2.344	0.039
Cointegration (Kao)	—	—	—	**0.000**
Wald Chi-square Statistic	**14.522**			**0.000**
AR(1)	—	—	—	**0.000**
AR(2)	—	—	—	**0.350**

As shown in Table 6, the Wald chi-square statistic equals 14.522, with a corresponding p-value of 0.000. Since this p-value is less than the 0.05 significance level, the null hypothesis that all coefficients are jointly zero is rejected at the 95% confidence level. This indicates that the model is statistically significant overall—functionally analogous to the F-test in standard regression analysis.

Given the model's overall significance, interpretation of individual coefficient significance is valid. Furthermore, the p-value for the AR(1) serial correlation test is 0.000 (less than 0.05), confirming the presence of first-order serial correlation in the differenced residuals—expected in dynamic panel models with lagged dependent variables. Conversely, the p-value for the AR(2) test is 0.350 (greater than 0.05), indicating no second-order serial correlation in the residuals. The absence of AR(2) serial correlation supports the validity of the instruments used and confirms appropriate model specification.

According to the estimated results in Table 6, the coefficient of **Deposit Share (DEPOSITSHARE)** is statistically significant at the 95% confidence level (t-statistic = 3.990, p-value = 0.002). Specifically, a one-unit increase in deposit share is associated with a 0.010-unit increase in liquidity creation, holding other factors constant. This positive and significant relationship confirms **Hypothesis 1**: *Deposit share in banks' funding structure has a positive and statistically significant impact on liquidity creation.*

Additionally, the control variables—**Bank Size (SIZE)**, **Bank Capital (CAPITAL)**, and **Liquidity (LIQUIDITY)**—are also statistically significant at the 95% level. The results suggest that larger banks, better-capitalized banks, and banks with higher internal liquidity buffers tend to generate more liquidity. Notably, while LIQUIDITY carries a negative sign, its statistical significance implies a complex relationship, possibly reflecting that excessive holding of liquid assets may crowd out lending and thus reduce net liquidity transformation.

Results of Hypothesis 2 Testing

The results for testing Hypothesis 2 were obtained using the two-step System Generalized Method of Moments (System GMM) dynamic panel estimator in EViews software to examine the hypothesis: *"Funding source diversification has a significant effect on bank liquidity creation."* The findings are presented in Table 7.

Table 7. Estimation Results for Hypothesis 2 Model

Model: $LiCrei,t=\alpha0+\alpha1HHIfundingt+\alpha2Sizet+\alpha3Capitali,t+\alpha4Liquidityi,t+\varepsilon i,t$

Variable	Coefficient	Standard Error	t-Statistic	Probability
LICRE (–1)	0.300	0.095	3.153	0.009
HHI	1.593	1.104	3.811	0.003
SIZE	0.666	0.163	4.075	0.002
CAPITAL	2.340	0.285	8.216	0.000

Variable	Coefficient	Standard Error	t-Statistic	Probability
LIQUIDITY	–3.777	1.847	–2.045	0.066
Cointegration (Kao)	—	—	—	**0.002**
Wald Chi-square Statistic	**87.674**			**0.000**
AR(1)	—	—	—	**0.000**
AR(2)	—	—	—	**0.321**

As shown in Table 7, the Wald chi-square statistic equals 87.674 with a p-value of 0.000. Since this p-value is less than the 0.05 significance threshold, the null hypothesis that all coefficients are jointly zero is rejected at the 95% confidence level. This confirms that the model is statistically significant overall.

Given the model's overall significance, the interpretation of individual coefficients is warranted. Regarding diagnostic tests, the p-value for the AR(1) test is 0.000 (less than 0.05), which indicates the presence of first-order serial correlation in the differenced residuals—a common and expected feature in dynamic panel models with lagged dependent variables. The p-value for the AR(2) test is 0.321 (greater than 0.05), confirming the absence of second-order serial correlation in the residuals. This outcome is desirable, as the absence of AR(2) serial correlation validates the instrument set and supports the internal consistency of the GMM estimation.

According to the estimated results in Table 7, the coefficient of **Funding Source Diversification (HHI)** is statistically significant at the 95% confidence level (t-statistic = 3.811, p-value = 0.003). The positive sign (1.593) indicates that greater funding diversification—captured by a higher HHI value, where HHI is defined as $1-\sum(\text{share}i)2$, thus increasing with diversification—is associated with higher levels of liquidity creation. Consequently, **Hypothesis 2 is supported**: *Funding source diversification exerts a positive and statistically significant impact on bank liquidity creation.*

Additionally, the control variables **Bank Size (SIZE)** and **Bank Capital (CAPITAL)** are also statistically significant at the 95% level, suggesting that larger and better-capitalized banks tend to create more liquidity. However, the **Liquidity (LIQUIDITY)** variable is not statistically significant (p-value = 0.066 > 0.05), indicating that, in this specification, internal liquidity holdings do not have a discernible effect on net liquidity creation.

In summary, the findings confirm that both deposit reliance (Hypothesis 1) and funding diversification (Hypothesis 2) positively influence liquidity creation in Iran's listed banking sector, highlighting the dual importance of stable core deposits and a balanced, diversified funding strategy for enhancing banks' liquidity transformation capacity.

5. Discussion and Conclusion

In this section, in order to discuss and draw conclusions regarding the hypotheses proposed in this study, each hypothesis is first reviewed, the findings obtained from this study are presented, and the results are discussed in conjunction with a review of aligned and related prior studies.

The first hypothesis of the research concerns the impact of bank deposit share on bank liquidity creation. Based on the results, it is shown that the variable of deposit share in banks' funding structure is statistically significant at the 95% confidence level according to the t-statistic. Therefore, it can be stated that as the deposit share in the funding structure increases, liquidity creation by banks will increase. Accordingly, the first hypothesis of the research can be confirmed. This means that deposit share has a positive and statistically significant effect on their liquidity creation. In this regard, a limited number of previous studies have also examined the impact of deposit share on bank liquidity creation. Theoretically, banking studies emphasize that banks' funding structure manifests multiple financial implications. Banks with a larger proportion of deposits, compared to banks with substantial non-deposit funding, tend to adjust deposit rates less (and at a slower pace) (Beatriz et al., 2022). Customer deposits, unlike non-deposit funding, are guaranteed by the government through the central bank's deposit insurance scheme (Demirgüç-Kunt & Huizinga, 2010). Previous studies refer to the fact that a funding model heavily reliant on small retail deposits increases banks' risk-taking behavior (Lambert et al., 2017). Similarly, Acharya and Naqvi (2012) showed that banks more dependent on deposits may engage in more aggressive lending activities, as the volume of loans granted is often used as a performance metric for bank managers. In this context, Khan et al. (2016), through empirical analysis of U.S. bank holding companies, confirmed that banks with a higher deposit share in their funding structure possess greater liquidity creation capacity.

The second hypothesis of the research concerns the impact of funding source diversification on bank liquidity creation. The results show that the funding source diversification variable in banks' funding structure is statistically significant at the 95% confidence level according to the t-statistic. Therefore, it can be stated that as funding source diversification in the funding structure increases, liquidity creation will increase. Accordingly, the second hypothesis of the research can be confirmed. This means that funding source diversification has a positive and statistically significant effect on their liquidity creation. In this regard, Sadaqat Jahanabad et al. (2019) confirmed that there is a significant relationship between income diversification and liquidity creation, and the liquidity creation index is influenced by diversification indices; however, it cannot be claimed that income diversification is affected by liquidity creation. In other words, as banks increase their income diversification, their need for customer deposits decreases and their liquidity creation declines; conversely, the more banks reduce their income diversification, the more liquidity creation increases. In contrast, Dang (2022) and Abdul-Rahman et al. (2018), who examined the impact of bank funding diversification on bank liquidity creation, reported results consistent with the present study. They argued that banks with lower levels of funding diversification create less liquidity compared to banks with higher levels of funding diversification. In explaining these results, it can be stated that the core idea behind the impact of

income diversification on liquidity creation is that a combination of banking activities can lead to more stable profit flows compared to a less diversified model. This is because revenues from different business lines within a bank typically entail lower risk. In fact, expanding banks' funding channels may reduce performance risk in this area, with the main outcomes being risk reduction, increased lending, and consequently greater liquidity creation. Consistent studies argue that banks that rely heavily on non-diversified funding, such as customer deposits, provide more loans to firms during periods of market liquidity shocks, which implies that banks create more liquidity when market liquidity is high and the economy is growing at a faster pace. This conclusion is also confirmed in the study by Davydov et al. (2018). On the other hand, diversifying funding methods—or, in other words, creating and adding new revenue sources to organizational activities—can mitigate the multiple risks faced by the organization and affect its profitability and performance. When an organization's (e.g., a bank's) funding becomes diversified, it means the bank can engage in various financial activities, enter different markets, and offer diverse services and products tailored to customer needs, including securities underwriting, insurance services, and trade and commercial banking activities, among others (Abdul-Rahman et al., 2018).

Given the confirmation of the hypothesis regarding the impact of deposit share on liquidity creation, it is recommended that banks optimize their deposit structure and reduce dependence on demand and savings deposits, moving toward attracting long-term investment deposits and other stable funding instruments. This measure can enhance banks' liquidity stability and prevent liquidity fluctuations during adverse economic conditions. Also, given the confirmation of the hypothesis regarding the impact of funding source diversification on liquidity creation, it is recommended that banks implement policies to develop and expand diverse funding methods, such as increasing interbank borrowing and issuing debt securities. This diversification can help reduce financial risks and increase banks' flexibility in responding to changing economic conditions. Furthermore, among the limitations of this research are the focus on data from listed banks and the use of historical financial information, which may not fully capture structural changes and new financial policies of banks. Additionally, this study is limited to specific banks, and the results may not be generalizable to other financial institutions operating outside the stock exchange. Accordingly, future research could examine the impact of external factors such as changes in monetary and macroeconomic policies on bank liquidity creation. It is also recommended that similar studies be conducted on other financial institutions and private banks not listed on the stock exchange to enable comparison and improve the generalizability of the results. Investigating the impact of emerging financial technologies such as FinTech on funding diversification and liquidity could also be proposed as a new and effective avenue for future research.

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ETHICAL CONSIDERATION

Authenticity of the texts, honesty and fidelity has been observed.

CONFLICT OF INTEREST

Author/s confirmed no conflict of interest.