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Research Article

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Liquidity Buffers and Next-Year Loan Growth in Iraq's Listed Commercial Banks

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Abstract: This study examines whether year-end cash and central-bank balances are associated with next-year growth in net direct credit among conventional commercial banks listed on the Iraq Stock Exchange. Audited statements for 2020–2024 yield 38 one-year comparisons from 12 banks. Bank and year fixed-effects estimates are positive, although their magnitudes vary with balance-sheet controls, the inclusion of deposit growth, and outlying credit changes. In the specification with size and equity controls, a one-percentage-point increase in the liquidity ratio is associated with a 2.47-percentage-point increase in subsequent net credit growth. Its cluster wild-bootstrap p-value is 0.109. The estimated coefficient falls to 0.92 after excluding growth observations above 100% in absolute value. An audited credit-note reconciliation shows that the largest increase in net credit coincided with an increase in reported non-performing debt. The results are an exploratory within-bank association and are not necessarily applicable to the other banks that were observed.

Keywords: Bank liquidity, net direct credit, credit growth, Iraq Stock Exchange, bank fixed effects, JEL classification G21, G28

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INTRODUCTION

Banks keep cash and central-bank balances so that they can pay and provide funding services, and keep portfolios of less liquid assets. So a rise in those balances allows the bank to provide credit during more challenging funding periods. It may also be a sign of low demand for loans, more stringent credit requirements, or a readiness for potential challenges. Hence the relation between liquidity and subsequent credit growth is purely an empirical issue and requires interpretation in the light of the definition of credit and the time of measurement.

Iraq provides a context to examine bank listed balance-sheet position, based on publicly disclosed, audited statements. The International Monetary Fund (2025) links financial-sector reforms in Iraq and improved private banking intermediation. The

exchange offers an observable universe that can be used to gauge coverage. The study of conventional banks in that universe also helps to compare the direct-credit items already audited and mitigate the differences that may be caused by business models. The settings are appropriate for a within bank study that is transparent, provided that similar statements are available.

The research question is that does the end of the year accounting liquidity relate to the change in a bank's net direct credit over the next year? The analysis contributes to three aspects. It matches the beginning and the end credit stocks from successive reporting years, records the proportion of the listed banks included in each starting year and traces an unusual change of credit back to the components of the audited notes. The net carrying amount can increase in several ways and the last step directly informs the interpretation of the outcome in an environment that a rise in the net carrying amount could occur.

Literature related and hypothesis

The explanation for the sharing of liquidity resources between deposits and loans is provided by Kashyap et al. (2002). Berger and Bouwman (2009) formalize the significance of assets and liabilities for liquidity creation by banks. Ivashina and Scharfstein (2010) and Cornett et al. (2011) illustrate the impact of banks' funding environment and their liquidity risk on lending during the global financial crisis. Their evidence can be used to gauge the relationship between liquid positions on their balance sheets and credit sustenability.

The association between lending and liquidity may vary in the case of observed holdings that are the result of regulatory restrictions or precautionary adjustment. Sundaresan and Xiao (2024) discover that required buffers can impact asset allocation and lending quantities at impacted banks. The accounting ratio examined herein is reported, and does not point to the impact of a regulatory change. Generally, separating borrower-side shocks from bank credit supply will necessitate matched lending data, as in Amiti and Weinstein (2018). The present panel describes changes in reported credit at bank level.

The primary hypothesis is that the higher the ratio of cash to central bank holdings at the end of the year, the larger the increase in net direct credit in the following year, given that bank and year fixed effects are taken into account. Precautionary cash accumulation and weaker demand are the other economic mechanisms. Empirical test is a two-tailed test.

Sample construction and data provenance

The reference population is the banks that are listed on the Iraq Stock Exchange in each year. Analytical scope deals with conventional commercial banking. When the institution is a conventional bank during the entire comparison period, public audited statements include both year-ends, and the reported items are consistent with comparable definitions of cash and central-bank balances, net direct credit and total assets. Additionally, controls must include shareholders' equity and (if appropriate) a comparable prior-year balance of customer deposits for deposits that are growing. Discontinuities and cases awaiting source reconciliation are not included in the respective specifications.

It's not a well-balanced panel. There are 38 eligible comparisons across the 12 different banks, from 2020-2023 to 2021-2024. Data from a 2019 deposit balance is entered in where needed to compute the growth for a 2020 starting observation. The Commercial Bank of Iraq provides comparisons prior to transition to Islamic banking. Table 1 shows the all bank denominator for each year (including Islamic banks). Each year's numerator represents banks in the analytical sample for that year. The source denominator for each year is in Appendix B.

Table 1. Listed-bank population and sample coverage

Starting year	All listed banks	Sample banks	Coverage	With deposit growth
2020	42	6	14.3%	1
2021	44	11	25.0%	6
2022	43	10	23.3%	10
2023	42	11	26.2%	10
2024	43	—	—	—

Source. Iraq Stock Exchange monthly bulletin and Iraq Securities Commission annual reports, listed in Appendix B. The 2024 count gives end-year context. The 2024 filings provide ending credit for 2023 comparisons.

Table 2. Banks and starting years of eligible credit comparisons

Bank	Starting years	Comparisons
Al-Mansour Bank for Investment	2020, 2021, 2022, 2023	4
Ashur International Bank for Investment	2021, 2022, 2023	3
Bank of Baghdad	2020, 2021, 2022, 2023	4
Commercial Bank of Iraq	2020, 2021	2
Erbil Bank for Investment and Finance	2021, 2022, 2023	3
Gulf Commercial Bank	2020, 2021, 2022, 2023	4
International Development Bank	2020, 2021, 2022, 2023	4
Iraqi Middle East Investment Bank	2023	1
National Bank of Iraq	2020, 2021, 2022, 2023	4
Region Trade Bank for Investment and Finance	2021, 2022, 2023	3
Trans Iraq Bank for Investment	2021, 2022, 2023	3
United Bank for Investment	2021, 2022, 2023	3

Source. Calculations from audited annual financial statements. Appendix A identifies the filings. The replication materials provide the source values and code.

Audited statements are a component of the sample design, and a limitation of external validity. The coverage ratios refer to the availability of observations in the banking sector mentioned. The nature of the reporting or the operating condition or balance-sheet structure of banks that issue similar statements may be different from the others. No weights are used to adjust the sample. The comparison is done within bank, and generally the same basis of reporting is used year after year (when the comparisons can be made) although the scope of consolidation may vary between banks.

In doing this, the curriculum covers the following areas:

Measurement and empirical design

The dependent variable is the percentage change in the net carrying amount of direct credit audited at the end of each year. Net direct credit is the credit balances of loans and direct facilities with the necessary adjustments in each financial statement. If the notes differentiate between the deposits of customers and the amounts placed by

other banks, the customer item would be used for the deposit-growth control. All amounts stated in thousands of Iraqi dinars are converted to Iraqi dinars prior to calculating size and any cross filing growth rate

$$Growth_{i,t+1} = \frac{NetCredit_{i,t+1}}{NetCredit_{i,t}} - 1 \quad (1)$$

The liquidity ratio is calculated by dividing the liquidity items (cash and balance with central bank) on the balance sheet by total assets. Unless otherwise indicated, holdings at other financial institutions are not included. The measure could include balances for settlement or under reserve requirements. Therefore, it is a measure of accounting liquidity instead of an estimate of readily available funds.

$$Liquidity_{i,t} = \frac{CashAndCentralBank_{i,t}}{Assets_{i,t}} \quad (2)$$

The extended controls consist of shareholders' equity divided by total assets, the natural log of total assets in Iraqi dinars and the year-on-year growth rate for customer deposits from the beginning of the year. The fixed-effects models involve comparing the same bank in different starting years and eliminating year effects from the models.

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$$Growth_{i,t+1} = \alpha_i + \delta_t + \beta Liquidity_{i,t} + \gamma' X_{i,t} + \varepsilon_{i,t} \quad (3)$$

The first model includes the liquidity ratio and the fixed effects. The second introduces size and equity controls. The third is the same in terms of the sub-set where there is an observable deposit growth. The fourth adds that control to the same subset. This sequence shows the portion of the change in the reported coefficient that is associated with limiting the sample and the portion that is associated with the addition of the deposit-growth variable.

The two-sided restricted wild cluster bootstrap t test of a zero liquidity coefficient is used in the inference stage, where observations are clustered by bank and a common Rademacher sign is used for the observations within each bank (Cameron et al., 2008). For each specification the sign assignments are numbered for the clusters. The p-values are still very sensitive to the small number of informative clusters, and should be interpreted with this limitation. A bank with a single comparison would only be included in the sample size and would not add within-bank variation to the coefficient. Sensitivity exercises leave out one bank at a time and one by one leave out observations whose credit growth is more than 100% in value. The latter is just an exploratory check of extreme observations.

The input ledger specifies the source of the observations and the page and verification status of the source. The analytical panel is built using a deterministic Python script and the models and resampling test are executed. The quantitative workflow is reproducible from the data ledger with the accompanying files.

RESULTS

1. Distribution of liquidity and credit growth

Table 3. Descriptive statistics for the estimated panel

Variable	Mean	Median	Minimum	Maximum
Cash and central-bank balances / assets	39.2%	41.7%	4.5%	85.2%
Next-year net direct credit growth	19.2%	11.0%	-52.0%	217.3%
Shareholders’ equity / assets	38.7%	37.9%	12.6%	70.4%
Log assets in Iraqi dinars	27.52	27.39	26.65	29.01

Source. Calculations from audited annual financial statements. Appendix A identifies the filings. The replication materials provide the source values and code. N = 38. Each bank-year comparison receives equal weight.

The credit growth for next year is 19.2% on average versus 11.0% median. The range covers a contraction of 52.0% and an expansion of 217.3%. If the mean is higher than the median, then there is the possibility of having high-growth observations that will significantly influence the sample mean. With a low credit level at the outset, the size of the balance sheet also affects the percentage growth.

2. Liquidity coefficients and specification sensitivity

Table 4. Liquidity and next-year net direct credit growth

Specification	Liquidity coefficient	Wild p-value	Obs.	Banks
Bank and year fixed effects	0.882	0.394	38	12
Add size and equity controls	2.471	0.109	38	12
Size and equity, deposit-growth subset	1.756	0.113	27	11
Add deposit growth on the same subset	2.176	0.061	27	11
Size and equity, exclude extreme growth	0.918	0.146	35	12

Source. Calculations from audited annual financial statements. Appendix A identifies the filings. The replication materials provide the source values and code. All models include bank and starting-year fixed effects. The last row excludes observations with absolute growth above 100%.

With equity and size added the liquidity coefficient goes up to 2.47, for the same 38 comparisons. The second model indicates that a 1% rise in liquidity corresponds with 2.47% increase in the net direct credit growth in the following year. The p-value is 0.109. In a statistical sense, controlling for these two balance-sheet characteristics results in an estimated different slope in the comparison. Scale and equity aspects can go hand in hand with changes in portfolio funding or loss-absorption for the economy. In this specification comparison it is not clear which contribution each economic channel makes.

If the size and equity coefficient is calculated on the subset of comparisons for which there is actual growth in deposits, the coefficient before the deposit-growth control is 1.76 and after the control is 2.18. This difference, 2.47-1.76, is due to the fact that different observations are included in the two sets. This is added as the funding variable is added to the increase within the restricted sample. Deposits can provide capital and they can also adjust to the financial situation of the bank or changing requirements of the customers. The p-values of the other specifications are greater than 0.05 as well as the last complete specification's two-sided p-value of 0.061.

Estimated coefficients vary between 1.68 (when Trans Iraq Bank for Investment is omitted) and 3.49 (when United Bank for Investment is omitted) in the leave-one-bank-out check for the size-and-equity model. The sign is all positive in each iteration. The range indicates that the size varies according to the banks that are included. A p-value of 0.146 is obtained when the three comparisons of absolute growth greater than 100% are omitted. The checks as a whole suggest a greater degree of stability in the value of the estimates than in the sign.

3. What is the largest amount of credit that can be raised.

The most notable comparison is from United Bank for Investment's 2023–2024 comparison. The total direct credit increased from IQD 44.88 billion to IQD 142.42 billion. As indicated in note 7 of the 2024 report, the non-performing debt rose from IQD 0.00 billion to IQD 115.18 billion; the amount of balances indicated in the loans granted was reduced from IQD 120.22 billion to IQD 112.28 billion, and the amount of

balances indicated in the debit current accounts was reduced from IQD 20.10 billion to IQD 19.61 billion. Other changes to suspended interest and impairment allowances are also included. This is what makes it possible for a net increase in carrying amounts, even if substantial, not necessarily to be considered an expansion of new credit origination. The evidence documents the changes shown in the filing. It does not establish when the non-performing balances were originated or the reasons for changes in their reporting.

DISCUSSION

The positive coefficient is in line with the idea that a bank with an accounting liquidity position with greater size prior to the acquisition of new reported credit will have a higher coefficient. The pattern can also be achieved through changes in asset quality, changes in asset demand, and through changes in portfolios as well as existing financing arrangements. The estimates are based on stocks at the end of the year and the case reconciliation provides an explanation for the importance of origination, repayment, classification change and write-offs and allowances for interpretation. It has special significance if the expansion is happening in sub-optimal balances.

The evidence is exploratory because there are three reasons for this. First, fixed effects capture persistent differences between banks and fixed year effects, such that time-varying effects of bank or borrower conditions are still potential confounders. Second, the source availability decides coverage and can opt for banks that have different disclosure practises. Thirdly, the sample size is too small to conduct clustered inference, particularly in the 27-observation model where deposits grow. The analysis does not include an estimate of an out-of-sample prediction model. These restrictions limit the extent to which inferences can be made for other banks, other times and other regulatory actions.

Empirically, the results justify the consideration of bank liquidity ratios in conjunction with direct-credit notes, particularly with very high growth compared to the bank's initial portfolio. Origination, repayments, reclassifications and impairment movements by sector would be helpful to be separately published, and more years of harmonized reporting from the sector would be beneficial.

CONCLUSION

The audited panel demonstrates a positive but an uncertainly estimated relationship in terms of a lagged effect between accounting liquidity and next-year growth in net direct credit. There is variability in the magnitude depending on the balance-sheet controls and missing deposit history or extreme changes in credit. The largest growth in the size of the credit stock is a case in point: it shows a difference between the flow of new loans and the stock of credit. The scope of the results is identified by the coverage audit and report-level citations, which enable the accounting measurements and statistical estimates to be checked.

The data and code are available.Data and Code are available.

Public corporate disclosures and market reports have been used as sources of the study. The source documents and relevant pages of PDF documents are identified in Appendices A and B. Balances, input units, notes for checking and constructed variables are transcribed in the accompanying workbook. The replication archive includes the input ledger, the analysis script and instructions on how to replicate the results reported.

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