

Liquidity Management and Loan Growth Under Vision 2030: Evidence from Saudi Banks

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ABSTRACT

In April 2016, Saudi Arabia announced the Vision 2030 national reforms aimed at diversifying the economy and expanding credit to non-oil industry activities. Although the government designed these reforms to encourage banks to increase lending, the expectation is that these banks will also maintain their financial stability. This balance becomes increasingly complex during credit expansion driven by policy reform. To assess the success of these dual expectations, this study examines how liquidity management has affected loan growth in Saudi banks pre- and post-Vision 2030 implementation. To that end, it investigates whether the relationships among cash reserves, deposit utilization, and lending behavior have altered. Analyzing quarterly data from 10 Saudi banks between 2013 and 2019 (three years before and after the Vision 2030 implementation), the study employs a random-effects panel regression model with cluster-robust standard errors, using Stata and SPSS to examine the interactions between liquidity ratios and Vision 2030. The results reveal that the Cash-to-Deposit (CTD) ratio maintains a significantly negative relationship with loan growth throughout the study period, with no significant change in the interaction term—pre- and post-Vision 2030, Saudi banks continue to prioritize cash buffers to ensure liquidity safety. However, the effect of the Loan-to-Deposit (LTD) ratio on loan growth does shift from negative to positive following the reforms, indicating a successful transformation to improved deposit-to-loan efficiency. Overall, the findings suggest that the Vision 2030 financial reforms have improved Saudi bank lending efficiency without negatively impacting liquidity management.

Keywords: liquidity management, loan growth rate, vision 2030, loan-to-deposit ratio (LTD), cash-to-deposit ratio (CTD), saudi banks

1. INTRODUCTION

Bank lending plays a critical role in economic development, particularly in economies undergoing significant structural changes. Saudi Arabia's Vision 2030, announced in April 2016, represents an ambitious national reform program to diversify the economy and reduce oil dependency¹. The Financial Sector Development Program (2022) is central to this reform, aiming to enable sustainable financial sector growth and expand credit access to support non-oil industry activities². The program expects banks to expand their lending activities while still meeting financial stability requirements, creating a dilemma.

Liquidity management captures this fundamental challenge: banking institutions must balance having sufficient cash for immediate obligations while investing idle funds to generate profit. The Basel Committee on Banking Supervision identifies effective liquidity management as the ability to ensure obligations can be met (e.g., withdrawals) without jeopardizing solvency³. The complexity of this tradeoff increases during credit expansion driven by policy changes. Although increasing loans will generate greater profitability and support the Vision 2030's objectives, it also introduces risks—non-performing loans (NPLs) that constrain lending capacity. This tension between loan growth and

stability in the liquidity-lending relationship is particularly important in the Saudi context. With a better understanding of this dynamic, we can answer the question whether banks in Saudi Arabia can simultaneously support growth and maintain financial stability, both key to the program's success and sustainability.

This study makes two major contributions to the literature. First, although prior research examines liquidity management and loan growth in Saudi banks separately, no study has investigated how the relationship between these two dimensions has evolved under Vision 2030. This gap is significant because understanding this relationship is crucial for assessing whether the policy reforms achieve their intended effects. Our study fills this gap by empirically examining the Saudi Vision program's impact on the liquidity-lending relationship in Saudi banks. Second, the findings extend the broader literature on macroeconomic-policy reforms and bank behavior. Unlike general discussions on banking efficiency, we provide context-specific evidence from a major economic transformation program.

Specifically, we investigate whether Vision 2030 fundamentally alters the relationship between liquidity management and loan growth in Saudi banks. Accordingly, we assess whether the dynamics among cash reserves, deposit utilization, and lending behavior change following the Vision's implementation. Using

quarterly observations from 10 Saudi banks from 2013 to 2019, we employ a random-effects panel regression model with cluster-robust standard errors to analyze these relationships before and after Vision 2030.

The results show a clear shift in bank behavior. Although banks maintain conservative cash buffers throughout the period, they improve their efficiency in transforming deposits into loans after Vision 2030, as evidenced by the loan-to-deposit (LTD) ratio's transformation from an insignificant to a significantly positive determinant of loan growth. Thus, Vision 2030 is enhancing lending efficiency without jeopardizing liquidity.

This is particularly important for policymakers, as it confirms that banking reforms can influence behavior in the desired directions without risking instability. For financial institutions, the results reveal how deposits can be utilized without affecting liquidity soundness. More broadly, we provide insights into how economic structural transformation plans can increase efficiency without impacting liquidity safety.

The remainder of this paper is organized as follows. Section 2 reviews relevant literature and presents the hypotheses. Section 3 describes the data, methodology, and model specifications. Subsequently, Section 4 reports and discusses the empirical findings. Finally, Section 5 concludes the paper with policy implications and directions for future research.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Liquidity Management Strategies in Banks. Prior studies have employed the LTD ratio as a proxy for liquidity risk because it captures the percent of a bank's deposits being actively applied to loans^{4,5}. Correspondingly, the cash-to-deposit (CTD) ratio captures a bank's ability to meet unexpected withdrawal demands. Notably, despite the typical positive association between lending activity and profitability, Saudi banks have demonstrated an inverse relationship between LTD and profitability, as literature suggests⁵. This dynamic may stem from the increased likelihood that banks need costly short-term funding as they decrease their CTD and increase their lending intensity⁵. Thus, the balance between loans and liquidity is vital for a bank's success.

These ratios are usually discussed in the context of financial risk management; however, their implications extend beyond that. They also indicate a bank's lending growth and potential contribution to economic development, dimensions that remain underexplored in the Saudi context.

2.2. Lending Growth and Bank Behavior. A bank's lending growth is determined by its capital and liquidity buffers⁶. The weaker its balance sheet measures, including deteriorating asset quality, the lower its credit supply and the weaker its contribution to economic growth⁷. In this regard, researchers emphasized that effective liquidity management is also critical to managing loan extensions⁸.

Although more profitable banks also show greater lending growth⁹, this relationship is not always guaranteed. Research demonstrates that regulations, liquidity management, and risk also affect loan growth¹⁰. Banks are tempted to extend more loans to generate more profit; nonetheless, as they reach a certain

threshold, the risk of loan default increases. These defaults, classified as NPLs, constrain banks from over-lending. To mitigate these risks, banks establish provisions and lending conditions that limit their ability to engage in lucrative but risky activities^{10,11}.

Empirical studies have demonstrated that high NPL ratios restrict bank lending, especially when accompanied by poor asset quality and small bank size. Conversely, larger banks generally have more stable funding sources and diversified portfolios, which enhance their lending growth⁸. Nguyen and Le¹² find a significant positive relationship between profitability and loan extensions in Southeast Asia—profitability is an outcome and a driver of credit extension.

Collectively, these findings suggest that risk, profitability, and bank size interact with liquidity management to determine a bank's credit extension capacity. This interaction becomes particularly relevant under transformative macroeconomic reforms.

2.3. Macroeconomic and Vision 2030 Context.

Despite the Saudi Central Bank's efforts to adopt and apply countercyclical policies, including countercyclical lending, various studies have concluded that lending behavior in Saudi Arabia and other Gulf Cooperation Council countries remains procyclical^{7,13}. During economic expansion, banks tend to increase credit supply, whereas contraction leads to credit tightening, amplifying cyclical fluctuations. This underscores the need for national reforms such as Vision 2030, as well as studies that examine the drivers and determinants of lending behavior.

Saudi Vision 2030 aims to diversify the economy by shifting GDP dependence from oil to non-oil industries. To achieve this, the Vision targets expanding lending to the private sector. Specifically, banks are expected to increase the financing for small and medium enterprises (SMEs) from 5.7% in 2019 to 20% by 2030¹⁴. Consistent with these ambitions, the Saudi Arabian Monetary Agency (SAMA) increased the maximum LTD ratio from 85% before the Vision program's implementation to 90% afterward^{15,16}. Additionally, the government injected SAR 20 billion in 2016 and SAR 50 billion in 2022 in the form of government-related deposits to enhance banking sector liquidity¹⁷.

2.4. Hypotheses Development. As noted, liquidity management requires the balancing of two contrasting goals: maintaining sufficient liquidity buffers to meet unexpected withdrawals and profitably deploying idle funds through investment opportunities¹⁸. This tradeoff is central to financial intermediation theory, which posits that banks create value by transforming liquid deposits into illiquid loans while managing maturity mismatches¹⁹. Hence, effective liquidity management is essential for stability and profitability.

Financial regulatory changes have been designed to influence bank lending even before the Vision 2030 program; for example, SAMA has made prior adjustments to liquidity requirements to influence bank lending¹⁵. Given the demonstrated influence of regulatory changes on bank behavior, Vision 2030's reforms, including the increase in maximum LTD ratios from 85% to 90%, are expected to significantly alter the liquidity-lending relationship.

Liquidity measures capture a bank's exposure to risk along with its ability to extend credit¹⁶. Banks with higher LTD ratios

are more efficient at transforming deposits into loans⁵; and banks with strong credit risk management and stable financing structures have higher LTD ratios. Conversely, banks with lower LTD ratios are inefficient at using their deposits. Thus, banks with higher LTD ratios are expected to have stronger loan growth; and this relationship is expected to improve further under Vision 2030's credit-expansion goals. As such, we posit the following:

H1: The LTD ratio has a positive and significant effect on bank loan growth, and this effect is stronger after the implementation of the Vision 2030 program.

Although cash buffers preclude short-term insolvency, they also may restrict lending activity. Rauch et al.¹⁸ and Hacini et al.⁵ indicate that banks with excessive cash reserves experience lower profitability due to the opportunity cost of idle cash. This negative relationship between cash holdings and profits stems from a precautionary liquidity strategy: banks hold cash to guard against unexpected withdrawals, but this precaution constrains their lending capacity and profits²¹. Although increased profitability typically drives loan growth¹², Saudi banks need to maintain prudent cash buffers to meet the country's stringent regulatory requirements and ensure financial stability¹⁶. Given these constraints, a higher CTD is expected to constrain loan growth regardless of Vision 2030's credit expansion objectives. Therefore, we posit the following.

H2: The CTD ratio has a negative and significant effect on bank loan growth, and this relationship remains consistent before and after Vision 2030 program implementation.

3. DATA AND METHODOLOGY

3.1. Sample Selection. To test our hypotheses, we gather data on 10 Saudi banks with available financial data on Argam, a financial data platform that provides investors with comprehensive financial and macroeconomic information. As the Vision program was announced in April 2016, to examine the pre- and post-Vision periods, we analyze quarterly records spanning 2013 to 2019. As approximately five months of 2016 preceded the Vision announcement and policy implementation typically involves a lag, all 2016 data are classified as pre-Vision. This classification yields quarterly observations from Q1 2013 to Q4 2019, resulting in 280 bank-quarter observations. We use STAT, SPSS, and G-Power for our analyses.

3.2. Model Specification and Variable Measures. To examine how liquidity-management affects bank loan growth under Vision 2030, our regression model includes the following components.

The dependent variable is quarterly loan growth, calculated as follows:

$$\text{Loan Growth}_{it} = (\text{Net Loans}_{it} - \text{Net Loans}_{it-1}) / \text{Net Loans}_{it-1}$$

This measure captures the percentage change in net loans from the previous quarter and provides a dynamic view of a bank's lending growth. Loan growth reflects a bank's capacity and willingness to extend credit, as banks that successfully expand lending in one period generate profits that enable further credit extension in subsequent periods through retained earnings reinvestment¹².

Liquidity management is captured using two complementary variables. The LTD ratio measures how efficiently banks convert deposits into loans. This is widely recognized as an indicator of liquidity efficiency²². It is calculated as follows:

$$\text{LTD}_{it} = \text{Net Loans}_{it} / \text{Total Deposits}_{it}$$

Second, the CTD ratio is employed to measure the proportion of deposits held as a cash buffer, indicating a bank's ability to meet short-term obligations⁵. CTD is calculated as follows:

$$\text{CTD}_{it} = \text{Cash}_{it} / \text{Total Deposits}_{it}$$

Together, these ratios provide a comprehensive assessment of a bank's liquidity management strategies⁵.

We also include several control variables that may affect bank lending behavior independent of liquidity management and Vision 2030 effects. Bank size influences loan growth through scale effects. Larger banks typically have more branches, which attract more deposits and enable higher absolute lending volumes. Although the loan growth rate captures percentage changes regardless of bank size, it does not account for growth attributable to mergers, acquisitions, or organic expansion unrelated to liquidity management or Vision 2030. Therefore, we include the logarithm of total assets as a proxy for bank size^{20,23}. We measure profitability using return on assets (ROA). More profitable banks have greater earnings to reinvest, which cumulatively enhances their credit supply^{20,24}. Credit risk is measured by the ratio of NPLs to total loans, capturing loan portfolio quality. Higher NPL ratios reflect weaker loan quality and signal that in subsequent periods, banks' ability to extend loans could be limited if their profitability declines due to loan losses^{20,25,26}. Finally, we control for macroeconomic factors using the real GDP growth rate, which captures the influence of national economic cycles on bank lending behavior²⁰.

Thus, incorporating the measures above, our final model is as follows:

$$\begin{aligned} \text{Loan Growth}_{it} = & \beta_0 + \beta_1 \text{CTD}_{it} + \beta_2 \text{LTD}_{it} + \beta_3 \text{Vision2030}_{it} \\ & + \beta_4 (\text{CTD} \times \text{Vision2030})_{it} + \beta_5 (\text{LTD} \times \text{Vision2030})_{it} + \beta_6 \text{NPL} \\ & \text{Ratio}_{it} + \beta_7 \text{ROA}_{it} + \beta_8 \log(\text{Total Assets})_{it} + \beta_9 \text{GDPGrowth}_{it} \\ & + u_i + \varepsilon_{it} \end{aligned}$$

4. EMPIRICAL FINDINGS

4.1. Descriptive Statistics. Table 1 presents the descriptive statistics for the full sample and subsamples corresponding to the pre- and post-Vision periods. As noted, the sample comprises 280 bank-quarter observations: 160 pre-Vision period and 120 post-Vision. The descriptive statistics reveal that, on average, loan growth declines from 2.4% to 1.3%, representing a 1.1 percentage point decrease. Notably, this appears inconsistent with several concurrent economic trends. First, Saudi house ownership increases by 16.7 percentage points from 2016 to 2023²⁷, which, according to Hariri²⁸, implies increased mortgage lending. Second, Saudi Arabia has launched multiple programs to increase bank financing for SMEs, which should increase aggregate lending. These apparent contradictions require further analysis to examine how Vision 2030 alters the relationship between liquidity management and loan growth.

Although mean loan growth declines, the maximum value indicates that at least one bank has been able to sustain substantial lending expansion. This heterogeneity in loan growth

Table 1. Summary statistics

	Full Sample (n=280)					Before Vision 2030 (n=160)					After Vision 2030 (n=120)					Differences in mean	
V2030	Mean	SD	Min	Median	Max	Mean	SD	Min	Median	Max	Mean	SD	Min	Median	Max		
Inloangrowth	0.02	0.04	-0.07	0.02	0.34	0.02	0.03	-0.07	0.03	0.11	0.01	0.04	-0.06	0.01	0.34	-0.01	***
Cash-to-Deposit	0.06	0.01	0.03	0.05	0.10	0.056	0.01	0.03	0.05	0.10	0.055	0.01	0.03	0.05	0.10	-0.001	
Loan-to-Deposit	0.42	0.04	0.30	0.42	0.57	0.41	0.04	0.30	0.42	0.57	0.43	0.02	0.38	0.43	0.47	0.02	***
NPL Ratio	0.01	0.01	0.00	0.01	0.06	0.012	0.01	0.00	0.01	0.04	0.017	0.01	0.01	0.01	0.06	0.005	***
ROA	0.02	0.01	-0.04	0.02	0.04	0.019	0.01	0.00	0.02	0.04	0.017	0.01	-0.04	0.02	0.04	-0.002	**
Assets Log	5.17	0.29	4.50	5.23	5.70	5.14	0.30	4.50	5.22	5.68	5.21	0.27	4.76	5.24	5.70	0.07	**
lnGDP	27.35	0.05	27.23	27.35	27.45	27.31	0.04	27.23	27.32	27.39	27.39	0.03	27.35	27.39	27.45	0.08	***

Note: =** p<0.10 ** p<0.05 *** p<0.01"

across these 10 banks may be attributed to differences in their size and profitability. Banks benefit from economies of scale until costs (including NPLs) escalate sufficiently to erode profitability. Thus, banks may prefer to maintain stable lending volumes rather than pursue aggressive growth.

The two liquidity management variables reflect divergent patterns across the pre- and post-Vision periods. The CTD ratio maintains a relatively stable average (5.6% pre-Vision vs. 5.5% post-Vision), demonstrating the persistence of Saudi banks' stringent liquidity buffer practices. This stability suggests that, despite Vision 2030's emphasis on credit expansion, financial stability and prudential standards remain paramount regulatory priorities for these banks. Conversely, the LTD ratio increases by two percentage points (from 41% to 43%), indicating improved deposit-to-loan transformation efficiency, consistent with Vision 2030's lending objectives.

The increase in NPLs from 1.2% to 1.7% is also consistent with expectations when banks expand lending, as rapid credit growth often accompanies deteriorating loan quality²⁹. Correspondingly, as NPLs represent profit loss, the decrease in ROA from 1.9% to 1.7% is consistent with the deterioration in asset quality.

Table 2 presents the correlation matrix for all variables in the model. The correlations range from small to moderate in size, with no coefficients exceeding levels indicating multicollinearity concerns. Notably, the correlation between CTD and loan growth is -0.089, while the correlation between LTD and loan growth is -0.057. Both correlations are weak and statistically insignificant—the unconditional relationships between liquidity

measures and loan growth are modest. However, these bivariate correlations do not account for control variables or interaction effects with Vision 2030, which we examine in the following multivariate regression analysis.

4.2. Multivariate Analysis. Following Hacini et al.⁵ and Kim and Sohn²⁰, our panel regression model applies random-effects and cluster-robust standard errors at the bank level to examine the relationship between liquidity management and loan growth, accounting for potential within-bank correlation of errors. Quarter dummy variables are included to control time-varying factors.

We conduct two specification tests to determine the appropriate model structure. First, the Breusch-Pagan Lagrange Multiplier (LM) test was conducted to determine whether a pooled OLS or random-effects model is appropriate. Notably, the random-effects model is more suitable than the pooled OLS one. Second, we conduct the Hausman test to compare fixed- and random-effects specifications, confirming the appropriateness of the random-effects model, which we then employ.

As noted, our dependent variable is quarterly loan growth; the key explanatory variables, CTD and LTD ratios, are interacted with Vision 2030 dummy variables (CTD×V2030 and LTD×V2030); and we control credit risk, bank profitability, bank size differences, and macroeconomic conditions.

We estimate four nested model specifications that progressively introduce Vision 2030-related variables to examine how policy reform alters the liquidity-lending relationship. Model 1 establishes a baseline, estimating the unconditional relationship

Table 2. Correlation matrix

	ln loan growth	Cash to Deposits	Loan to Deposits	V2030	NPLRatio	ROA	Assets Log	ln GDP
ln loan growth	1.0000							
Cash-to-Deposit	-0.0891	1.0000						
Loan-to-Deposit	-0.0576	-0.2887*	1.0000					
V2030	-0.1616*	-0.0387	0.2235*	1.0000				
NPL Ratio	0.0057	0.0350	-0.2058*	0.3107*	1.0000			
ROA	0.0419	0.0688	-0.0552	-0.1310	-0.2492*	1.0000		
Assets Log	-0.1854*	0.1673*	-0.2521*	0.1233	0.0204	0.2810*	1.0000	
ln GDP	-0.2598*	-0.1699*	0.2104*	0.7121*	0.2077*	-0.2639*	0.1601*	1.0000

Table 3. Interaction effect of liquidity management and Vision 2030 on the loan growth rate

	Model 1	Model 2	Model 3	Model 4
Constant	0.745 (1.065)	-11.93** (4.970)	0.0887*** (0.0281)	-11.47** (4.857)
Cash-to-Deposit	-0.275*** (0.0986)	-0.275*** (0.0986)	-0.457*** (0.163)	-0.334** (0.152)
Loan-to-Deposit	-0.0772 (0.0500)	-0.0772 (0.0500)	-0.0340 (0.0536)	-0.103** (0.0412)
V2030		-0.102*** (0.0378)	-0.0868* (0.0499)	-0.170*** (0.0288)
CTD×V2030			0.416 (0.261)	0.187 (0.163)
LTD×V2030			0.109 (0.0996)	0.142** (0.0567)
NPL Ratio	-0.824*** (0.193)	-0.824*** (0.193)		-0.828*** (0.208)
ROA	0.356 (0.226)	0.356 (0.226)		0.336 (0.226)
Assets Log	-0.0230* (0.0131)	-0.0230* (0.0131)		-0.0243* (0.0127)
lnGDP	-0.0193 (0.0407)	0.446** (0.182)		0.430** (0.178)
Observations	280	280	280	280

Notes: *, **, and *** represent significance at 0.10, 0.05, and 0.01 levels, respectively. Standard errors are in parentheses.

between liquidity management and loan growth, including all control variables but excluding Vision 2030 indicators. Model 2 introduces the Vision 2030 dummy variable to capture the average change in loan growth associated with policy reform but does not attribute these changes to specific liquidity management measures. Model 3 includes the Vision 2030 dummy and interaction terms (CTD×V2030 and LTD×V2030) but excludes all control variables to isolate Vision 2030 effects. Model 4 is our preferred specification, incorporating all liquidity variables, Vision 2030 indicators, interaction terms, and control variables to assess the policy's impact on the liquidity-lending relationship comprehensively.

The results reveal substantial differences in how liquidity management affects loan growth before and after Vision 2030. In the baseline Model 1 (which pools pre- and post-Vision periods), CTD has a statistically significant negative relationship with loan growth (coefficient -0.275, $p < 0.01$), whereas LTD is statistically insignificant. The CTD coefficient indicates that a one percentage point increase in the CTD ratio is associated with a 27.5 percentage point decrease in quarterly loan growth, consistent with the opportunity cost of holding cash rather than extending loans.

Model 4, our preferred specification, reveals more nuanced dynamics. In the pre-Vision period, CTD and LTD have statistically significant negative coefficients (CTD = -0.334, $p < 0.05$; LTD = -0.103, $p < 0.05$). However, there is a striking transformation in the LTD effect in the post-Vision period. The LTD×V2030 interaction term is positive and statistically significant (coefficient +0.142, $p < 0.05$)—the total LTD effect in the post-Vision period is +0.039 (-0.103 + 0.142), shifting from negative to positive. This reversal confirms that Vision 2030 is improving the banks' abilities to transform deposits into loans, consistent with the policy's credit objectives. The statistical insignificance of LTD in Model 1 can now be understood as the opposing effects of LTD before and after Vision 2030, canceling each other out in the pooled sample.

Contrary to the LTD dynamics, the CTD×V2030 interaction term is statistically insignificant in Model 4 (coefficient 0.187, $p > 0.10$), with the CTD main effect remaining consistently and significantly negative across all model specifications. This stability indicates that the negative relationship between cash holdings and loan growth remains unchanged throughout the pre- and post-Vision periods. This suggests that Vision 2030's credit expansion objectives have not compromised prudential liquidity standards, as these banks continue to maintain conservative cash buffers consistent with the regulatory requirements for financial stability.

5. CONCLUSIONS

This study examines whether and how Saudi Vision 2030 has altered the relationship between liquidity management and bank lending growth by analyzing quarterly data from 10 Saudi banks from 2013 to 2019. The findings reveal that the Vision 2030 program implementation has significantly altered the relationship between liquidity management and bank lending growth. Throughout the study period, banks with higher cash reserves experience slower loan growth, reflecting the opportunity cost of holding cash rather than that of extending loans. This relationship remained consistently negative before and after its implementation—these banks maintained prudent liquidity buffers even amid the Vision's credit expansion implementation. The insignificant change in the CTD effect demonstrates the persistence of conservative liquidity management practices and suggests that prudential standards remain paramount, despite policy reforms aimed at credit expansion.

However, Vision 2030 fundamentally transformed the relationship between the LTD ratio and loan growth. While this relationship is negative in the pre-Vision period, it is positive following the policy reforms, indicating an enhanced deposit-to-loan

transformation efficiency. This demonstrates that Vision 2030 has successfully encouraged banks to use deposits more effectively for lending while maintaining conservative cash buffers. Thus, our findings confirm the success of Saudi Arabia's dual goals of expanding credit access and ensuring financial stability.

This has important implications for policymakers and financial regulators. The results demonstrate that well-designed macroeconomic reforms can alter the liquidity-lending relationship in intended directions without compromising prudential standards. Specifically, Vision 2030's regulatory changes, such as increasing the maximum LTD ratio from 85% to 90%, along with strategic liquidity injections, successfully encouraged banks to use their deposits more efficiently for lending. The unchanged CTD effect confirms that credit expansion objectives can be achieved while maintaining conservative liquidity buffers required for financial stability. These implications are relevant for other emerging economies undertaking similar economic diversification, demonstrating that targeted policy interventions can reshape bank behavior and preserve financial system resilience.

Although our study makes an important contribution by providing the first empirical evidence of Vision 2030's impact on the liquidity-lending relationship in Saudi banks, there are several limitations that warrant mention. First, we examine a relatively short period (2013–2019), covering only three years before and after the Vision's program announcement, which may not fully capture the long-term effects of reforms that unfold through 2030. Second, the sample comprises only 10 banks, which, while representing a substantial portion of the Saudi banking sector, may not fully account for potential differences between Islamic and conventional banking models. Third, we did not address any potential endogeneity concerns arising from simultaneity and omitted variable bias through instrumental variable or dynamic panel methods—reverse causality between liquidity management and loan growth cannot be ruled out. Finally, our sample period ends in 2019, immediately before the COVID-19 pandemic, which significantly disrupted financial markets and may have affected the sustainability of Vision 2030's effects during the economic crisis.

Future research could enhance these findings by extending the analysis to include post-pandemic data, expanding the sample to differentiate between banking types, and employing more sophisticated econometric techniques, such as the system generalized method of moments to address endogeneity. Additionally, future studies could investigate the mechanisms through which Vision 2030 alters bank behavior, including the roles of regulatory changes, government liquidity injections, and changes in credit demand. Such research would provide a more comprehensive understanding of how transformative national policies affect banking sector behavior and contribute to economic diversification goals.

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