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THE EFFECT OF MACROECONOMIC FACTORS ON FINANCIAL STABILITY: EVIDENCE FROM UZBEKISTAN

Khurazov Islom Umar ugli
Lecturer, "Corporate Finance and Securities" Department,
Tashkent State University of Economics, Uzbekistan
Email: i.khurazov@tsue.uz

Abstract

This study examines the impact of key macroeconomic factors: inflation, real interest rate, and commodity price volatility on financial stability in Uzbekistan during 2013-2024. Financial stability is proxied by the credit-to-GDP ratio, and the analysis applies a multiple linear regression model with heteroskedasticity-robust (HC3) standard errors. Data were sourced from the World Bank, IMF, and the World Bank's Pink Sheet Commodity Price Data.

The results indicate that the real interest rate has a positive and statistically significant effect on financial stability, suggesting that tighter monetary policy enhances credit discipline and risk management. In contrast, inflation and commodity price volatility are statistically insignificant but follow the expected theoretical directions. These findings are consistent with the Central Bank of Uzbekistan's Financial Stability Report (2024), which highlights that monetary tightening improved banking sector resilience while moderating credit growth.

The study concludes that Uzbekistan's financial stability is mainly influenced by prudent monetary policy and institutional reforms, while external vulnerabilities persist through commodity dependence. It recommends strengthening macroprudential tools, deepening financial markets, and promoting economic diversification to ensure long-term financial stability.

Keywords: Financial Stability; Real Interest Rate; Inflation; Commodity Price Volatility; Credit-to-GDP Ratio.

Introduction

Financial stability broadly refers to a condition in which the financial system - banks, markets, and institutions - can withstand shocks, allocate resources efficiently, and support economic growth without excessive volatility or systemic crises. A stable financial system effectively manages credit, liquidity, market, and operational risks, ensures that counterparties meet their commitments, and prevents idiosyncratic shocks from spreading contagiously across the system. Macroeconomic factors play a critical role in shaping financial stability. Inflation, interest rates, exchange rates, external volatility, and commodity prices influence borrowers' repayment capacity, banks' profitability and funding conditions, and the transmission of external shocks. For instance, high and volatile inflation erodes real income and increases default risk; elevated real interest rates raise borrowing costs, potentially constraining credit growth or incentivizing riskier lending; and commodity price swings can weaken export revenues, fiscal balances, and corporate solvency in commodity-dependent economies.

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In transition and emerging economies, achieving financial stability poses greater challenges due to shallower financial markets, evolving institutional capacity, and heightened external vulnerabilities. Policymakers must balance the need for stability with that of financial deepening and economic growth - often referred to as the "stability-growth trade-off." In this context, macroprudential tools, stress testing frameworks, and central bank autonomy emerge as essential complements to traditional monetary policy.

The Central Bank Law of 2019 reinforced the central bank's autonomy and formalized its core mandates of price stability and banking sector supervision. Concurrently, the government adopted the Banking Sector Reform Strategy, designed to privatise state-owned commercial banks and transition them toward competitive, market-oriented operations. In 2023, the Central Bank of Uzbekistan (CBU) implemented Guidelines on Risk-Based Supervision (GRBS), further enhancing supervisory capacity and aligning oversight practices with international standards.[1]

In June 2025, President Shavkat Mirziyoyev also emphasised the importance of financial stability in the development of Uzbekistan's economy: "The financial system and technologies are drastically changing in the modern world. Recently, together with the International Monetary Fund and the World Bank, we conducted a comprehensive assessment of Uzbekistan's financial sector for the first time. They fully supported our reforms in banking, finance, insurance, and the capital market. To take these sectors to the next stage of development, a Financial Stability Council will be established in Uzbekistan, as well as cybersecurity and financial technology platforms at the Central Bank."[2]

International institutions have also commended Uzbekistan's reform drive. In the 2025 Article IV Consultation, the IMF noted that real GDP growth remained strong (6.5 per cent in 2024), supported by narrowing fiscal and current account deficits and ample reserves.[3] It is projected that inflation would gradually moderate under tight macroeconomic and macroprudential policies, targeting the CBU's 5 per cent inflation target by the end of 2027.[4] The IMF also encouraged the CBU to monitor emerging financial stability risks, introduce additional capital buffers when necessary, and strengthen risk-based supervision, particularly in the rapidly expanding micro-lending sector.[5]

Meanwhile, the IMF's Financial Sector Assessment Program (FSAP) for Uzbekistan - its first such program - acknowledged significant progress in institutional and operational reforms, while

[1] Republic of Uzbekistan: Financial Sector Assessment Program-Detailed Assessment of Observance-Basel Core Principles for Effective Banking Supervision, IMF staff country reports, August 8, 2025 - https://www.imf.org/en/Publications/CR/Issues/2025/08/08/Republic-of-Uzbekistan-Financial-Sector-Assessment-Program-Detailed-Assessment-of-569475 -

[2] Address by the President of the Republic of Uzbekistan Shavkat Mirziyoyev at the Fourth Tashkent International Investment Forum, 10 June 2025 - https://president.uz/en/lists/view/8203

[3] IMF Executive Board Concludes 2025 Article IV Consultation with the Republic of Uzbekistan, Press release No. 25/206, 18 June 2025 - https://www.imf.org/en/News/Articles/2025/06/18/pr-25206-uzbekistan-imf-executive-board-concludes-2025-article-iv-consultation

[4] Republic of Uzbekistan: 2025 Article IV Consultation-Press Release; and Staff Report, IMF staff country reports, 24 June 2025 - https://www.imf.org/en/Publications/CR/Issues/2025/06/23/Republic-of-Uzbekistan-2025-Article-IV-Consultation-Press-Release-and-Staff-Report-567977

[5] Uzbekistan: Staff Concluding Statement of the 2025 Article IV Mission, Mission concluding statement, 23 April 2025 - https://www.imf.org/en/News/Articles/2025/04/23/mcs-042325-uzbekistan-staff-concluding-statement-of-the-2025-article-iv-mission

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recommending further efforts to reduce state-directed lending, enhance systemic risk analysis, and expand macroprudential policymaking capacity.[6]

Thus, Uzbekistan presents a compelling case of a reforming emerging economy striving to strengthen financial stability under global uncertainties. This article contributes to that discourse by empirically examining how macroeconomic

Methodology

This study employs a quantitative regression analysis to examine the impact of key macroeconomic factors, namely inflation, real interest rate (RIR), and commodity price volatility (oil, gold, and copper), on financial stability in Uzbekistan. Financial stability is proxied by the credit-to-GDP ratio, reflecting the depth, resilience and sustainability of financial intermediation within the economy.

The analysis uses annual data from 2013-2024. The credit-to-GDP ratio is sourced from the World Bank's World Development Indicators; inflation data are taken from the IMF World Economic Outlook; and the real interest rate from the World Bank. Commodity prices for oil, gold, and copper are derived from the World Bank's "Pink Sheet" (World Bank Commodities Price Data).

The empirical model follows a multiple linear regression framework, specified as:

$$\text{Credit to GDP\_t} = \alpha + \beta 1 \times \text{Inflation\_t} + \beta 2 \times \text{RIR\_t} + \beta 3 \times \text{ Oil Volatility\_t} + \beta 4 \times \text{Gold Volatility\_t} + \beta 5 \times \text{Copper Volatility\_t} + \varepsilon\text{\_t}$$

The model is estimated using heteroskedasticity-robust (HC3) standard errors to ensure consistent and unbiased inference. Commodity price volatility is calculated as the rolling standard deviation of annual price changes (year-on-year returns) using a two-year window. This methodological framework allows the study to assess how macroeconomic fluctuations and external shocks influence Uzbekistan's financial stability amid ongoing monetary and structural reforms.

Main body

The stability of the global financial system in recent years has been shaped by persistent inflationary pressures, geopolitical fragmentation, and the tightening of global monetary policy. According to the International Monetary Fund (IMF, 2024), the synchronised increase in interest rates across major economies, designed to counter inflation, has heightened financial fragility by increasing borrowing costs and depressing asset valuations. The Global Financial Stability Report (IMF, 2024) highlights that global credit growth has slowed, while debt servicing burdens have risen, posing systemic risks, particularly in emerging market economies.

[6] Republic of Uzbekistan: Financial Sector Assessment Program-Financial System Stability Assessment, IMF staff country reports, 24 June 2025 - https://www.imf.org/en/Publications/CR/Issues/2025/06/23/Republic-of-Uzbekistan-Financial-Sector-Assessment-Program-Financial-System-Stability-567987

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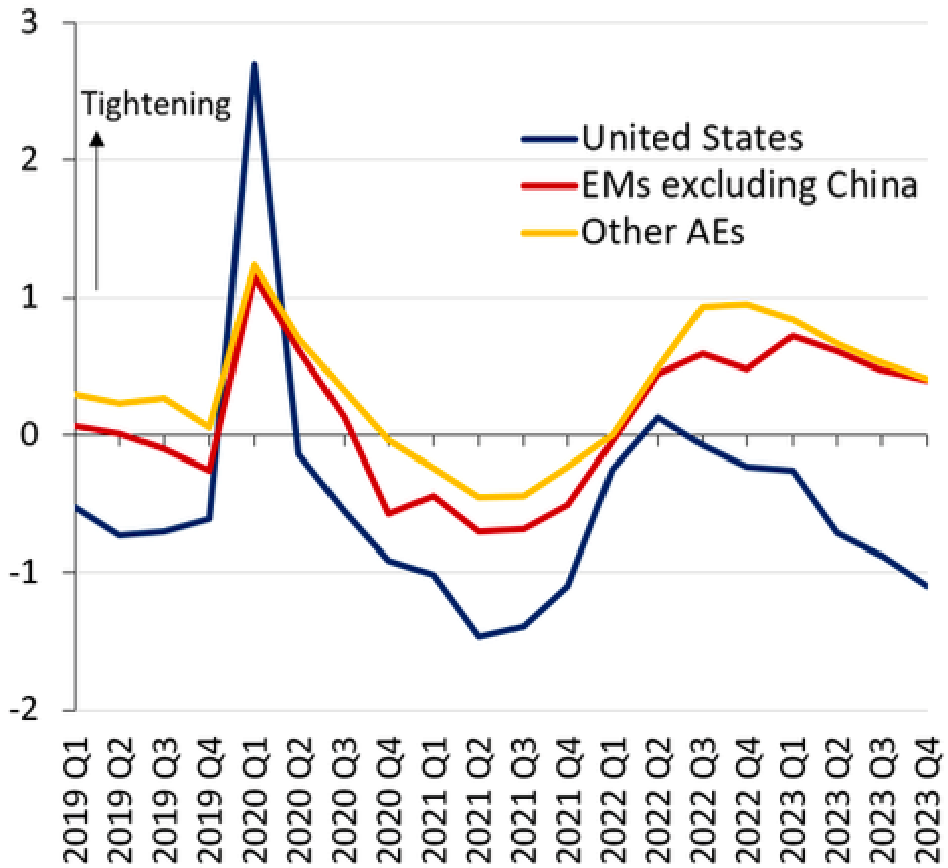

Figure 1. Global Financial Conditions Index (standard deviation from average) [7]

Figure 1 illustrates the Global Financial Conditions Index (GFCI) from 2019–2023, capturing the degree of financial tightening in advanced and emerging economies. The index, measured as a standard deviation from its long-term average, shows a sharp global tightening episode during 2020 Q1-Q2, coinciding with the COVID-19 pandemic, followed by a temporary easing in 2021 and renewed tightening during 2022–2023.

This cyclical tightening was most pronounced in the United States, where the Federal Reserve's aggressive interest rate hikes after 2022 aimed at combating inflation led to a decline in global liquidity and higher financing costs worldwide. Emerging markets excluding China also experienced synchronous tightening, though of a smaller magnitude.

[7] Central Bank of Uzbekistan (2024) *Financial Stability Report 2024*, May. Available at: https://cbu.uz/en/financial-stability/report/

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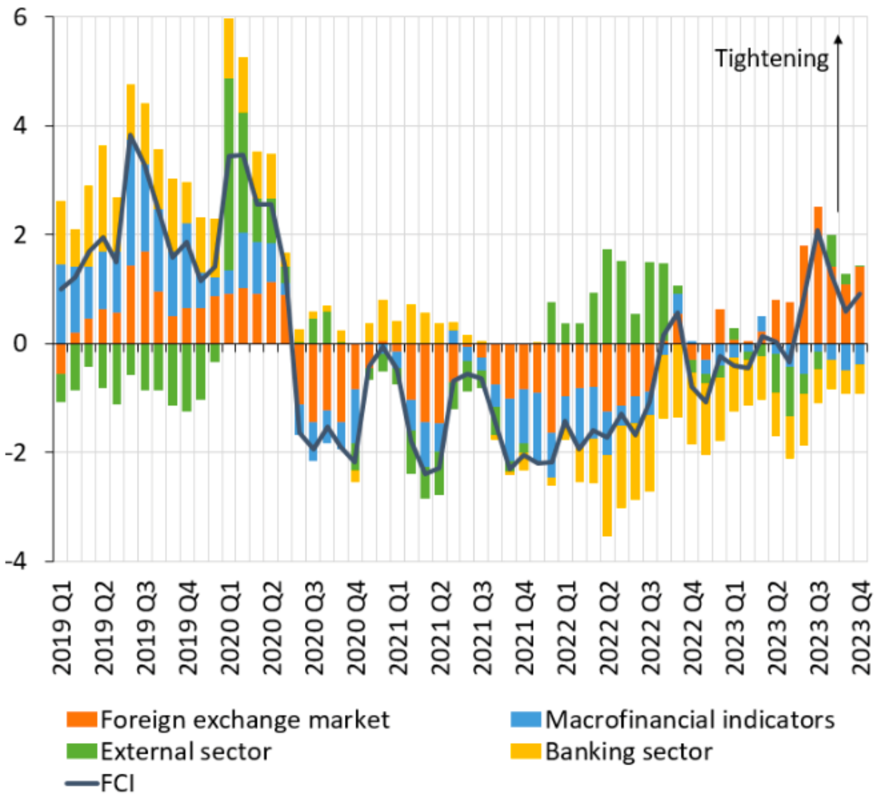

Figure 2. Uzbekistan's Financial Conditions Index (FCI)[8]

Note: Positive values of the FCI indicate a tightening of financial conditions, while negative values indicate a softening of financial conditions.

Figure 2 presents Uzbekistan's Financial Conditions Index (FCI) over the same period, capturing the interaction between domestic and external financial pressures. Positive FCI values represent tightening, while negative values represent easing conditions.

From 2019-2020, Uzbekistan's FCI was strongly positive, peaking at nearly more than 5 standard deviations during 2020 Q1, primarily driven by foreign exchange market pressures and tightening in the banking sector. This mirrors the global tightening phase in Figure 1, confirming that external shocks, particularly during the pandemic, directly translated into tighter domestic credit conditions.

The FCI turned negative in 2021-2022, reflecting policy support measures and liquidity injections that softened domestic financial conditions. However, from 2023 Q1, the index again rose into positive territory, indicating renewed tightening driven mainly by macro-financial indicators and the banking sector.

In this global context, Uzbekistan has maintained relative financial stability through prudent regulatory oversight and gradual monetary tightening. The Financial Stability Report (Central Bank of the

[8] Central Bank of Uzbekistan (2024) *Financial Stability Report 2024*, May. Available at: https://cbu.uz/en/financial-stability/report/

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Republic of Uzbekistan, 2024) notes that Uzbekistan's Financial Stress Index (FSI) declined steadily throughout 2023, reflecting improved market confidence and risk management.

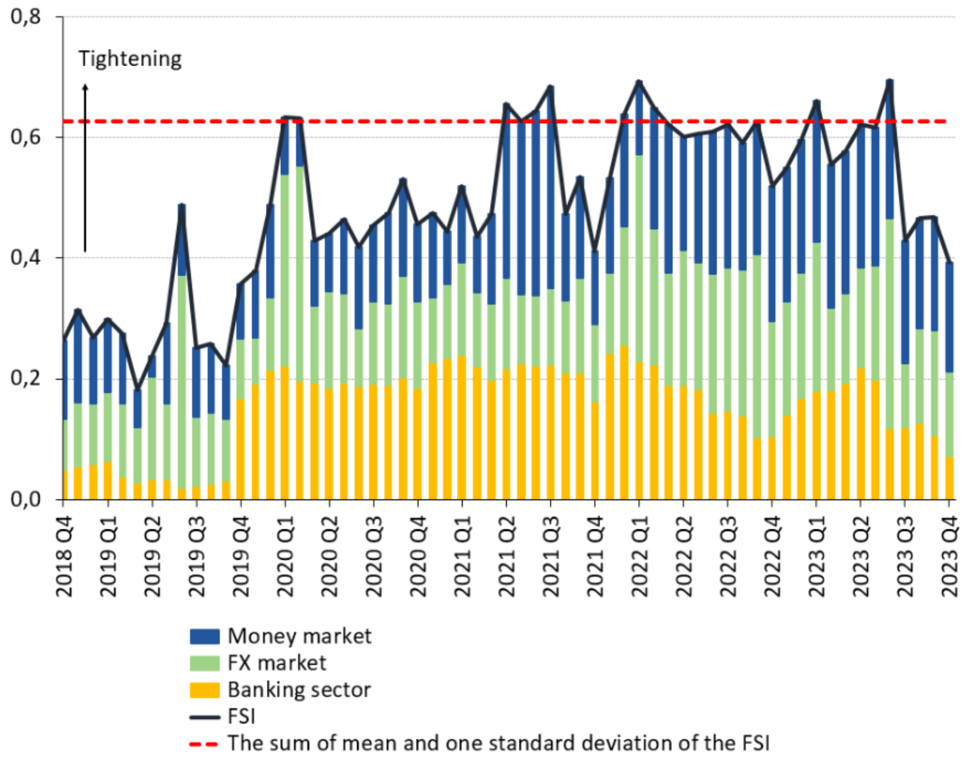

Figure 3. Uzbekistan's Financial Stress Index[9]

Note: The FSI value close to 1 indicates a high level of stress, while a value near 0 indicates a low level of stress.

Figure 3 shows that the FSI fell below the neutral level (zero) by mid-2023, driven by easing exchange rate pressures and stable interbank liquidity conditions. These improvements highlight the Central Bank's effective balancing of inflation control with credit market stability, positioning Uzbekistan's financial system on a more resilient trajectory amid global uncertainty.

[9] Central Bank of Uzbekistan (2024) *Financial Stability Report 2024*, May. Available at: https://cbu.uz/en/financial-stability/report/

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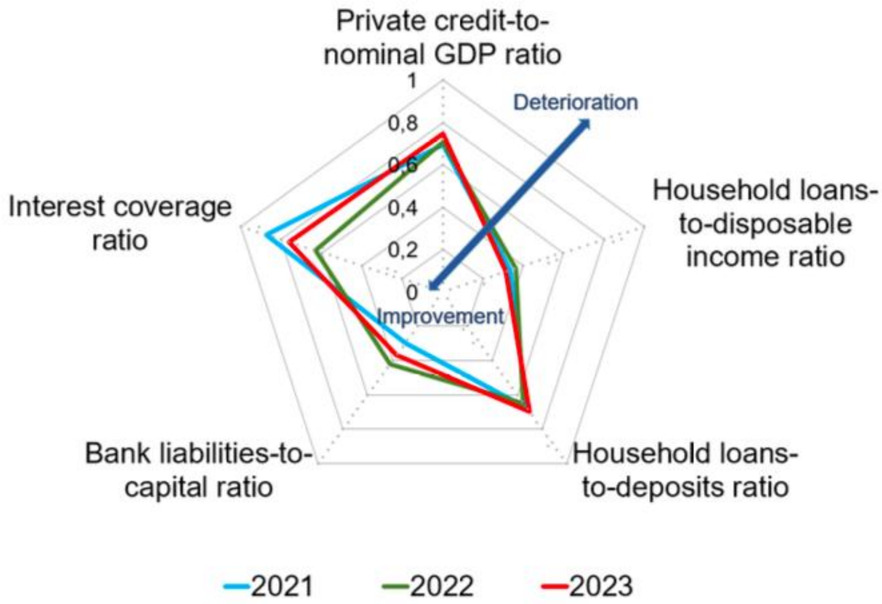

Figure 4. Credit Market Conditions[10]

Figure 4 presents Uzbekistan's Credit Market Risk Map (2021–2023), showing notable improvements in several dimensions of credit quality and balance sheet strength. The most significant enhancement is observed in the bank liabilities-to-capital ratio, which declined by 28% in 2023, reflecting stronger capital buffers and reduced leverage. Meanwhile, the private credit-to-GDP ratio increased by 2 percentage points, and loans to the private sector grew by 25%, outpacing nominal GDP growth of 20%. This pattern suggests that Uzbekistan's credit market remains expansionary yet more resilient, as credit growth has not undermined overall financial stability. These results align with the empirical findings that higher real interest rates (RIR) exert a positive effect on the credit-to-GDP ratio, indicating that tight monetary conditions have enhanced credit selectivity and risk discipline rather than suppressing aggregate lending.

However, the decline in the interest coverage ratio by 7 percentage points reveals potential vulnerabilities in corporate debt servicing capacity, especially as borrowing costs rise. Thus, while banks are better capitalised, the private sector's ability to absorb higher rates is weakening, a potential risk that could emerge if interest rate tightening persists.

[10] Central Bank of Uzbekistan (2024) *Financial Stability Report 2024*, May. Available at: https://cbu.uz/en/financial-stability/report/

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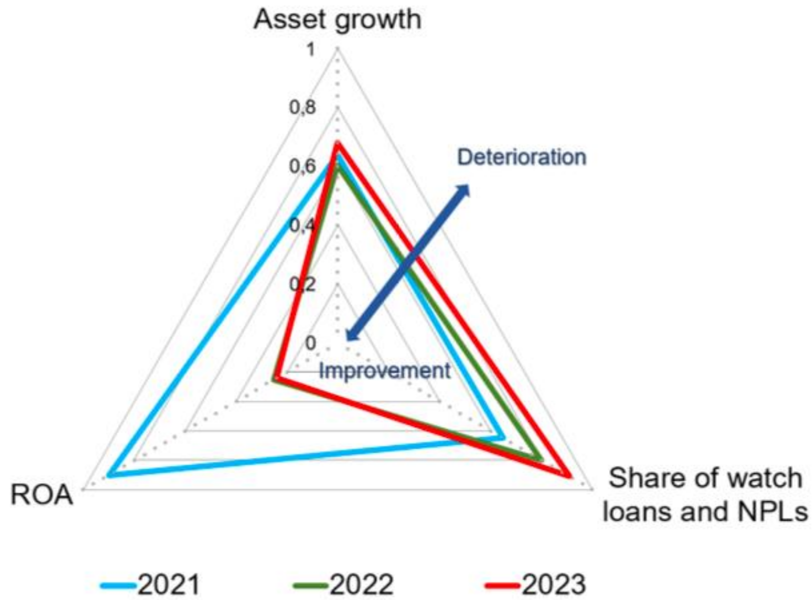

Figure 5. Financial Soundness Conditions[11].

Figure 5 visualises the Financial Soundness Map, focusing on three indicators: Return on Assets (ROA), Asset Growth, and Share of Watch Loans and Non-Performing Loans (NPLs). The ROA remained stable at 2.5%, indicating sustained profitability, while asset growth decelerated by 8 percentage points, a sign of slower credit expansion amid higher interest rates. However, the proportion of non-performing and watch loans rose to 20%, up by 4 percentage points from 2022.

The Central Bank of Uzbekistan (CBU) correctly identifies this as a shift from macro-stability to micro-credit risk, underscoring the importance of enhanced credit risk monitoring, particularly in the household and SME sectors.

Empirical Analysis

This study empirically investigates the relationship between key macroeconomic factors and financial stability in Uzbekistan over the period 2013–2024. In line with global financial stability literature (e.g., Borio & Lowe, 2002; Dabla-Norris & Srivisal, 2013; Beck et al., 2014), the credit-to-GDP ratio is employed as the dependent variable, serving as a proxy for financial stability. This measure reflects the depth and soundness of financial intermediation: an increasing ratio typically signals a deepening financial system, while excessive or volatile credit growth can indicate emerging systemic risks. The Central Bank of Uzbekistan (CBU) also uses the credit-to-GDP ratio in the Financial Stability Report to assess the sustainability of financial expansion and to detect credit market imbalances.

[11] Central Bank of Uzbekistan (2024) *Financial Stability Report 2024*, May. Available at: https://cbu.uz/en/financial-stability/report/

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The explanatory variables: inflation, the real interest rate (RIR), and the volatilities of commodity prices (oil, gold, and copper) are selected based on theoretical relevance and Uzbekistan's economic structure. Inflation captures macroeconomic stability and affects borrowers' real debt burdens and banks' asset quality. The real interest rate represents the monetary policy stance and cost of credit, influencing lending discipline and risk-taking. Commodity price volatility is included given Uzbekistan's dependence on commodity exports, which affect fiscal revenues, external balances, and corporate solvency.

Table 1 reports the regression results. The real interest rate shows a positive and statistically significant effect on financial stability at the 10% level, with coefficients of 0.84–1.11 across model specifications. This suggests that higher real interest rates improve credit quality and financial discipline, consistent with findings in Dabla-Norris & Srivisal (2013) and Beck et al. (2014). However, tighter monetary conditions may also constrain credit growth, revealing a policy trade-off between short-term resilience and long-term financial deepening.

This result aligns with the CBU's policy stance during 2023–2024, when the policy rate was held at 14% to contain inflation and anchor expectations. According to the Financial Stability Report (2024, p.17), the decline in the Financial Stress Index (FSI) during this period reflected reduced speculative activity and improved interbank liquidity. Yet, the Report also notes that private credit-to-GDP rose by only 2 percentage points in 2023, compared to 4.5 points in 2022, indicating slower credit expansion, particularly to SMEs and households, due to high borrowing costs.

Table 1. Regression Results – Effect of Macroeconomic factors: Inflation, Real Interest Rate, Volatility of Commodity Prices on Credit to GDP

	Dependent variable: Credit to GDP			
Inflation	0.06			0.85
	(1.42)			(1.23)
RIR		0.84*		1.11*
		(0.47)		(0.65)
Oil			-0.69	-0.45
			(0.72)	(0.86)
Gold			1.72	1.07
			(1.55)	(1.66)
Copper			0.36	0.48
			(0.66)	(0.47)
R^2	0.00	0.39	0.29	0.77
Residual Std. Error	10.29	8.01	9.98	6.96

Note: This table presents the regression results showing the effects of macroeconomic factors: inflation, the real interest rate (RIR), and the volatilities of commodity prices, namely oil, gold, and copper, on financial stability, which is proxied by the credit-to-GDP ratio. The commodity price volatility variables

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are calculated as the rolling standard deviation of annual percentage changes (year-on-year returns) using a two-year window. MacKinnon–White heteroskedasticity-robust (HC3) standard errors are reported in parentheses. Stars *, **, and *** denote 10 %, 5 %, and 1 % significance levels, respectively. The sample period is from 2013 to 2024.

The inflation coefficient (0.06-0.85) is positive but statistically insignificant, suggesting that moderate inflation has not destabilised credit markets. As reported by the CBU, headline inflation eased from 12.3% in 2022 to 9.2% in 2023 due to improved food supply and stable import prices. This supports the regression outcome, implying that inflation remained within a tolerable range that preserved real returns and borrowers' repayment capacity. Nonetheless, persistent price volatility could erode real incomes and elevate default risk, underscoring the importance of maintaining price stability to safeguard credit quality.

Commodity price volatilities (oil, gold, and copper) are statistically insignificant but directionally consistent with theory. The Financial Stability Report (2024, pp.73-80) indicates that a 15% decline in global oil prices would reduce GDP growth by 1.3% and raise the non-performing loan (NPL) ratio by 1.5 percentage points. This stress-test result suggests that while commodity shocks may not directly affect credit ratios, they indirectly weaken financial stability through fiscal channels, liquidity tightening, and asset quality deterioration.

Further, the share of NPLs and watch loans rose to 20% of total loans in 2023, a 4-percentage point increase from 2022, indicating gradual credit risk accumulation amid external pressures. These findings highlight that commodity volatility exerts lagged, second-round effects on credit stability, reinforcing the need for stronger macroprudential buffers, enhanced hedging instruments, and diversified FX reserves.

Finally, global financial conditions tightened sharply in 2022–2023 as major central banks, led by the U.S. Federal Reserve, raised rates to curb inflation. This global tightening was transmitted to emerging markets, including Uzbekistan, through higher external borrowing costs and commodity price volatility. Reflecting this, Uzbekistan's Financial Conditions Index (Figure 2) shows parallel episodes of domestic tightening. The CBU's policy response, maintaining a real rate of 14%, helped stabilize the credit-to-GDP ratio, reaffirming that real interest rates remain the dominant macroeconomic determinant of financial stability in Uzbekistan.

Conclusion

This study examined the impact of key macroeconomic factors, inflation, real interest rate, and commodity price volatility, on financial stability in Uzbekistan from 2013 to 2024. Using the credit-to-GDP ratio as a proxy for financial stability, the results show that the real interest rate plays the most significant stabilising role by enhancing credit discipline, liquidity management and risk screening. This outcome aligns with the Central Bank of Uzbekistan's (CBU) Financial Stability Report (2024), which notes that maintaining a real policy rate of 14 per cent helped reduce speculative activity, stabilise interbank liquidity, and lower the Financial Stress Index (FSI) during 2023-2024.

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The Financial Stability Report highlights that headline inflation declined from 12.3 per cent in 2022 to 9.2 per cent in 2023, supported by improved food supply and stable import prices that contributed to maintaining borrowers' repayment capacity and banks' real profitability. However, the Report cautions that price volatility remains a latent risk, as potential supply disruptions or energy import shocks could erode real incomes and strain household credit quality.

Similarly, while commodity price volatility did not show a direct statistical impact on the credit-to-GDP ratio, the CBU's stress-testing exercises demonstrate its indirect role in amplifying fiscal and financial vulnerabilities.

The findings indicate that tight monetary policy implemented by the Central Bank of Uzbekistan (CBU) has effectively reduced speculative activity and improved interbank market resilience. However, this stability has come at the cost of slower credit growth, particularly to SMEs and households, highlighting the trade-off between stability and financial deepening.

Overall, Uzbekistan's experience demonstrates that robust monetary and macroprudential policies, underpinned by institutional reforms, can strengthen financial stability amid global uncertainty while highlighting the need for a more balanced approach that sustains financial deepening and inclusive growth.

Recommendations

1. Adopt Countercyclical Policy Tools: Implement a Countercyclical Capital Buffer to restrain excessive credit growth during economic expansions and support stability during downturns.
2. Enhance Liquidity and Risk Management: Expand foreign exchange liquidity buffers and improve access to standing liquidity facilities to maintain liquidity coverage ratios above prudential thresholds.
3. Deepen Domestic Financial Markets: Foster the development of local bond and derivatives markets to mitigate interest rate and commodity price risks, enhancing financial diversification.
4. Reinforce Inflation Anchoring: Consolidate the inflation-targeting framework to stabilise expectations and protect credit quality against potential supply-side pressures.
5. Diversify the Economic Base: Promote non-resource exports and SME financing to reduce reliance on commodity revenues and strengthen structural financial resilience.

By balancing monetary prudence with inclusive credit growth and market deepening, Uzbekistan can sustain a stable, diversified, and resilient financial system aligned with its long-term development strategy and regional integration goals.

References

1. Address by the President of the Republic of Uzbekistan Shavkat Mirziyoyev at the Fourth Tashkent International Investment Forum, 10 June 2025 - https://president.uz/en/lists/view/8203
2. Anvarova, M., & Isakov, O. (2024). Impact of government ownership on banks' profitability: Empirical evidence from commercial banks in Uzbekistan. Tripal Publishing House.
3. Balgobind, N., Naidoo, R., & Phetla, M. (2022). Commodity cycles and macro-financial linkages in emerging economies. Journal of Emerging Market Finance, 21(3), 315–340.

ISSN: 2776-1010 Volume 7, Issue 1, January 2026

4. Beck, T., Degryse, H. and Kneer, C. (2014) 'Is more finance better? Disentangling intermediation and size effects of financial systems', *Journal of Financial Stability*, 10, pp. 50–64.
5. Borio, C., & Lowe, P. (2002). Assessing the risk of banking crises. BIS Quarterly Review, December, 43-54.
6. Central Bank of the Republic of Uzbekistan (CBU). (May 2024). Financial Stability Report 2024. CBU. Available at: https://cbu.uz/en/financial-stability/report/
7. Dabla-Norris, E. a nd Srivisal, N. (2013). Revisiting the link between finance and macroeconomic volatility. IMF Working Paper No. 13/29. Washington, DC: International Monetary Fund.
8. Ikromov, A., & Alimova, N. (2024). Modernization and transformation of Uzbekistan's banking sector. ResearchGate.
9. International Monetary Fund (IMF). (2024). Global Financial Stability Report. Washington, D.C.: IMF.
10. International Monetary Fund (IMF). (2025). Republic of Uzbekistan: 2025 Article IV Consultation – Staff Report. Washington, D.C.: IMF.
11. Kamilova, S. (2024). Analysis of the current state of monetary policy of the Central Bank of the Republic of Uzbekistan. Inlibrary. https://www.inlibrary.uz/index.php/arims/article/view/78938
12. Priority areas of development of deposit operations in Uzbekistan's commercial banks. (2024). Global Research Network. https://globalresearchnetwork.us/index.php/ajebm/article/view/3924
13. Banking system in Uzbekistan: Problems and strategies. (2024). American Journal of Business Management, Economics and Banking. https://americanjournal.org/index.php/ajbmeb/article/view/2808
14. World Bank. (2024). World Development Indicators. Washington, D.C.: World Bank.
15. World Bank. (2025). World Bank Commodities Price Data – The Pink Sheet. Retrieved from https://thedocs.worldbank.org/