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Article

Public Debt Policy and Macroeconomic Stability in Uzbekistan: Debt Dynamics and Portfolio Risks

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Abstract: Uzbekistan has expanded sovereign borrowing while maintaining rapid economic growth and gradually changing the composition of public debt. This paper evaluates whether the historical relationship between public debt and growth is stable over time and whether portfolio structure changes the interpretation of aggregate debt indicators. The empirical analysis uses annual data for 2000–2023 and combines descriptive statistics, Pearson correlations, a parsimonious ordinary least squares model, Newey–West robust inference, unit-root diagnostics and subperiod comparison. Official debt data for 2023 and 2025 are used to assess currency, interest-rate and maturity exposures. Public debt is negatively associated with real GDP growth over the full historical sample, but the relationship differs sharply across subperiods; formal stability tests do not establish 2017 as a definitive structural break. The portfolio analysis shows continued reliance on external and foreign-currency borrowing, alongside long maturities and a growing local-currency component in domestic debt. The results indicate that debt sustainability in Uzbekistan is better assessed through a combination of debt level, financing structure, debt-service capacity and contingent fiscal risks than through the debt-to-GDP ratio alone.

Keywords: public debt; macroeconomic stability; debt sustainability; fiscal risk; Uzbekistan

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1. Introduction

Public debt has become more difficult to manage as borrowing needs remain high and financing conditions have tightened. Global public debt was just under 94% of GDP in 2025 and is projected to reach 100% by 2029 [1]. For emerging economies, however, the size of the debt stock is only part of the problem: currency denomination, maturity, interest-rate structure and the use of borrowed funds can be equally important.

Theory offers no single prediction for the growth effect of public borrowing. Debt-financed fiscal expansion can support demand and public investment, while persistent borrowing may crowd out private investment or weaken fiscal flexibility. The balance between tax and debt financing of government expenditure has itself been approached differently over time [2]. Ricardian equivalence provides a different mechanism in which households respond to current borrowing by anticipating future taxation [3]. Debt-overhang theory adds the possibility that a sufficiently burdensome debt stock can discourage investment and reduce expected returns [4]. These competing channels make country-specific evidence essential.

The empirical literature reaches the same conclusion. Panizza and Presbitero show that a negative debt-growth correlation can disappear once endogeneity is addressed [5]. Law et al. estimate a threshold effect for developing countries and find that institutional quality matters [6]. Augustine and Rafi report much wider country-specific threshold estimates, ranging from 24% to 132% of GDP [7]. The evidence therefore argues against treating a single debt ratio as a universal boundary between sustainable and unsustainable borrowing.

Debt composition is especially important for emerging markets. Persistent foreign-currency borrowing can amplify the fiscal effect of exchange-rate depreciation [8]. Sovereign-risk evidence also points to a separate composition effect associated with foreign debt, beyond the effect of the total debt stock [9]. Domestic debt markets can diversify financing and deepen local financial markets, but large government borrowing can also compete with private credit [10].

Uzbekistan provides a useful setting for examining these issues. National research has also examined how public debt can be used to reduce poverty in Uzbekistan [11]. The domestic government-securities framework was strengthened in 2018, when rules for issuing, circulating and redeeming treasury obligations and bonds were formalized [12]. By end-2025, the Ministry of Economy and Finance reported public debt of USD 46.851 billion, of which USD 39.821 billion was external and USD 7.030 billion domestic [13]. The IMF, using its own coverage and revised macroeconomic framework, reported real GDP growth of 7.7% in 2025, end-period inflation of 7.3% and public debt of 28.6% of GDP [14]. The difference between administrative and IMF debt ratios is a reminder that debt vintages and definitions should not be mixed mechanically.

This paper asks two related questions: how stable has the historical debt-growth relationship been in Uzbekistan, and what does the current debt portfolio imply for macroeconomic risk? The analysis combines a reproducible 2000–2023 time-series assessment with a 2023–2025 portfolio comparison covering external exposure, currency denomination, interest-rate structure and maturity.

2. Materials and Methods

The historical sample covers 2000–2023 and contains 24 annual observations. The core variables are real GDP growth, total government debt as a percentage of GDP and consumer-price inflation. All three are IMF-origin annual series distributed through the Federal Reserve Bank of St. Louis (FRED). The real GDP growth series is taken from FRED [15]. The government debt series is taken from the same database [16]. The inflation series is also taken from FRED [17]. The estimation window ends in 2023 because the debt series used here belongs to an earlier statistical vintage; more recent national-accounts revisions are therefore used only for current-context and portfolio analysis.

Detailed public-debt data for 2023 and 2025 are taken from the Ministry of Economy and Finance. The 2023 table reports total public debt of USD 34.927 billion, including USD 29.639 billion of external debt and USD 5.288 billion of domestic debt [18]. The corresponding 2025 values, published by the Ministry in its end-2025 indicators, are USD 46.851 billion, USD 39.821 billion and USD 7.030 billion.

The empirical procedure combines descriptive statistics, Pearson correlation, ordinary least squares and subperiod comparison. Statistical inference uses Newey–West heteroskedasticity and autocorrelation consistent standard errors [19]. Stationarity is assessed with Augmented Dickey–Fuller tests [20]. The baseline specification is $GROWTH_t = \alpha + \beta 1 DEBT_t + \beta 2 INF_t + \varepsilon_t$. The model is intentionally parsimonious because the annual sample is small.

To examine temporal stability, the sample is split into 2000–2016 and 2017–2023. The two debt-growth correlations are compared using Fisher's z transformation, and a residual-based CUSUM test is used as an additional stability diagnostic. These tests are interpreted conservatively: they indicate whether the strength of the relationship changes, not whether 2017 can be treated as an exogenously identified policy break.

Table 1. Variables, Definitions and Analytical Roles

Variable	Symbol	Measurement	Analytical role
Real GDP growth	GROWTH	Annual % change	Dependent variable
Public debt	DEBT	% of GDP	Main explanatory variable
Consumer inflation	INF	Annual % change	Macroeconomic control
External debt	EXT	USD billion / share	External exposure
Foreign-currency debt	FX	USD billion / share	Currency risk
Variable-rate debt	VAR	USD billion / share	Interest-rate risk
Maturity profile	MAT	USD billion / share	Refinancing risk

3. Results

The historical series show a pronounced decline in the debt-to-GDP ratio during the 2000s and early 2010s, followed by renewed borrowing after 2017. The debt ratio reached 33.7% in 2020 in the historical series, while real GDP growth fell to 1.6% during the pandemic and rebounded in 2021.

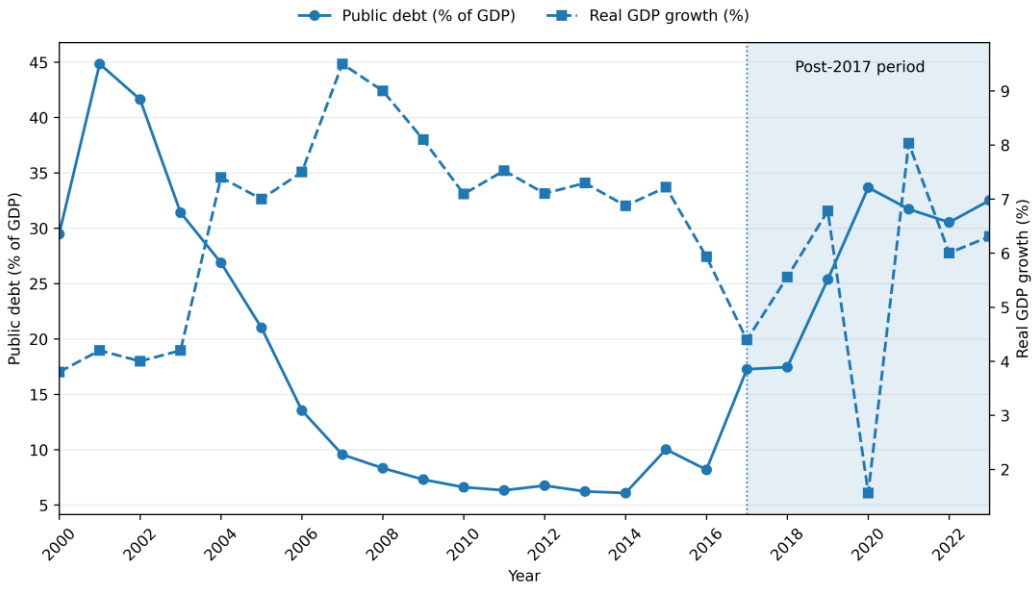

Figure 1. Public Debt and Real GDP Growth in Uzbekistan, 2000–2023

Source: authors' calculations based on IMF-origin FRED series.

For the full 2000–2023 sample, public debt and real GDP growth are negatively correlated ($r = -0.635$, $P < 0.001$). Public debt is positively correlated with inflation ($r = 0.556$, $P = 0.0048$), while growth and inflation are negatively correlated ($r = -0.526$, $P = 0.0084$). These statistics describe historical co-movement; they do not establish causality.

Table 2. Correlation and Subperiod Evidence

Relationship / period	Correlation (r)	P value
Debt-growth, 2000–2023	-0.635	<0.001
Debt-inflation, 2000–2023	0.556	0.0048
Growth-inflation, 2000–2023	-0.526	0.0084
Debt-growth, 2000–2016	-0.775	<0.001
Debt-growth, 2017–2023	0.001	0.999
Fisher z comparison	z = -1.824	0.068

The contrast between the two subperiods is large, but the Fisher comparison is only marginal at the 10% level. The residual CUSUM stability test also does not reject parameter stability (P = 0.474). The appropriate interpretation is therefore temporal heterogeneity rather than a confirmed structural break.

The baseline regression is GROWTH_t = 8.953 - 0.0735DEBT_t - 0.0852INF_t + ε_t. The public-debt coefficient is negative and remains statistically significant under Newey–West robust inference; the inflation coefficient does not reach the 5% significance level.

Table 3. Baseline Regression and Diagnostic Results

Variable / statistic	Estimate	Conventional P value	HAC P value
Constant	8.9534**	<0.001	<0.001
Public debt/GDP	-0.0735*	0.019	0.012
Inflation	-0.0852	0.215	0.079
R^2	0.446		
Adjusted R^2	0.393		
Observations	24		
Durbin-Watson	2.053		
Breusch-Godfrey LM	0.037	0.847	
Breusch-Pagan LM	2.719	0.257	
Jarque-Bera	2.678	0.262	

*P<0.05; **P<0.01. Significance markers on coefficients refer to HAC P values.

Augmented Dickey–Fuller diagnostics indicate that real GDP growth is stationary in levels (ADF = -3.379, P = 0.0117), whereas debt/GDP is more persistent (ADF = -1.622, P = 0.472) and becomes stationary after first differencing (ADF = -4.714, P < 0.001). This reinforces the decision to treat the regression as a compact historical association rather than a fully identified long-run causal model.

The debt portfolio changed in size more than in its external/domestic split. Total public debt rose from USD 34.927 billion in 2023 to USD 46.851 billion in 2025, while external debt remained about 85% of the total. The clearer structural shift occurred within domestic debt: soum-denominated obligations increased and foreign-currency domestic liabilities declined.

Table 4. Structure and risk profile of Uzbekistan's public debt, 2023 and 2025

Indicator	2023	2025
Total public debt, USD bn	34.927	46.851
External debt, USD bn	29.639	39.821
External debt, % of total	85%	85%
Domestic debt, USD bn	5.288	7.030
Domestic debt, % of total	15%	15%

Indicator	2023	2025
External fixed-rate debt, USD bn	15.801	20.849
External variable-rate debt, USD bn	13.636	18.691
External FX-denominated debt, USD bn	29.092	38.719
External debt maturing after >1 year, USD bn	28.752	39.207
Domestic debt denominated in UZS, USD bn	1.860	4.615
Domestic FX-denominated debt, USD bn	3.428	2.416

Sources: Ministry of Economy and Finance of the Republic of Uzbekistan, public debt indicators for 2023 and 2025.

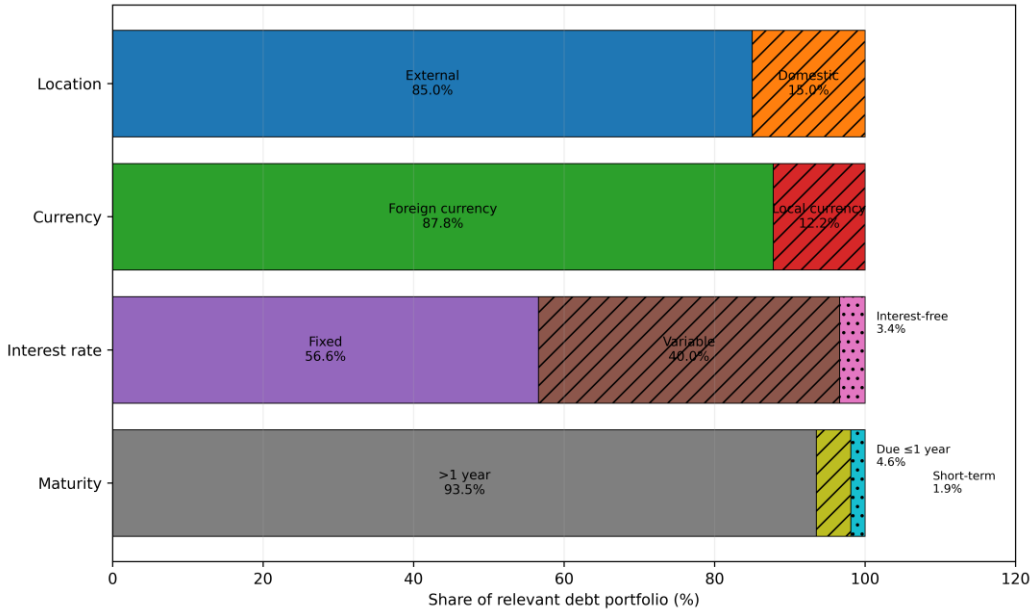

Figure 2. Public Debt Risk Profile of Uzbekistan, 2025

Source: authors' calculations based on Ministry of Economy and Finance end-2025 public-debt indicators.

At end-2025, according to the Ministry of Economy and Finance, foreign-currency-denominated external debt amounted to USD 38.719 billion and variable-rate external debt to USD 18.691 billion. At the same time, USD 39.207 billion of external obligations had more than one year remaining to maturity. The portfolio therefore combines significant exchange-rate and interest-rate exposure with comparatively limited immediate rollover pressure.

4. Discussion

The full-sample regression points to a negative association between public debt and growth, but the subperiod evidence shows that the relationship is not stable enough to support a simple one-coefficient interpretation. This is consistent with the international research discussed in the Introduction, which shows that debt effects vary with institutions, financing conditions and country characteristics.

The result should also be read in light of endogeneity. Weak growth can itself raise the debt ratio through lower revenues, higher countercyclical spending and a smaller GDP denominator. For that reason, the estimated coefficient is not treated as the causal effect of additional government borrowing.

The portfolio evidence is more informative about the channels through which debt can affect stability. A high foreign-currency share exposes the fiscal position to valuation effects when the domestic currency depreciates, as discussed in the Introduction. Long

maturities and official lending, however, reduce near-term refinancing pressure. The IMF's 2026 Debt Sustainability Analysis classifies Uzbekistan's external and overall debt-distress risks as low, while highlighting contingent liabilities from state-owned enterprises and public-private partnerships as material stress factors.

The growing local-currency component of domestic debt is a useful form of diversification, but it does not eliminate risk. A deeper domestic government-securities market can reduce foreign-exchange exposure and support price discovery, while excessive sovereign borrowing can compete with private credit.10 The relevant trade-off is therefore among financing cost, currency risk, refinancing risk and domestic market capacity, rather than a simple preference for external or domestic borrowing.

Uzbekistan's Public Debt Law sets a ceiling of 60% of projected GDP and requires additional government measures when the ratio reaches 50% [21]. These are legal safeguards, not empirically estimated growth-maximizing thresholds. The country-specific evidence in this paper supports monitoring the composition and servicing profile of debt alongside the headline ratio.

5. Conclusion

The analysis finds a statistically significant negative association between public debt and real GDP growth over 2000–2023, but the relationship changes markedly across subperiods and formal stability tests do not identify 2017 as a definitive break. The historical coefficient should therefore be read as an association rather than a causal marginal effect.

The recent portfolio structure adds an important qualification to the headline debt ratio. Uzbekistan remains highly exposed to external and foreign-currency liabilities, but the portfolio also benefits from long maturities and a large official-creditor component. Domestic borrowing has become increasingly local-currency based. These features imply that debt sustainability depends on the interaction of debt level, currency structure, interest-rate exposure, maturity, debt-service capacity and contingent liabilities.

The practical implication is to complement the debt-to-GDP ratio with portfolio-risk and debt-service indicators and to monitor contingent public-sector exposures separately from direct sovereign debt. Future work could extend the analysis with a longer harmonized data vintage, quarterly observations where consistent series become available, or a comparative panel of Central Asian and emerging economies.

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