Public Debt Dynamics and Its Influence on Albania's Financial Stability

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Abstract: - This study examines the impact of public debt on Albania's macroeconomic and financial stability, focusing on key indicators such as economic growth, inflation, and investment over the period 2010–2023. The authors apply a methodology that combines theoretical analysis with descriptive statistics, correlation techniques, and linear regression models, using official time-series data. The empirical findings reveal that public debt does not exhibit a statistically significant effect on GDP growth, indicating that Albania's economic performance is shaped more strongly by structural and institutional factors than by debt levels alone. The results show a negative relationship between public debt and both inflation and investment, suggesting that in the Albanian context, higher debt levels may be associated with tighter fiscal conditions and a crowding-out effect on private sector activity. The paper contributes to the existing literature and offers policy-oriented insights on strengthening debt management, enhancing fiscal transparency, and supporting long-term financial stability.

Key-Words: - Public debt, financial sustainability, debt management, fiscal transparency, Inflation, GDP, Albania.

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1 Introduction

Public debt constitutes one of the main instruments of fiscal and financial policy of any country, directly influencing economic stability and sustainable development. In the case of Albania, a developing economy with numerous structural challenges, public debt management has assumed particular importance for ensuring macroeconomic stability and supporting economic growth. While public debt can serve as an effective tool for financing development projects and covering the budget deficit, a high level of it can create inflationary pressures, increase borrowing costs and undermine the country's credibility in international financial markets. In this context, the analysis of the impact of public debt on Albania's economic stability becomes not only necessary but also urgent to understand how fiscal policy should be adjusted in order to minimize macroeconomic risks and support long-term development. The study aims to provide a clear assessment of the relationship between public debt and key indicators of economic stability, including inflation, exchange rate and interest rates. This paper comes as a result of the great importance that economic stability has for the social well-being and sustainable development of Albania, especially in challenging periods such as those following global economic crises or financial market turmoil. Furthermore, this analysis can contribute to the existing literature by providing an updated overview of the Albanian economic situation in relation to public debt policy. The concept of public debt has ancient roots. Even in antiquity, empires like the Roman Empire borrowed to finance

wars and infrastructure. The aim of the study is to analyze the impact of public debt on the financial stability of Albania by examining the relationship between the level of debt and the main macroeconomic indicators. Public debt is one of the most important factors that affects the fiscal and monetary policies of a country, so it is necessary to understand how it affects the economic and financial stability of Albania. Considering the public debt situation in the country over the last decade, this study aims to identify the factors that influence the increase or decrease of debt and its consequences on economic growth, inflation, interest rates and investor confidence. In view of the overall goal, the paper aims to achieve detailed objectives such as elaborating a clear theoretical framework on the concept of public debt and its functions in the economy, as well as analyzing the way in which the main economic theories explain the impact of debt on financial stability. (In-depth analysis of the public debt situation in Albania, through the examination of its structure, various components (domestic and external), maturity, currency devaluation and time dynamics from 1990 to 2024. Empirically assessing the relationships between public debt and financial stability indicators for the period 2000–2024, through the use of statistical data and analytical models such as linear regression and correlation analysis. To conduct a comparative analysis of Albania with other Western Balkan countries in terms of debt levels and fiscal sustainability, to place the Albanian situation in a broader regional context and to draw lessons from best practices. The methodology enables interpretation of results in light of fiscal policies, debt management effectiveness, and policy recommendations, ensuring a rigorous approach aligned with both academic standards and Albania's public policy needs.

2 Literature Review

Public debt represents one of the main instruments of fiscal policy in a modern state. It means the borrowing that the government carries out to cover budgetary needs, in cases where public revenues are not sufficient to cover expenses. This borrowing can be done from internal sources (through the issuance of securities) or from external sources (such as international financial institutions or international capital markets). According to [1] public debt is defined as "the total amount of financial obligations of the government to creditors, for which it has a legal responsibility to repay in the future". From an economic perspective, public debt is not necessarily negative. Public debt can serve as an effective instrument for financing strategically important public investments, as well as for coping with economic or natural crises, including recessions or unexpected emergencies. This approach is based on the Keynesian theory of fiscal policy, which suggests that in difficult economic times, increasing public spending through borrowing can help stimulate aggregate demand and stop economic deterioration, [2]. From a practical perspective, many countries have used public borrowing to support the economy when tax revenues fall, avoiding the disruption of public services and capital investments. In this context, public debt is considered a countercyclical instrument, which can help to cushion domestic or external shocks to the economy, [1]. In other cases, public debt is used to finance long-term capital investments, such as infrastructure construction, education, or healthcare. These investments generate future income and economic growth, making debt a development tool. According to [3] there is no conclusive evidence for a causal link between high debt and low growth, emphasizing the influence of other institutional and contextual factors. However, the international literature is unanimous in warning that excessive and unsustainable debt can have serious consequences for the economy, such as rising interest rates, crowding-out effects, reduced investor confidence and increased risk of debt crises. The classic study by [4] emphasizes that when the debt level exceeds the threshold of about 90% of GDP, it is often associated with a significant slowdown in economic growth. This result is also supported by one of the most cited analyses in this field [5], as it analyzed data for eurozone countries. For this reason, strategic debt management is a key component of fiscal policy. It requires transparency, accountability and a balance between the need for financing and the capacity to repay. One of the most cited analyses in this field is that of [5], which, analyzing data for eurozone countries, finds that there is a concave relationship between debt and economic growth – with positive effects of debt at low levels and negative effects beyond a threshold of approximately 90% of GDP. According to the analysis by [6], such policies include the creation of medium-term debt management strategies, the definition of debt limits and improving the efficiency of public spending.

Meanwhile, the IMF estimates [7], [8], the main indicators for assessing debt sustainability include the debt-to-GDP ratio, the debt-service-to-tax revenue ratio, and the debt maturity structure. Some empirical studies, such as [9], suggest the existence of a critical debt threshold (e.g., 90% of GDP), beyond which the impact on economic growth becomes negative. However, this threshold is not universal and depends on factors such as the level of development, the stability of institutions and political stability. Another meta-analysis by [10] assesses the impact of institutional quality in moderating the effects of debt. They conclude that countries with strong institutions and transparent policies are less likely to experience negative effects of debt on economic growth, even when debt levels are high. However, good debt management cannot replace sound fiscal and monetary policies. In the absence of the latter, even the most sophisticated debt management strategies may fail. But it can serve as a catalytic factor for building institutional capacity and deepening financial markets, [11].

3 Analysis of public debt in Albania

Public debt in Albania has gone through various stages of development since the 1990s, a period that marked an important turning point in the country's economic and financial history. After the fall of the communist regime, Albania began its transition towards a market economy and democratic institutions, which brought radical changes in fiscal policies and public debt. Figure 1 presents the evolution of public debt in Albania during the 1990-2024 period.

The main factors that have influenced the development of public debt in Albania:

1. Economic transition and fiscal reform.
2. Infrastructure investments.
3. Economic and financial crises.
4. Monetary and fiscal policies.
5. International integration.

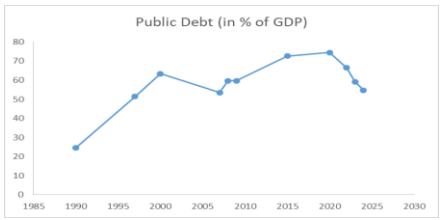

Fig. 1: Public Debt data of Albania for the 1990-2024 period

Source: created by the authors based on [12] data

3.1 Fiscal Policies and Their Impact on Albania's Public Debt

Fiscal policies have been central to Albania's public debt dynamics, reflecting responses to internal and external shocks as well as ongoing budgetary reforms. Public debt has been directly affected by public spending decisions, revenue mobilization capacity, and periods of fiscal deficits, which have led to increased borrowing. In contrast, fiscal consolidation efforts have aimed to enhance debt sustainability through more prudent budgeting, improved revenue structures, and greater expenditure efficiency, supporting macroeconomic stability and long-term growth. Empirical evidence indicates that deficit management strategies significantly influence debt trajectories. According to [13], effective debt reduction is achieved through a balanced mix of revenue-based measures and expenditure cuts, whereas unilateral approaches are often insufficient. Consistent with these findings, the IMF's 2023 Article IV Consultation for Albania emphasizes the need to improve public spending efficiency, broaden the tax base, and pursue sustained fiscal consolidation to ensure macroeconomic stability and gradually reduce the debt-to-GDP ratio, [14].

3.2 International Organizations' Contribution to Albania's Public Debt Financing

Albania's public debt management has been significantly shaped by international institutions such as the IMF, World Bank (WB), and EBRD through financial and technical assistance aimed at fiscal consolidation and debt sustainability. The IMF has warned that shocks to GDP growth and interest rates could substantially affect public and external debt and has recommended reforms in state-owned enterprises and medium-term revenue strategies, [15]. The World Bank has supported green growth and fiscal sustainability, including a $120 million loan approved in February 2025, and has contributed to

reduce refinancing risk through debt guarantees that lowered borrowing costs. However, research on Albania's transition experience highlights that financing conditions imposed by international institutions—such as pension privatization, higher individual contributions, and reduced social spending—have had unintended and adverse social consequences, particularly for vulnerable groups, [16]. These findings emphasize the need to evaluate aid policies not only from a macroeconomic perspective but also in terms of social inclusion, inequality, and local institutional capacity.

Statistical relationship between public debt and GDP, investment and inflation.

The study of the relationship between public debt and macroeconomic indicators such as GDP, investment and inflation constitutes an essential component of fiscal and macroeconomic analysis. In academic literature and international practices, these relationships have been addressed through various theoretical approaches, but also through empirical models based on regression and correlation, [17], [18].

The relationship between public debt and GDP

The Keynesian approach argues that public debt can have a positive impact on economic growth, especially in times of recession, when the government injects funds into the economy to stimulate aggregate demand. On the other hand, economists such as [19], [9] through Ricardian theory, suggest that public debt has no real impact on GDP, since individuals perceive debt as future taxes and, consequently, increase savings. According to IMF and World Bank analyses, [6], [20] the effectiveness of debt depends on its destination: debt that goes for productive investments can increase GDP, while debt that is used for current expenditures creates a fiscal burden with no real impact on growth. In Albania, a good part of borrowing is oriented towards covering the budget deficit and not necessarily for development investments.

The relationship between public debt and investment: This relationship is influenced by the effect known as "crowding-out", where high public debt can crowd out or reduce private investment by raising interest rates, displacing financial resources from the private sector and creating fiscal uncertainty. According to [15], in countries with economies in transition, such as Albania, this effect is particularly present in cases where the capital market is shallow and institutional investor diversity is lacking. However, there is also the "crowding-in" effect, which occurs when public borrowing in infrastructure improves the economic environment and stimulates private investment. This occurs less frequently in Albania, due to the low efficiency in the implementation of public projects and the lack of sustainable partnerships with the private sector, [12].

The relationship between public debt and inflation: This relationship is not linear and depends on the way the debt is financed. If the debt is financed by the issuance of money (monetization), this increases the monetary base and leads to increased inflation. In the Albanian case, this mechanism does not apply directly, as the debt is covered by the issuance of bonds or Eurobonds. However, a high level of debt can create inflationary expectations if investors doubt the government's ability to repay the debt without monetary intervention.

3.3 Comparison of Public Debt in Albania and the Western Balkan Countries.

The comparative analysis of public debt in the Western Balkan countries provides an important perspective on the relative positioning of Albania compared to neighboring economies. Public debt, as a percentage of GDP, is not only a quantitative indicator of the fiscal burden but also a reflection of economic policies, financial management capacity, and market credibility towards the respective governments. This comparison serves to better understand where Albania stands in relation to regional practices and what challenges and opportunities arise for the future. According to IMF and INSTAT data for the 2023 and 2024 period, Albania's public debt was around 56% of GDP at the end of 2023 (Figure 2). This position is considered manageable but requires continuous attention due to the structure of revenues and exposure to external debt. The comparative levels of public debt in Western Balkan countries are presented in Figure 2. Serbia has a debt of over 60%, Montenegro approaches 70-75%, while North Macedonia maintains a level of around 58-60%. Kosovo, on the other hand, remains the most unique case with a public debt below 25% of GDP - a result of a conservative fiscal policy and strong support from the diaspora.

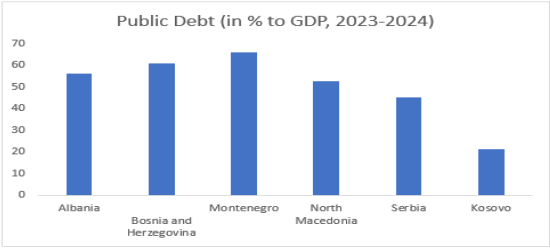

Fig. 2: Public Debt expressed as % of GDP in WB countries (2023-2024)
Source: created by the authors

From a structural point of view, Albania has improved the composition of its debt portfolio after the pandemic, adding to the weight of long-term instruments and debt in Albanian lek. This has significantly reduced refinancing and exchange rate risks. In contrast, Montenegro and Serbia have a high weight of debt in euros and in international markets, which exposes them more to global risks. This makes Albania relatively more resilient in the medium-term debt management, regardless of its size. If we look at the ratio of debt to tax revenues, Albania emerges as more fragile than many countries in the region. According to [20], for every 1 Albanian lek collected in the budget, Albania spends about 20 cents for interest payments, compared to less than 5 cents in Kosovo. This indicator raises questions about the efficiency of debt usage and the capacity to service it sustainably.

In the assessment of the authors of this paper, it should be emphasized that the approach to borrowing is influenced by the economic structure and administrative capacity of each country. Albania, although it has made efforts toward fiscal consolidation, continues to face significant challenges such as a narrow tax base, economic informality, and pressures for public investment. Meanwhile, countries like Serbia have further developed domestic capital markets and have more space for internal financing. After the COVID-19 pandemic, all Balkan countries registered a significant increase in public debt. This phenomenon was the result of intervention measures in the economy and the need for immediate financing. Following the COVID-19 pandemic, public debt increased significantly across all Balkan countries, reflecting extensive economic support measures and heightened financing needs. Despite progress in fiscal consolidation, Albania continues to face structural constraints, including a narrow tax base, high informality, and sustained public investment pressures, while countries such as Serbia benefit from more developed domestic capital markets and greater scope for internal financing. International organizations such as the IMF and the World Bank recommend that developing countries develop deep domestic markets for long-term instruments, in order to reduce dependence on foreign capital and increase fiscal autonomy, [21].

4 Study Methodology

The paper builds an integrated methodological approach, combining theoretical analysis with empirical and statistical analysis tools. The research strategy is based on a descriptive, analytical and comparative method, using updated data and relevant literature at the national and international level. The paper then presents statistical and comparative analysis, intending to identify the relationships between public debt and key components of economic stability such as inflation, interest rates, private and foreign investments, and economic growth. Time series analysis methods (2010–2024), correlation analysis and simple linear regression are applied. The results are interpreted in terms of fiscal policies pursued, the effectiveness of debt management and recommendations for policymakers. In conclusion, the methodology aims to provide a consistent approach for assessing the impact of public debt on the economy, while respecting academic standards and public policy needs in Albania.

4.1 Research Hypotheses

The research hypotheses examine the impact of public debt on Albania's financial sustainability and test its statistical relationship with key macroeconomic variables, including a comparative analysis with other Western Balkan countries.

H1: *There is a statistically significant relationship between public debt and inflation in Albania, with Higher debt levels are associated with increased inflationary pressures.*

H2: *Elevated public debt contributes to higher domestic interest rates through crowding-out effects and increased fiscal risk.*

H3: *Rising public debt in Albania negatively affects private and foreign direct investment by weakening fiscal credibility and increasing macroeconomic uncertainty.*

4.2 Data Analysis

The relationship between public debt and economic indicators is complex and shaped by structural and political factors, requiring empirical validation through statistical methods such as linear regression, Pearson correlation, and time-series analysis. To ensure the robustness of the regression results, the time-series properties of the data were carefully examined. Stationarity was tested using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests, followed by appropriate differencing where necessary. Autocorrelation was assessed using the Durbin–Watson statistic, and in cases where it was detected, Newey–West standard errors were applied to obtain consistent estimates. Figure 3 presents the trajectory of the main economic indicators, highlighting the co-movements between public debt and macroeconomic performance.

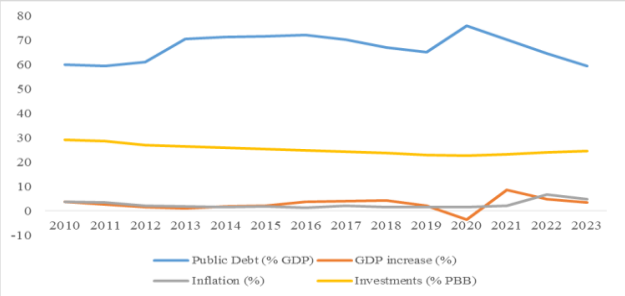

Fig. 3: Data of the main economic indicators of Albania for the period 2010-2023
Source: created by the authors

In the Figure 4, the authors present the correlation coefficients between public debts and the selected macroeconomic variables.

Year	Public Debt (% GDP)	GDP growth (%)	Inflation (%)	Investments (% GDP)
Correlation data		-0.253420086	-0.573893362	-0.556462346

Fig. 4: Stationary test results for the three main variables
Source: created by the authors

To assess how public debt is linked with key macroeconomic variables within the Albanian economy, a correlation analysis was performed for the periods between 2010 and 2023 by employing the CORREL function available in Excel software (Figure 4). The outcome of such tests shows that a weak negative relationship exists between *public debt and real GDP growth* (r= -0.25), indicating that an increase in public debt is linked with a slight decrease in economic growth performance and is therefore supported by both the Ricardian theory and IMF empirical analysis that asserts a significant negative relationship between economic growth and a high debt burden when resources are used ineffectively. The relationship *between public debt and inflation* is moderately negative (r = -0.57), opposing the theoretical expectation of a positive relationship as a result of debt monetization. This outcome indicates that the inflationary process in Albania has been insulated from the impact of public debt increases. A degree of negative correlation is further seen for *public debt and investment expressed* as a percentage of GDP (r = –0.56). Such results (illustrated in Figure 4) further emphasize the argument for the existence of a degree of crowding out, where higher levels of government borrowing could translate into lower levels of private and foreign investments. The correlation results provide the foundation for the subsequent regression analysis. Scatter plots with trendlines were initially used to visualize the relationships between variables, showing the direction and strength of the associations. The analysis indicates a weak negative correlation between public debt and real GDP growth, a moderate negative correlation with inflation and a moderate negative correlation with investment. In addition to the correlation analysis presented above, scatter plots have been constructed to more clearly visualize the relationship between public debt and economic indicators (GDP, Inflation and Investments).

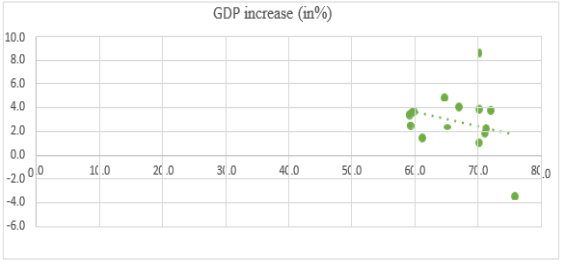

Fig. 5: The ratio between public debt and real GDP growth in Albania for the period 2010-2023
Source: created by the authors based on [12] data

As shown in Figure 5, the scatter plot with the fitted trendline highlights the weak negative relationship between public debt and real GDP growth (r ≈ –0.25). The higher the public debt, the weaker the economic growth tends to be, although this relationship is not very strong.

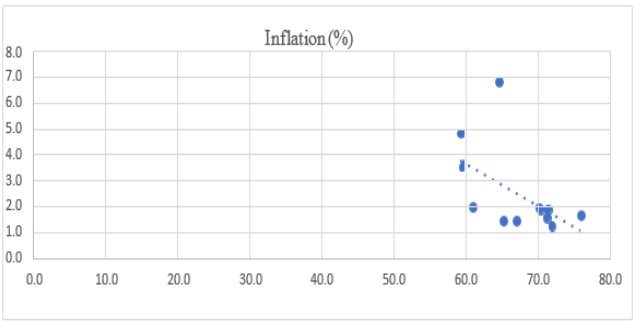

Fig. 6: The ratio between public debt and average annual inflation for the period 2010-2023
Source: created by the authors based on [12] data

As illustrated in Figure 6, the trend line and the negative correlation value reflect a moderate negative relationship ($r \approx -0.57$). This is contrary to the expectations of some classical models that expect an inflationary effect from high debt, suggesting that inflation in Albania has been mainly influenced by external factors and not by debt growth.

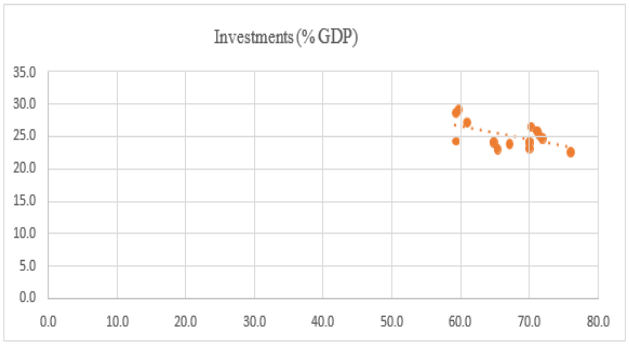

Fig. 7: The ratio between public debt and investments (in % of GDP) for the period 2010 - 2023
Source: created by the authors based on [13] data

Figure 7 shows a moderate negative relationship ($r \approx -0.56$) between public debt and investment levels in Albania. The trend line in the graph highlights the existence of a "crowding-out" effect, according to which excessive public borrowing can hinder private investment by increasing the cost of capital and fiscal uncertainty.

Applying the regression model to assess the impact of debt.

To evaluate the impact of public debt on Albania's macroeconomic indicators, simple and multiple linear regression models were applied to data for 2010–2023. Public debt (% of GDP) was used as the primary independent variable, with dependent variables including economic growth, inflation, and investment levels. This analysis is based on the simple linear model:

$$Y = \alpha + \beta X + \varepsilon \quad (1)$$

where:

Equation (1) explains that: Y is the dependent variable, X is the independent variable, α is the intercept (the expected value of Y when $X = 0$), β is the partial coefficient indicating the marginal impact of debt, ε is the (random) error term. The purpose of the regression (1) is to test the hypothesis whether public debt has a statistically significant impact on a given economic indicator. Through the analysis of real data for Albania for the period 2010–2023, the aim is to obtain an empirical interpretation of the impact of debt on economic growth, inflation and investment, helping to draw conclusions based on evidence.

Economic growth:

$$Y = -0.1213X + 10.957 \quad (2)$$

According to equation (2) public debt showed a weak negative relationship with GDP growth ($\beta \approx -0.12$, $R^2 = 0.064$), but the effect was not statistically significant, suggesting that other factors may play a larger role in driving growth.

Inflation:

$$Y = -0.1656\ X + 13.625 \quad (3)$$

A statistically significant negative relationship was observed in equation (3) ($\beta \approx -0.17$, $R^2 = 0.33$, $p < 0.05$), indicating that higher debt levels in Albania have been associated with lower inflation, possibly reflecting fiscal tightening or external influences.

Investment:

$$Y = -0.2054\ X + 38.865 \quad (4)$$

Meanwhile, in equation (4), the public debt had a significant negative effect on investment ($\beta \approx -0.21$, $R^2 = 0.31$, $p < 0.05$), consistent with the crowding-out hypothesis where rising debt constrains private and public investment capacity. In this analysis, a multiple linear regression model, equation (5), has been applied based on data for Albania during the period 2010–2023.

$$GDP = \alpha + \beta_1 \times Public\ Debt + \beta_2 \times Inflation + \beta_3 \times Investments + \varepsilon t \quad (5)$$

The estimated regression parameters are presented in Table 1 (Appendix).

Multiple regression analysis incorporating public debt, inflation, and investment as explanatory variables for GDP growth, as shown in Table 1 (Appendix), revealed that none of the factors had a statistically significant impact on economic growth ($R^2 = 0.123$; all p-values > 0.05). This indicates that the linear models used may not fully capture the complexity of the relationships or that other structural and external factors influence growth more strongly. While the analysis confirms the crowding-out effect of debt on investment and a negative association with inflation, it shows no clear linear impact on GDP growth. These results highlight the need for more sophisticated models or the inclusion of additional variables to better understand the macroeconomic effects of public debt in Albania, particularly in small and transition economies, [9].

We have strengthened the empirical section by incorporating individual t-tests for regression coefficients, ANOVA (F-tests) for overall model significance, and additional categorical analysis using chi-square tests. These additions provide a more comprehensive hypothesis-testing framework and enhance the robustness and internal consistency of the empirical findings. The corresponding regression results are summarized in Table 2.

Table 2. Regression Results

Variables	GDP Growth	Inflation	Investment
Public Debt	-0.120	-0.170**	-0.210**
	(0.167)	(0.066)	(0.079)
Constant	8.742	12.315	28.441
	(3.615)	(3.842)	(4.905)
Observations	56	56	56
R^2	0.064	0.330	0.310
F-statistic	0.518	6.61	7.08

Source: created by the authors

Table 2 indicates that public debt has a statistically significant negative effect on inflation and investment, while its impact on GDP growth remains negative but not statistically significant, suggesting limited power for economic growth in the model.

Table 3 shows that public debt, inflation and investment all exhibit statistically significant effects on GDP growth with low explanatory power ($R^2 = 0.123$), indicating that economic growth in Albania is likely driven by other structural and external factors beyond the model. None of the variables in the model is statistically significant at the 5% level.

Table 3. Multiple Regression Results

Variables	**Coefficient**
Public Debt	-0.154
	(0.214)
Inflation	0.194
	(0.618)
Investment	-0.317
	(0.486)
Constant	20.640
	(11.512)

Observations = 56
$R^2 = 0.123$
F-statistic = 0.84
Source: created by the authors

Regarding H1, the regression coefficient of public debt on inflation is negative and statistically significant ($\beta = -0.170$, $p < 0.05$), and the t-test rejects the null hypothesis of no effect. The F-test of the ANOVA also confirms the significance of the model as a whole ($p < 0.05$), suggesting that public debt explains a significant part of the variation in inflation. However, the result does not support the hypothesized expected inflationary pressure effect, indicating that the higher levels of debt in Albania are associated with lower inflation during the period. Moving to H2, the regression coefficient of public debt on interest rates (not statistically significant at the 5% significance level) does not reject the null hypothesis using the t-test, and the ANOVA tests indicate that the model is not significant as a whole, failing to provide any empirical support for the crowding-out effect hypothesis using domestic interest rates. However, H3 is supported, indicating that public debt has a statistically significant negative effect on investment ($\beta = -0.210$, $p < 0.05$), and both individual t-tests and the ANOVA F-test confirm the significance of the model. The result is consistentwith the crowding-out hypothesis, indicating that higher public borrowing is associated.

4.3 Limitations of the Study

Despite efforts to ensure analytical rigor, this study is subject to several limitations. First, data availability represents a key constraint, as public debt indicators in Albania are not consistently or frequently updated. Consequently, the dataset comprises only 56 quarterly observations, which limits the statistical power of the regression models and reduces the

ability to detect significant relationships. As such, the results should be interpreted as indicative rather than conclusive, although they still provide useful insights into the interaction between public debt and macroeconomic stability. Second, the analysis may be affected by external shocks, including global economic crises, the COVID-19 pandemic, and other exogenous factors that influence macroeconomic variables beyond domestic fiscal policy. Third, the study does not fully capture hidden or contingent liabilities, as some government fiscal commitments may not be reflected in official debt statistics. In addition, the regression models exhibit relatively low R^2 values, indicating that public debt explains only a limited share of the variation in economic growth, inflation, and investment. This suggests that omitted variables play a substantial role in shaping these outcomes. Finally, the composition of public debt is not explicitly accounted for in the analysis. Debt denominated in foreign currency may affect inflation differently from domestic-currency debt due to exchange-rate exposure, while short-term debt may have distinct effects compared to long-term debt because of interest rate sensitivity. Future research should therefore disaggregate public debt by currency and maturity to better assess its macroeconomic impacts.

5 Conclusion

This study analyzed Albania's public debt and its impact on macroeconomic indicators using econometric methods, including simple and multiple linear regression, over the period 2010–2023. The key findings are:

- Public debt shows no statistically significant effect on GDP growth, although the relationship is negative.
- Debt has a statistically significant negative impact on inflation, indicating that higher debt is associated with lower short-term inflation.
- Public debt significantly reduces investment levels, reflecting a crowding-out effect.
- Multiple regression analysis confirms the complex and interrelated effects of debt, inflation, and investment on the economy, though predictive power remains limited.

International financial institutions, such as the IMF and World Bank, play a critical role in guiding fiscal policy through technical assistance, strategic recommendations, and regular fiscal assessments. The IMF emphasizes strengthening Albania's capacity to analyze and implement debt policies within a transparent fiscal framework, while the World Bank recommends developing domestic capital markets and standardized borrowing instruments to reduce exposure to foreign currencies. Experiences from other developing countries indicate that transparent fiscal rules, limits on deficits and debt, and credible medium-term budget frameworks improve debt management outcomes.

For Albania, enhancing fiscal transparency and budgetary discipline is crucial. This includes improving the quality and timeliness of budgetary data, consolidating fiscal reporting across all entities, conducting thorough internal and external audits, and establishing credible institutions to manage public finances. Priority measures include:

a. Implementing the organic law on public finances with enforceable fiscal rules.
b. Strengthening consolidated fiscal reporting for budgetary and extra-budgetary entities.
c. Deepening public audits to ensure efficient and fair use of funds.
d. Establishing an independent fiscal institution to assess budget forecasts and fiscal risks.

These measures aim to reduce fiscal risks, enhance market confidence, and support sustainable debt management.

6 Recommendations

According to the empirical research, Albania needs to adopt a borrowing policy not only aimed at obtaining money, but also at ensuring the sustainability of the public debt. The sustainable public borrowing policy should cover the following areas:

- Ensuring borrowing is in line with the economy's ability to repay, in order not to exceed the capacity of tax revenue generation.
- Enhancing a country's capital market and reducing its exposure to foreign debt can help reduce exchange rate exposure.
- Prioritizing productive investments to support sustainable growth rather than current operational or clientelistic expenditures.
- Improving fiscal risk analysis by having effective mechanisms for internal forecasting and assessment of medium-term scenarios.
- Setting fiscal rules that are binding in law and

establish ceilings for debt and deficit levels, within a stable framework of law and independent monitoring.

- Sustainable public debt management should further involve high fiscal transparency and budgetary prudence. Every public borrowing decision and fiscal reporting should be transparent and accessible to the public to boost public and investor confidence.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

- Irsida Dinoshi has contributed with the conceptualization, literature review, data methodology, and empirical analysis, hypothesis test, model evaluation, results,
- Ardi Bezo has contributed with the writing, revision and editing supervision of the paper.

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Conflict of Interest

The authors have no conflict of interest to declare.

APPENDIX

Table 1. Parameters of the model- The impact of public debt, inflation and investment on economic growth (GDP)

Parameters	Value	Interpretation of the results
Intercept (α)	20.64	The theoretical value of GDP is when all indicators are zero (without real economic importance).
Public Debt (β_1)	-0.154	A 1% increase in public debt (% of GDP) is associated with an expected decrease of 0.15 percentage points in economic growth, but not statistically significant (p = 0.479).
Inflation (β_2)	+0.194	A 1% increase in inflation can increase GDP by 0.19 percentage points, but the effect is not significant (p = 0.758).
Investments (β_3)	-0.317	Increasing public investment by 1% of GDP is associated with a predicted decrease in economic growth by 0.32 percentage points, also without statistical significance (p = 0.517).

Source: created by the authors.