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“IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH: A THRESHOLD ANALYSIS”

Annotation. This study applies the ARDL bound technique to explore the short-run and the long-run impact of public debt on economic growth in the context of Uzbekistan using the sample period from 1997 to 2020. The research also reviewed the latest theoretical and empirical literature. Evidences suggest that public debt can either reduce or increase economic output depending on how efficiently the borrowed funds are used in the economy. Government debt of Uzbekistan was found to have positive effect on economic growth in the short-run, whereas this effect became negative in the long-run.

Key words: government debt, economic growth, debt threshold, econometric analysis, government spending.

Annotatsiya. Ushbu tadqiqot avtoregressiv taqsimlangan kechikish (ARDL) modelidan foydalangan holda 1997 yildan 2020 yilgacha bo'lgan davr uchun O'zbekiston sharoitida davlat qarzining qisqa va uzoq muddatli iqtisodiy o'sishga ta'sirini o'rganishga bag'ishlangan. Tadqiqot shuningdek, eng so'nggi nazariy va empirik adabiyotlarni ko'rib chiqadi. Dalillar shuni ko'rsatadiki, davlat qarzi qarz mablag'larining iqtisodiyotda qanchalik samarali ishlatilishiga qarab iqtisodiy o'sishga salbiy yoki ijobiy ta'sir etishi mumkin. O'zbekiston davlat qarzi qisqa muddatda iqtisodiy o'sishga ijobiy ta'sir ko'rsatishi aniqlangan bo'lsa, uzoq muddatda bu ta'sir salbiyga o'zgardi.

Kalit so'zlar: davlat qarzi, iqtisodiy o'sish, qarz chegarasi, ekonometrik tahlil, davlat xarajatlari.

Аннотация. В этом исследовании применяется метод ARDL для изучения краткосрочного и долгосрочного влияния государственного долга на экономический рост в контексте Узбекистана с использованием выборочного периода с 1997 по 2020 год. В исследовании также были рассмотрены последние теоретические и эмпирические литература. Имеющиеся данные свидетельствуют о том, что государственный долг может либо сокращать, либо увеличивать объемы производства в зависимости от того, насколько эффективно используются заемные средства в экономике. Установлено, что государственный долг Узбекистана оказывает положительное влияние на экономический рост в краткосрочной перспективе, тогда как в долгосрочной перспективе это влияние становится отрицательным.

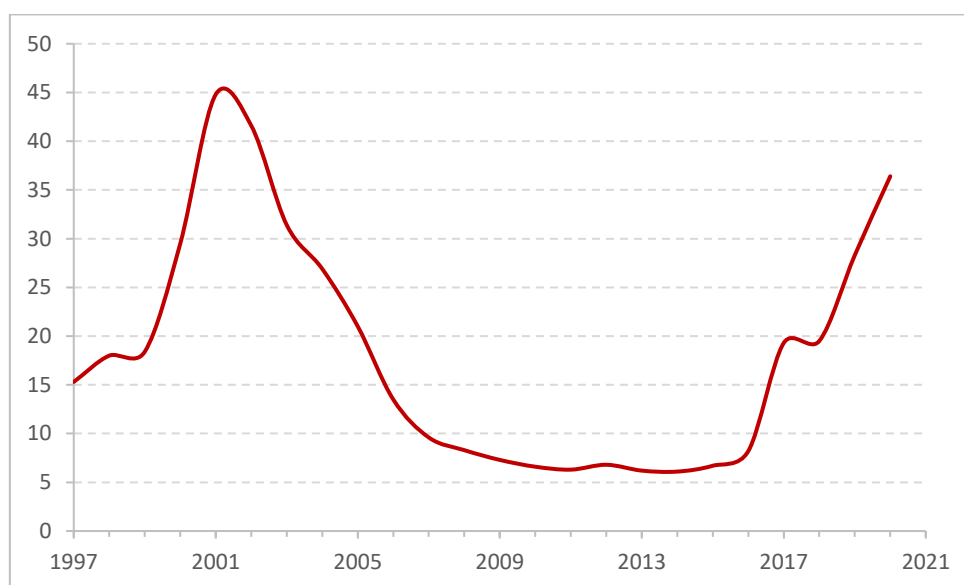
Ключевые слова: государственный долг, экономический рост, порог долга, эконометрический анализ, государственные расходы.

Introduction

Governments have fundamental socio-economic objectives that they set out to achieve. These objectives demand additional funds to boost economic activity and, more specifically, to increase economic growth. To achieve these goals, a vast amount of investment in technology, infrastructure, human resources, and nature conservation is necessary.

Unfortunately, the sources of funding are very limited for emerging nations like Uzbekistan, which has few revenue choices but high investment needs in infrastructure, social programs, and other economic initiatives.

Figure 1: Uzbekistan: General government debt 1997-2020 (% of GDP)



Source: World Bank, World Development Indicators

In Uzbekistan, a number of state measures have been implemented in recent years as part of the country's reforms to achieve comprehensive economic growth in several sectors of the economy. The majority of these initiatives were funded by the state budget. This, in turn, resulted in a growth in the national debt. By the end of 2020, public and publicly guaranteed (PPG) debt had risen to 38 percent of GDP, almost double the level three years earlier.

Theories of public finance provide opposing views on how to use debt resources to boost economic development. On the one hand, classical and Ricardian theories imply that public debt is a burden on future generations and that long-term debt stifles investment. The Keynesian approach, on the other hand, advocates for an acceptable stock of public debt in the short term in order to promote investment and job creation. Neoclassical economists believe that rising public debt has a detrimental influence on economic growth. Thus, debt financing is a two-edged sword that, when used cautiously, may be useful in achieving a greater level of economic growth. Otherwise, the negative consequences of channeling resources via public debt may arise in the form of debt overhang and crowding out.

To prevent the negative repercussions of debt financing, empirical researchers are focusing on quantifying the ideal public debt ratio. According to different research findings, moderate levels of public debt boost economic growth, but debt ratios beyond the set threshold have a negative impact on economic growth. Subsequently, most recent publications seek the optimum public debt ratio as the ratio that maximizes economic output. The presence of such a growth-maximizing public debt level suggests a non-linear debt-growth connection in which taking on extra debt over the optimal debt threshold reduces GDP. As a result, this study seeks an ideal debt-to-GDP ratio that optimizes Uzbekistan's economic growth.

Literature review

The classical ideology adheres to the laissez-faire concept and market forces' regulating activity. Thus, it primarily rejects the significance of public debt in economic growth. Classicists believe that the state's job should be to ensure the smooth operation of economic relations without participating in the economy. Smith (1904) asserts that governments have no right to incur debt, saying that debt impedes a nation's natural growth toward wealth and prosperity. Furthermore, it has been suggested that resources that might otherwise be directed to productive uses in the private sector are diverted by the state to fund its unproductive expenditures, resulting in a waste of resources with little prospect of future reproduction. Additionally, Ricardo (2005) illustrates the detrimental consequences of debt on the formation of productive capital in the economy.

By rejecting the same liberal assumptions and ideas upon which classical economics depend, Keynesians place a trust on the state, which is no longer condemned for intervening in the economy and society, but is instead tasked with implementing the market's activities and correcting its defects. Keynesians acknowledged the state's expansion of authority in order to minimize the adverse impacts of public spending and to foster economic growth and development. Additionally, public authorities are tasked with the responsibility of resolving disruptions in a social and economic phenomenon, which provides the new character of public borrowing to rectify imbalances and assure the economy's upward progression. Keynesian contributions to devising demand-side fiscal policies for reviving the economy during a recession or fostering balanced economic growth are highly regarded in this respect.

Economic liberalism made a strong comeback in the 1970s, with adherents of the neoliberal doctrine ushering in a new age by restoring the "good" classical doctrine's principles and rejecting of the state's debts. The primary reason for opposing state borrowing is the detrimental impact of public borrowing, known as "crowding-out effect." The crowding-out effect argues that as public authorities expand their debt via public borrowing, the demand for loanable money grows, resulting in an increase in the market interest rate. This reduces private investment, and as a result, private capital funds "flee" to the state sector to finance public spending. Overall, the monetarist stresses that the possibilities of encouraging debt-financed budget deficits having a positive influence on GDP growth are very slim, if not non-existent.

However, Barrow (1979), representing the rational expectations school, provided an alternative position that is consistent with the Ricardian Equivalence thesis. The paper argued against Keynesian logic and argued for debt neutrality on the basis of the equivalence of the impacts of funding a specific amount of public expenditure via the conventional method of taxation or through public borrowings.

Thus, the classical (liberal) and Keynesian arguments are combined into a so-called conventional approach (Elmendorf and Mankiw, 1998) that differentiates between the short- and long-term consequences of public debt on economic development. The approach is Keynesian in character and takes a short-term view. Consequently, demand dictates the supply of goods and services, and thus production, which may be altered by greater public borrowing to support larger budget deficits. Thus, public indebtedness may be good to the economy in the short run, particularly when the economy is in recession or experiencing poor growth rates, as well as when real GDP is substantially below potential. On the contrary, the analysis's framework is classical in character when seen over a longer period of time. Demand becomes less important, and public authorities' borrowing to fund budget deficits is assumed to result in a decline in total (public and private) saving, a rise in interest rates, a decline in investment, and a decline in capital stock. As a result, its impacts on economic growth seem to be mostly negative.

Therefore, public debt is significant in three ways for policymakers considering benefits on economic development or mitigating any potential negative consequences. To begin, public debt must not grow widespread. Public borrowing would be advantageous in instances when the economy is faced with an exceptional event that necessitates extensive government action and significant financial (public) resources. Second, financial resources acquired via borrowing should be directed toward projects that generate additional value in the economy over the medium and long term, so establishing the conditions for future repayment of the ensuing public debt without significant difficulty. Thirdly, the dimension of public debt must be examined (both the pace at which it accumulates and the total amount of debt). When public debt is enormous or grows rapidly, the chance of adverse consequences increases. This, in turn, may have a detrimental influence on economic growth.

When it comes to public debt and economic growth, there is no clear theoretical explanation for the influence of public debt. As a result, it's critical to go into the empirical analysis to learn more about the link between the two and determine if the aforementioned hypotheses are credible.

Methodology and results

Our analysis is built around the model that is aimed at estimating the relationship between economic growth and public debt. The dependent variable, thus, is the real GDP (RGDP). Along with public debt as an independent variable, other control variables are employed to test the non-linear effect of government debt on the economic growth of Uzbekistan. Following the steps of Pattillo et al. (2002), quadratic growth equation has been used to approve whether a non-linear connection between growth and public debt exists. The baseline model is specified below:

$$\text{growth}_t = \beta_0 + \beta_1 \text{debt}_t + \beta_2 \text{debt}_t^2 + \text{control variables} + \varepsilon_t$$

Where, growth is the model's dependent variable and represents the growth rate of real GDP and debt represents the public debt as a percentage of GDP. Control variables are employed so to increase the model accuracy. They include gross fixed capital formation as a percentage of GDP, gross domestic savings as a percentage of GDP, trade openness, and population growth. Consequently, we can rewrite above equation as:

$$\text{RGDP}_t = \beta_0 + \beta_1 \text{PD}_t + \beta_2 \text{PD}^2 + \beta_3 \text{GFC} + \beta_4 \text{DSAV} + \beta_5 \text{TRDOPEN} + \beta_6 \text{POP} + \varepsilon_t$$

To test for the existence of non-linear link, the squared terms of public debt is included in equation. β_0 represents the constant term in the model and ε_t is the error term of the model which reflects other variables impacting economic growth. β_1 and β_2 coefficients are of great importance since they reflect the effect of public debt on economic growth.

The estimation of ARDL model is presented below:

$$\begin{aligned} \Delta \text{RGDP}_t = & \alpha_0 + \delta_1 \text{RGDP}_{t-1} + \delta_2 \text{PD}_{t-1} + \delta_3 \text{PD}^2_{t-1} + \delta_4 \text{GFC}_{t-1} \\ & + \delta_5 \text{TRDOPEN}_{t-1} + \delta_6 \text{POP}_{t-1} + \delta_7 \text{DSAV}_{t-1} \\ & + \sum_{i=1}^p \beta_1 \Delta \text{RGDP}_{t-i} + \sum_{i=1}^{q1} \beta_2 \Delta \text{PD}_{t-i} + \sum_{i=0}^{q2} \beta_3 \Delta \text{PD}^2_{t-i} \\ & + \sum_{i=0}^{q3} \beta_4 \Delta \text{GFC}_{t-i} + \sum_{i=0}^{q4} \beta_5 \Delta \text{TRDOPEN}_{t-i} + \sum_{i=0}^{q5} \beta_6 \Delta \text{POP}_{t-i} \\ & + \sum_{i=0}^{q6} \beta_7 \Delta \text{DSAV}_{t-i} + \varepsilon_t \end{aligned}$$

Where, Δ denotes the first difference operator, α_0 is the drift component, ε_t is an error term, p and q are the lags of the dependent and independent variable.

The result of the long-run estimation is presented in Table 1 below. Maximum of two-lag restriction is applied in our model because of small sample size.

From Table 1, it is detected that in the long-run, Uzbekistan's public debt has significant negative impact on its economic growth. Specifically, at 1% significance level, a 1% rise in Uzbekistan's public debt causes 0.24% reduction in real GDP growth. The result implies that more public debt will deteriorate economic growth in the context of Uzbekistan. The negative coefficient could mean that the government debts are directed in unproductive economic activities or there is ineffective debt management system in the country.

Table 1: Long-run estimations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<i>C</i>	15.210***	2.708	5.620	0.002
<i>PD</i>	-0.239***	0.038	-6.230	0.002
<i>PD2</i>	0.003***	0.001	4.370	0.007
<i>GFC</i>	-0.028	0.034	-0.830	0.442
<i>DSAV</i>	0.127**	0.048	2.650	0.046
<i>TRDOPEN</i>	0.018	0.017	1.090	0.327
<i>POP</i>	-0.155	0.213	-0.730	0.500

Source: Author's own estimations using Stata 13

The results also reveal that Uzbekistan's domestic savings' growth significantly and positively affects economic growth. Clearly, at 5% significance level, a 1% rise in Uzbekistan's domestic savings causes 0.13% increase in real GDP growth.

Trade openness exerts positive but insignificant impact on Uzbekistan's economic growth.

Table 2: Short-run estimations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<i>ADJ (-1)</i>	-2.62***	0.389	-6.750	0.001
Δ <i>RGDP (-1)</i>	0.829***	0.202	4.100	0.009
Δ <i>PD (-1)</i>	0.432**	0.146	2.950	0.032
Δ <i>PD2 (-1)</i>	-0.005*	0.002	-2.160	0.083
Δ <i>GFC (-1)</i>	0.058	0.100	0.580	0.585
Δ <i>DSAV (-1)</i>	-0.255*	0.116	-2.210	0.078
Δ <i>TRDOPEN (-1)</i>	-0.035	0.029	-1.220	0.279
Δ <i>POP (-1)</i>	0.663	0.364	1.820	0.128

Source: Author's own estimations using Stata 13

Estimated short-run relationship among the variables employed for this study is reported in Table 2. From Table 2, the error correction term, ADJ, represents significant negative value, thus confirming the co-integration found among the variables and stability of the model under consideration. The error correction term which is employed in our study represents the speed of adjustment to long-run equilibrium and also how fast endogenous variables respond to shocks in the exogenous variables. In our case, the long-run equilibrium's speed of adjustment is 262% which means shocks will be corrected within a year.

The short-run model estimations imply that the lag of the growth has positive significant effect on the current growth rate at 1% significant level. Supporting Keynesian view, the public debt has significant positive impact on growth. Specifically, at 5% significance level, a 1% rise in Uzbekistan's public debt causes 0.43% increase in real GDP growth.

The results show that domestic savings exerts significant negative impact on growth at 10% level. Thus, in the short-run, 1% rise in domestic savings causes approximately 0.26% fall in growth.

Conclusion and recommendations

It is concluded that Uzbekistan's public debt has a considerable detrimental influence on the country's economic progress in the long term. To be precise, a 1% increase in Uzbekistan's public debt results in a 0.24 percent decline in real GDP growth. As a consequence, increased public debt will imply a decline in economic development in Uzbekistan. The negative coefficient may indicate that the government's debt is being used for unproductive economic activity or that the country's debt management system is inadequate.

In the short-run, public debt has a considerable beneficial effect on growth, corroborating the Keynesian perspective. To be precise, a 1% increase in Uzbekistan's public debt results in a 0.43 percent increase in real GDP growth at a 5% significance level.

The study's results established a favorable short-run, and a negative long-run relationship between Uzbekistan's public debt and its economic growth. As a consequence, government debt might be seen as a stimulus for economic progress for a short period of time. However, policymakers are advised to invest borrowed funds into productive sectors of the economy to guarantee that these funds generate long-term benefits. Additionally, policymakers should ensure that macroeconomic policies are effective in order to control macroeconomic variables such as the capital investment, domestic savings, and trade policies, all of which have a significant impact on economic growth.

It is also advised that future studies examine the relationship between public debt and growth in other Central Asian countries to see if they behave similarly to Uzbekistan.

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