Analysis of the Relationship Between External Debt and Economic Growth in Central Asian Countries[1]

Aziza Syzdykova[2]

Abstract

In the literature, studies on the relationship between external debt and economic growth are generally shaped around general theoretical and empirical frameworks. This study aims to shed light on the special conditions of the relationship in this region by addressing the external debt structure and economic growth performance of Central Asian countries. Although Central Asian countries entered the independence process with zero debt in 1991, they have received significant foreign debt and aid. The study aims to empirically analyze the relationship between external debt and economic growth in Central Asian countries based on available statistical data. In the application part of the study, the relationship between the variables was examined with the Westerlund (2007) cointegration test using data from 1995-2022 in Central Asian countries. The panel FMOLS method was used to estimate long-term coefficients between variables. According to the results, the long-term regression coefficient between external debt and economic growth in Central Asian countries is -0.1493. This means that when the external debt stock increases by 1% in these countries, economic growth decreases by approximately 0.15%. When evaluated on a country basis, the relationship between external debt and economic growth was negative in Kazakhstan, Kyrgyzstan, and Tajikistan, while it was positive in Uzbekistan. The results found for Turkmenistan are statistically insignificant. The findings are expected to guide economic policymakers, academics and international stakeholders.

Keywords: *Central Asian countries, developing countries, external debt, economic growth, panel cointegration*

JEL Codes: *C33, E62, G15, O40*

INTRODUCTION

Among the basic goals of societies, ensuring social and political development and increasing the national income level are of great importance. These goals bring with them the problem of financing the elements that will ensure progress in the relevant areas. In order to achieve growth and development, the use of foreign resources comes into play, and especially underdeveloped and developing countries have to borrow for industrialization initiatives that require high budgets. Foreign borrowing, which means that individuals and organizations resident in the country obtain credit from individuals and organizations resident in other countries, can also be used for purposes such as eliminating foreign trade and budget deficits, financing defense expenditures, rolling over debts and covering extraordinary expenses. However, foreign resource transfers are preferred not only by countries that have not completed their development process but also by developed

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countries due to their effects on protecting and providing economic balance.

If external debt is used to finance productive investments, its positive effect on national output is reversed because it causes an unrequited flow of funds during the periods when repayments are made. In addition, debts that cannot be paid on time can lead to a debt crisis by imposing a financial burden on the economy, and the problems that arise as a result can make economic balances more vulnerable to external shocks. Therefore, the debt burden problem and the need to limit debt constitute one of the important issues today. On the other hand, there is no common view in the literature on the direction of the relationship between external debt and economic growth. Some studies have found a statistically significant negative relationship between external debt and economic growth, while others have found a statistically insignificant negative relationship. In some studies, a statistically insignificant positive relationship has been obtained. There is no empirical study in the literature investigating the relationship between external debt and economic growth for Central Asian countries.

Central Asian countries include Kazakhstan, the Kyrgyz Republic, Turkmenistan, Tajikistan, and Uzbekistan. After these countries gained independence, they implemented many structural reforms and privatization programs as they transitioned to market economies (Syzdykova, 2018). The countries in question resorted to external debt to overcome the economic difficulties they experienced in the first years of independence. Although the Central Asian countries started the process of independence in 1991 without debt, they have received a significant amount of foreign loans and aid to this day. Central Asian countries, especially the Kyrgyz Republic and Kazakhstan, are among the countries with high external debt. In this context, studying the relationship between external debt and economic growth in these countries is essential. This study aims to examine the relationship between external debt and economic growth in Central Asian countries in transition. For this purpose, empirical studies on the topic were introduced after the introductory part of the article, and their results were discussed. The total foreign debts and structures of the Central Asian countries were evaluated. The data set and research method were then explained. The last part includes the analysis results, and the research is finished with the final part.

LITERATURE REVIEW

The relationship between foreign debt and economic growth began to be mentioned with Keynes and later continued with Harrod Domar. In the growth model created by Harrod-Domar, it is claimed that there is a close relationship between the investment savings rate and growth in an economy. When external resources are used in investment financing, investments will increase and as a result, high growth rates will be achieved. According to this model, when external debts are transferred to investments, it will cause an increase in domestic resources depending on the increase in national income. Increasing domestic savings will reduce the

need for external debts and financing will be provided for external debt service payments (Zhu et al.2018).

In the neoclassical model, the relationship between external debt and economic growth is positive. This approach is incomplete due to its unrealistic assumption of full capital mobility. The generally accepted proposition is that the external debt burden negatively affects economic growth. In the long run, external debts have two different effects resulting from the taxes required to finance their payments. The first effect is that taxes directly reduce taxpayers' consumption. The other effect is that, with the decrease in disposable income, taxes reduce individuals' savings and thus reduce the capital stock (Patillo et al.2002).

The " growth cum debt" puts forward the argument that investments that cannot be realized due to the domestic savings deficit will be covered by foreign borrowing (Nissanke & Ferrarini, 2004). The aim here is to analyze the debt service capacity according to the benefits and costs of external resources in the process of economic growth. In order to maintain debt capacity, additional external debts must contribute sufficiently to economic growth over time. This is because the behavior of international financial resources providers may change at different stages of the debt cycle (Karadam, 2018).

The main theoretical explanation between external debt stock and economic growth is the "debt overhang" theory (Hwang et al.2010). According to the theory, if the debt stock exceeds the country's ability to repay in the future, the expected debt service is an increasing function of the country's output level (Krugman, 1988). Therefore, investments in the country's economy will be taxed by foreign creditors, and the incentives of domestic and foreign investors to invest will decrease. Krugman established a debt overhang model regarding the dilemma of debt repayments from the perspective of creditors. According to Krugman, if the discounted value of a country's future resource transfers is less than the current value of its debts, that country has a debt problem. Faced with this problem, creditors are trying to find strategies aimed at maximizing the current value of debts. In countries where debt excess begins to become chronic, domestic and foreign entrepreneurs tend to make lower investments both in the current period and in the future. Investors expect taxes on returns to cover debt service. Any deflationary or inflationary policy implementation by the government deters investors (Patillo et al.2002). Excessive indebtedness negatively affects investments and causes lower economic growth (Ikonen, 2017).

The empirical literature highlights several types of relationships between external debt and economic growth. Some empirical studies seek answers to the question of the amount of debt. Developing countries are especially trying to complete their economic development through foreign borrowing, which is one of the most common types of financing. How and to what extent external debt affects economic growth is a much-discussed issue in the literature. The theoretical literature on this topic developed mainly due to the debt crisis in Latin America in the 1980s (Presbitero, 2005). According to the general theory, foreign debt reduces economic growth. Although

many empirical studies support this theory, some have found a non-significant relationship. Eberhardt and Presbitero (2015) investigated the linear and nonlinear relationship between public external debt and economic growth with data from 1961-2012. A total of 118 countries were included in the analysis, including 22 low-income, 27 lower-middle-income, 33 upper-middle-income and 36 high-income countries. After performing the panel cointegration analysis, it was estimated with a long-run coefficient estimator. As a result, there is a negative relationship between public external debt and long-term growth, and the degree of this relationship varies from country to country. Siddique et al. (2015) analyzed the impact of external debt burden on economic growth for more than 40 highly indebted countries, including the Kyrgyz Republic, one of the Central Asian countries, with data from 1970 to 2007. The results of the empirical analysis show that in the short term and in the long term, reducing the debt stock significantly increases the growth performance of indebted countries.

Kamaci (2016) studied the effect of foreign borrowing on economic growth and inflation in Azerbaijan, Kazakhstan, Kyrgyz Republic, Uzbekistan, Tajikistan, Turkey and Turkmenistan with data from 1995-2014. Panel cointegration and panel causality analysis revealed a long-run relationship between external borrowing and economic growth and inflation. However, according to the results obtained from the causal analysis, although there is a unidirectional relationship between external debt and economic growth, the causal relationship between external debt and inflation has yet to be determined. Kharusi and Ada (2018) found that external debt has a negative and significant effect on economic growth in Oman. It recommends more efficient use of external debt to influence positive growth.

Zhang et al. (2020) investigated the causal relationship between external debt and economic growth in developing countries, finding bidirectional causality between the two variables. Zuhroh and Pristiva (2022) found that external debt has a significant positive effect on economic growth in South Asian countries. Azretbergenova et al. (2022) examined the relationship between external debt and economic growth in the BRIC countries. The study found a long-term negative relationship between external debt and economic growth with a regression coefficient -0.1108.

Gurung (2023) stated that external debt has a negative impact on economic growth in Nepal. Shah et al. (2023) found a negative and significant relationship between external debt and economic growth in developing countries. Ale et al. (2023) found a significant negative relationship between foreign debt and economic growth in South Asian countries, both in the long run and in the short run. The authors recommend encouraging domestic savings and investment to reduce dependence on foreign debt. Heimberger (2023) applies meta-regression methods to 816 estimates from 47 primary studies. The unweighted average of the presented results shows that a 10% increase in the public debt-to-GDP ratio is associated with a 0.14% decrease in the annual

growth rate with a 95% probability. Abate (2023) examines the nature of the relationship between public debt and economic growth in Ethiopia. For this purpose, time series data from 1982-2018 were used. Nonlinear ARDL and multiple marginal nonlinear ARDL models were used to determine the relationship asymmetry between Ethiopia's external debt and economic growth. An instrumental variable regression model with a quadratic specification was used to test the marginal effect of debt. The results show evidence to support the existence of an asymmetric relationship between the indicated variables. Accordingly, it was found that a significant positive debt shock is favourable to economic growth, while a minor and negative debt shock is unfavourable. The results further show that debt has a marginal effect when the external debt-to-GDP ratio is below 66.75%, which benefits Ethiopia's economic growth. Debts above this threshold will impair the country's economic growth. The study recommends that the Ethiopian government create an enabling environment to help secure more loans from potential creditors while keeping annual debt well below 66.75% of GDP.

A study by Yamin et al. (2023) carefully examines the theoretical and empirical literature on the impact of external debt on economic growth in developed and developing economies. The authors aim to determine whether there is mutual agreement on the impact of external debt on economic growth. As a result, it determines a number of conflicting information about the relative impact of foreign debt on economic growth. Although most of the reviewed literature supports the negative effect of external debt on economic growth, several other studies have found long-term positive effects of external debt on economic growth through the fiscal multiplier effect. The article finds that several other studies support the hypothesis that no relationship exists between external debt and economic growth. Overall, these theoretical models and empirical studies show inconclusive results based on various criteria, such as the level of development of the sampled countries, the methodology used, data coverage, and the researchers' choice of control variables.

METHODOLOGY

This study aims to examine the relationship between external debt and economic growth in Central Asian countries. An empirical model was created within the framework of panel data analysis using the external debt stock and growth indicators of 5 countries under analysis (Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan) for the period 1995-2022. The developed empirical model is as follows:

$$lngrowth_{it} = \alpha_{it} + \beta_{it}lnedebt_{it} + e_{it} \qquad (1)$$

$i = 1, \dots, 5$ in equation 1 indicates countries and time period $= 1995, 1996 \dots 2022$. ln represents the natural logarithm of the variables, and ε is the stochastic error term. In the study, the dependent variable expressed as «$growth$» is the GDP of each country, while the variable «$edebt$» is the external debt stock of each country. Data on variables were obtained from the official website of the World Bank in US dollars.

This study uses Westerlund's (2007) panel cointegration test to examine the long-run relationship between external debt and economic growth in Central Asian countries. The panel FMOLS method was used to estimate long-run coefficients. Westerlund (2007) proposed a 4-panel cointegration test based on an error correction model to test the presence of cointegration. The basis of the tests is to check for cointegration by deciding whether each unit has its correction. Thus, when the main hypothesis of "no error correction" is rejected, the hypothesis of "no cointegration" is also rejected. The following error correction pattern applies:

$$\Delta Y_{it} = \delta_i' d_t + \alpha_i \left(Y_{i,t-1} - \beta_i' X_{i,t-1} \right)$$
$$+ \sum_{J=1}^{p_i} \varphi_{ij} \Delta Y_{i,t-j} + \sum_{J=-q_i}^{p_i} \gamma_{ij} \Delta X_{i,t-j} + \varepsilon_{it} \qquad (2)$$

Moreover, rearranged as follows:

$$\Delta Y_{it} = \delta_i' d_t + \alpha_i Y_{i,t-1} + \lambda_i' X_{i,t-1} + \sum_{J=1}^{p_i} \varphi_{ij} \Delta Y_{i,t-j} + \sum_{J=-q_i}^{p_i} \gamma_{ij} \Delta X_{i,t-j} + \varepsilon_{it} \qquad (3)$$

d_t in equations 2 and 3 is a vector of deterministic components (constant and trend); λ_i is long-term, γ_i and φ_i are short-term parameters. Similar to the Pedroni (2001a) test, the autoregressive parameter can be estimated in two ways: specific to each unit or specific to the entire panel. In the first type of statistic, called the "panel variance coefficient statistic," the autoregressive parameter is assumed to be constant for all units. In the second type of statistic, the "group mean-variance coefficient statistic," the autoregressive parameter varies from unit to unit.

FINDINGS AND DISCUSSION

Data on foreign debts of Central Asian countries after independence are given in Tables 1 and 2. Data on external debt in the form of total external debt stock and their ratio to GDP and total exports of the respective countries were obtained from World Bank data. Central Asian countries, which had zero debt in 1991, could borrow significantly in the first four years after independence, as shown in Table 1. In the current period, the total debt stock increased systematically in all of these countries except Turkmenistan. According to the results of 2022, the total external debt fund of Kazakhstan is 161.7 billion dollars. After Kazakhstan, the country with the most significant external debt is Uzbekistan, and its external debt fund is about 49.1 billion dollars. As can be seen from Table 1, Uzbekistan's external debt has proliferated since 2020. It can be seen that the country with the least foreign debt in Central Asia is Turkmenistan, which has a foreign debt of 4.5 billion US dollars.

Table 1: Total Stock of External Debt in Central Asian Countries (billion US dollars)

Countries/Years	1995	2000	2005	2010	2015	2020	2021	2022
Kazakhstan	3,75	12,89	43,86	119,15	153,47	161,46	160,81	161,72
Kyrgyz Republic	0,61	1,94	2,26	4,12	7,72	8,68	9,06	9,53
Tajikistan	0,63	1,14	1,12	3,56	5,14	6,90	6,97	6,74
Turkmenistan	0,40	2,63	1,15	1,68	7,00	5,64	4,85	4,51
Uzbekistan	1,80	4,95	4,63	7,98	13,39	33,71	40,84	49,10
Source: Compiled by the author with World Bank data.								

Table 2 shows the ratio of total external debt of Central Asian countries to GDP and total exports of countries. According to the IMF and the World Bank, if the total foreign debt to GDP ratio exceeds 50 per cent, this country is considered highly indebted. The corresponding country is considered a medium-debt country if the total debt-to-GDP ratio is between 30% and 50%. Accordingly, all countries except Turkmenistan, namely Kazakhstan, Kyrgyz Republic, Tajikistan and Uzbekistan, are in the category of countries with high debt. Turkmenistan's total external debt to GDP ratio was 16.20% in 1995, which will be 7.98% in 2022. With this indicator, Turkmenistan is among the countries with the lowest debt. In general, the ratio of external debt to GDP in Central Asian countries has the highest indicator in the Kyrgyz Republic, which is 82.51%. Tajikistan and Uzbekistan's total external debt/GDP ratio is 64.28 and 61.08%, respectively.

Table 2: Ratio of Total Foreign Debt to GDP and Exports (%)

	1995	2000	2005	2010	2015	2020	2021	2022
Kazakhstan								
External debt/GDP	18,41	70,47	76,78	80,48	83,23	94,37	81,59	71,72
External debt/Export	62,76	126,05	138,01	178,36	320,90	327,67	224,21	172,81
Kyrgyz Republic								
External debt/GDP	36,69	141,48	91,72	85,90	115,60	104,91	97,97	82,51
External debt/Export	136,02	338,21	238,48	187,04	318,35	356,25	275,26	262,53
Tajikistan								
External debt/GDP	51,14	132,55	48,30	63,12	62,19	84,87	77,99	64,28
External debt/Export	-	-	227,00	422,89	623,76	489,91	322,50	384,78
Turkmenistan*								
External debt/GDP	16,20	90,44	14,23	7,45	19,56	12,30	9,70	7,98
Uzbekistan								
External debt/GDP	13,49	35,96	32,37	16,04	15,53	55,98	58,68	61,08
External debt/Export	-	-	82,99	66,16	113,00	231,91	248,38	203,78
Note: Export data for Turkmenistan could not be accessed.								

Source: Compiled by the author with World Bank data.

The empirical analysis in the article begins with a test of cross-sectional dependence. The cross-sectional dependence test is important for the series that make up the panel. The presence of cross-sectional dependence is important for determining the unit root and other types of analysis used in later stages of the analysis. Cross-sectional dependence can be defined as the instantaneous correlation between series. The results related to cross-sectional dependence are presented in Table 3.

Table 3: Cross-sectional dependence test results

Variables	LM (Breusch, Pagan 1980)		CD_{LM} (Pesaran 2004)	
	Test statistics	Probability value	Test statistics	Probability value
lngrowth	-0.893	0.008	-3.729	0.002
lnedebt	46.765	0.016	53.875	0.006

According to the results, the null hypothesis of cross-sectional independence for the $growth$ and $growth$ variables in the model is rejected. Accordingly, there is a dependence between growth and the cross-sectional units of the external debt series. It is unrealistic to assume that the cross-sectional units that make up the panel will never interact with each other under any shock conditions. Because of the cross-sectional dependence of the series used in the study, a second-generation unit root test was used to account for this condition. Pesaran's CADF test was used for this type of analysis. In his study, Pesaran (2007) proposed a method of surrogate variables instead of self-inference and estimation of factorial predicates for situations where horizontal dependence is identified. This method is called "Covariate Augmented Dickey-Fuller (CADF)" because the ADF regression is augmented with lagged cross-sectional means.

Table 4: Pesaran panel unit root test results

Variables	Level		1st difference	
	$\bar{t}$	**%5**	$\bar{t}$	**%5**
lngrowth				
Intercept	-1.936	-2.330	-5.082**	-2.330
Intercept&Trend	-2.528	-2.830	-5.564**	-2.830
lnedebt				
Intercept	-2.193	-2.330	-5.247**	-2.330
Intercept&Trend	-2.604	-2.830	-4.545**	-2.830
Note: ** denotes 5% significance level.				

As a result of the unit root test, it can be seen in Table 4 that the level values are not constant, although there is a trend from the deterministic components. This means that the shock effects in the series do not disappear over time. When taking the first difference, the variables become stationary according to all statistical test values; they have an I (1) process. Since one-order stationarity is established, cointegration analysis can be started. After examining the stationarity of the series that make up the panel, the cointegration test used is decided on the basis of the obtained information. When making the assumptions of panel cointegration tests, the degree of stationarity of the variables changes the type of test used. The series considered in the study includes cross-sectional dependence.

For this reason, the study used Westerlund's (2007) panel cointegration test (Table 5). In his study, Westerlund (2007) proposed four-panel cointegration tests to test the presence of cointegration in panel data. The basis of the tests is to check for cointegration by deciding whether each unit has its error correction.

Table 5: Westerlund (2007) panel cointegration test results

Test	Test statistics	z value	p-value	Constant p-value
G_t	-3.257	-3.212	0.001*	0.001*
G_a	-36.931	-10.304	0.025**	0.000*
P_t	-8.104	-2.127	0.020**	0.194
P_a	-16.675	-3.780	0.010*	0.040**
Note: * and ** indicate 1% and 5% significance levels, respectively.				

According to the results of the cointegration test, it is decided that there is a cointegration relationship between the series. In other words, tests performed with baseline values do not contain spurious regression. According to the results of the cointegration test, looking at the strong probability values of the test statistics that take into account horizontal dependence in Central Asian countries, it is concluded that there is a long-term relationship between external debt and economic growth at the 5% significance level in the long run. The long-term cointegration vector of the model defined by the numerical expressions of the cross-sectional dependence and the cointegration relation was estimated by the FMOLS (Full et al.) estimator developed by Pedroni (2001). The FMOLS method stands out as an unbiased and consistent method by correcting biases caused by problems such as OLS (ordinary least squares), autocorrelation, and heteroscedasticity in standard fixed effect estimators. Allowing for significant heterogeneity among individual cross-sections, the FMOLS method also considers possible correlations between the constant term, the error term, and the variance of the independent variables. The results of estimation by the Panel FMOLS method are as follows (Table 6):

Table 6: FMOLS test results

Countries	Coefficient	t-Statistics	Standard deviation
Kazakhstan	-0.1058*	-30.04088	0.19709
Kyrgyz Republic	-0.1650*	-9.03094	0.04403
Tajikistan	-0.1137**	-12.04346	0.08437
Turkmenistan	0.0370	-4.27144	0.10113
Uzbekistan	0.0532*	-27.74082	0.04508
Panel	-0.1493*	-1.75505	0.04907
Note: * and ** indicate 1% and 5% significance levels, respectively.			

According to the results, the estimated long-term regression coefficient between external debt and economic growth is -0.1493. According to empirical findings, there is an inverse relationship between economic growth and external debt, and the results are consistent with the theory. If the external debt stock increases by 1%, economic growth will decrease by about 0.15%. By country, the relationship between external debt and economic growth is positive for Turkmenistan and Uzbekistan and negative for Kazakhstan, the Kyrgyz Republic, and Tajikistan. Although a positive relationship was found between the variables in Turkmenistan, it is statistically insignificant. In Kazakhstan, the Kyrgyz Republic, and Tajikistan, the external debt fund increases by 1%, while economic growth decreases by 0.10%, -0.16%, and -0.11% in these countries, respectively. And in Uzbekistan, a 1% increase in foreign debt increases economic growth by 0.05%.

CONCLUSION

In the literature, according to the relationship between external debt and economic growth, external debt has a positive effect on growth up to a certain level. If it exceeds this level, the relationship between economic growth and external debt becomes negative due to excessive debt. The increase in foreign debts in Central Asian countries has become an essential economic problem, as in many other developing countries. The study examined the relationship between external debt and economic growth in Central Asian countries using the panel cointegration method. For this purpose, annual data from 1995-2022 were used. As a result of the applied Westerlund (2007) panel cointegration test, a long-run relationship between external debt and economic growth variables in Central Asian countries was determined. The long-run cointegration vector was then estimated with a panel FMOLS estimator. According to the results, the long-term regression coefficient between foreign debt and economic growth in Central Asian countries is -0.1493. This means that if the external debt stock increases by 1% in Central Asian countries, economic growth will decrease by about 0.15%. When considering countries individually, the relationship between external debt and economic growth was negative in Kazakhstan, the Kyrgyz Republic and Tajikistan and positive in Uzbekistan. The results found for Turkmenistan are meaningless. In order to solve the problem of foreign debt in Central Asian countries, it is necessary to manage foreign debt effectively. The basis of these countries' external debt problems lies in insufficient domestic savings. Therefore, the policy of increasing domestic savings should be implemented to reduce the need for foreign debt. Other challenges in countries include reducing the shadow economy and tax evasion, effectively fighting corruption, and increasing funds allocated to productive investments by reducing public spending.

REFERENCES

Abate, C. A. (2023). Is the Nexus of Public Debt and Economic Growth in Ethiopia Symmetric? Cogent Economics & Finance, 11(2), 2231226. DOI: 10.1080/23322039.2023.2231226

Al Khatib, A. M. G., Alshaib, B. M., & Kanaan, A. M. (2023). The Interaction Between Financial Development and Economic Growth: A Novel Application of Transfer Entropy and Nonlinear Approach in Algeria. SAGE Open, 13(4), 21582440231217871. https://doi.org/10.1177/2158244023121787

Ale, S. A., Islam, M. S., & Nessa, H. T. (2023). Does External Debt Affect Economic Growth: Evidence from South Asian Countries. International Journal of Economics and Financial Issues, 13(1), 83. https://doi.org/10.32479/ijefi.13527

Azretbergenova, G., Zhetibayev, Z., & Yessymkhanova, Z. (2022). Relationship between external debt and economic growth: panel data analysis for BRIC countries. Journal of Economic Research & Business Administration, 141(3), 3-11. https://doi.org/10.26577/be.2022.v141.i3.01

Eberhardt, M., & Presbitero, A. F. (2015). Public debt and growth: Heterogeneity and non-linearity. Journal of International Economics, 97(1), 45-58. https://doi.org/10.1016/j.jinteco.2015.04.005

Gurung, A., & Rijal, D. P. (2023). External Debt and Internal Debt Impact on the Growth of the Nepalese Economy. Open Journal for Research in Economics, 6(1). https://doi.org/10.32591/coas.ojre.0601.02013g

Heimberger, P. (2023). Do higher public debt levels reduce economic growth? Journal of Economic Surveys, 37(4), 1061-1089. https://doi.org/10.1111/joes.12536

Hwang, J. T., Chung, C. P., & Wang, C. H. (2010). Debt overhang, financial sector development and economic growth. Hitotsubashi Journal of Economics, 13-30.

Ikonen, P. (2017). Financial depth, debt, and growth. Scientific monographs, No. E:51, ISBN 978-952-323-161-0, Bank of Finland, Helsinki, https://nbn-resolving.de/urn:nbn:fi:bof-201705171300

Kamaci, A. (2016). Dış borçların ekonomik büyüme ve enflasyon üzerine etkileri: panel eşbütünleşme ve panel nedensellik analizi. Uluslararası Kültürel ve Sosyal Araştırmalar Dergisi, 2(Special Issue 1), 165-175. https://dergipark.org.tr/tr/download/article-file/253530

Karadam, D. Y. (2018). An investigation of nonlinear effects of debt on growth. The Journal of Economic Asymmetries, 18, e00097.

Kharusi, S. A., & Ada, M. S. (2018). External debt and economic growth: The case of an emerging economy. Journal of economic integration, 33(1), 1141-1157. http://dx.doi.org/10.11130/jei.2018.33.1.1141

Krugman, P. (1988). Financing vs. forgiving a debt overhang. Journal of development Economics, 29(3), 253-268.

Nissanke, M., & Ferrarini, B. (2004). Debt dynamics and contingency financing: Theoretical reappraisal of the HIPC initiative. In Debt relief for poor countries (pp. 24-58). London: Palgrave Macmillan UK.

Pattillo, C. A., Poirson, H., & Ricci, L. A. (2002). External debt and growth. IMF Working Paper, 2002 WP 2/69. https://is.gd/oebXWC

Pedroni, P. (2001a). Purchasing power parity tests in cointegrated panels. Review of Economics and Statistics, 83(4), 727–731. https://EconPapers.repec.org/RePEc:tpr:restat:v:83:y:2001:i:4:p:727-731

Pedroni, P. (2001b). Fully modified OLS for heterogeneous cointegrated panels", Baltagi, B.H., Fomby, T.B. and Carter Hill, R. (Ed.) Nonstationary Panels, Panel Cointegration, and Dynamic Panels (Advances in Econometrics, Vol. 15), Emerald Group Publishing Limited, Leeds, pp. 93–130. https://doi.org/10.1016/S0731-9053(00)15004-2

Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. Journal of Applied Econometrics, 22(2), 265-312. https://www.jstor.org/stable/25146517

Presbitero, A. F. (2005). The debt-growth nexus: an empirical analysis. Mimeographed). Downloadable at: http://www. Unicast. it/convegno/open_ economy/Allegati/debtgrowth_presbitero. pdf.

Siddique, M. A. B., Selvanathan, E. A., & Selvanathan, S. (2015). The impact of external debt on economic growth: empirical evidence from highly indebted poor countries. University of Western Australia, Economics. DOI: 10.1016/j.jpolmod.2016.03.011

Syzdykova, A. (2018). Orta Asya ülkelerinde enerji tüketimi ve ekonomik büyüme ilişkisi: Panel veri analizi. Afyon Kocatepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 20(1), 87-99. DOI NO: 10.5578/jeas.67162

Westerlund, J. (2008). Panel cointegration tests of the Fisher effect. Journal of Applied Econometrics, 23(2), 193-233. https://doi.org/10.1002/jae.967

World Bank. URL: http://databank.worldbank.org/ (date of application: 21.12.2023)

Yamin, I., Al_Kasasbeh, O., Alzghoul, A., & Alsheikh, G. (2023). The Influence of Public Debt on Economic Growth: A Review of Literature. International Journal of Professional Business Review, 8(4), e01772-e01772. https://doi.org/10.26668/businessreview/2023.v8i4.1772

Zhang, B., Dawood, M., & Al-Asfour, A. (2020). External debt and economic growth: A dynamic panel study of Granger causality in developing countries. The Journal of Asian Finance, Economics and Business, 7(11), 607–617. DOI: 10.13106/jafeb.2020.vol7.no11.607

Zhu, X., Lin, S., Wang, L., Wu, W., Qin, Q., Zhu, X., ... & Qin, Q. (2018). Debt and economic growth. A Study of the Turning Point of China's Debt, 1-13.

Zuhroh, I., & Pristiva, D. (2022). External Debt and Economic Growth: Evident from South Asian Countries. JEJAK, 15(1), 92-101. https://doi.org/10.15294/jejak.v15i1.34293