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Determinants of government debt accumulation in Iran's economy with emphasis on economic growth and budget deficit (using the Lasso and ARDL approach)

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Abstract

Government borrowing is considered a means of financing the government, which first appeared in 1688 in Britain and then in America, Belgium, Denmark, etc. Receiving loans and credit through domestic banks and institutions as well as through international monetary institutions is one of the things that will create debt for governments in the future. Today, government debt is a global phenomenon that most countries in the world face. The purpose of this paper is to study the impact of economic growth and government budget deficit on the accumulation of government debt in Iran's economy using the Lasso and ARDL approach for the period 1979-2023. The results of the research through the Lasso approach showed that economic growth, foreign direct investment, government budget deficit, economic openness, real interest rate and inflation variables were chosen as the determinants of accumulation of the government's debt. The results of the model estimation through the ARDL approach showed that in the long term, the economic openness variable had a positive and significant effect on the accumulation of government debt. Also, in the long term, economic growth and the real interest rate variables had a negative and significant effect on the dependent variable. The results of the model for examining the short-term dynamics indicated the significance of the variables of openness of the economy, the economic growth, the real interest rate and the budget deficit. Similar to the long-term period, economic openness had a positive and large effect on the accumulation of the government debt in the short-term period. Although the positive effect of the budget deficit was not significant, the negative effect of the interest rate on the government debt was significant in both the long-term and short-term periods.

Keywords: Budget deficit, Economic growth, Government debt accumulation, ARDL, Lasso approach.

JEL Classification: H63, C3, C53, N85.

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1. Introduction

According to the definition of the International Monetary Fund, government debt is an obligation that requires the payment of interest or capital to the debtor. According to the studies, the increase in government debt was often caused by their efforts to support the country's economic growth after the crisis (Swami, 2015). The purpose of this research is to investigate the impact of economic growth and government budget deficit on the accumulation of government debt in Iran. The hypotheses of this research are presented as follows: 1- Economic growth in the long and short term affects the accumulation of government debt. 2- The government budget deficit affects the accumulation of government debt in the long and short term. Lasso approach and ARDL are used to test the hypotheses and determine the variables affecting the accumulation of government debt in Iran.

2. Theoretical Framework

Several empirical studies have focused on the determinants of government debt. According to the studies, several factors such as budget deficit, exchange rate, inflation rate, trade freedom and gross domestic product and economic growth, business cycles, banking crisis and the amount of government debt in the previous period can affect the accumulation of government debt (Sinha et al., 2011).

2-1. The relationship between economic growth and government debt

There are many economic studies on the importance of the impact of economic growth on government debt. In a study that examined the relationship between government debt and economic growth in 20 developed countries, the results showed that economic growth has a negative effect on government debt in the short term, while its positive effect was confirmed in the long term (Kam and Octem, 2018). Also, the results of a study conducted in 2015 for the G7 countries indicate the negative impact of economic growth on government debt in the long term (Kampa and Sadat Khan, 2015).

2-2. The relationship between the budget deficit and the accumulation of government debt

The concept of budget deficit is the excess of government expenditure over government income. Although governments may not fund all expenses through taxes and choose to borrow as another important method of financing the government, which includes issuing and selling bonds or borrowing from institutions. Therefore, debt and financing through taxes are among the tools to solve the budget deficit. Keynes believes that the combination of tax and monetary borrowing can be a suitable tool to solve the budget deficit in a situation where the economy is in recession (Florenso and Falad, 2013).

Public Sector Economics Studies Qurterly 10 PSE
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3. Methodology

In this research, two Lasso approaches and the ARDL approach have been used to investigate the factors affecting the government debt in Iran's economy. In this research, the model used by Omraneh and Balqis in 2017 for Tunisia and Zahra et al. in 2023 for Pakistan has been used.

(1) $Debt\_t=F(GDP_t\ .INF_t.rint_t.tgdp_t.Exchange.\ BD_t\ .FDI.Corr)$

Debt: Government debts: including all debts that need to be paid and including debts in the form of SDR, currency and deposits, debt securities, loans, insurance, pension and standard guarantee schemes and other accounts. It is payables that have been extracted from the World Bank and the Central Bank in medium, long, and short term periods. GDP: real economic growth rate at the price of 2015. INF: Consumer price index based on the price of 2015. Rint: the real interest rate, which is the interest rate related to the loan and is adjusted based on inflation and is measured by the change in GDP. (the year 1995 is considered as the base year). tgdp: The openness of the economy, which is based on the total export and import of goods and services, which is measured as a share of the GDP. FDI: foreign direct investment. BD: government budget deficit, Exchange: real exchange rate based on price index in 2015, Corr: corruption control index.

4. Discussion

According to the topics mentioned in the research method section, the purpose of this research is to obtain the prediction function by the Lasso approach and to investigate the factors that determine the accumulation of government debt in Iran. The data was collected by the World Bank and the Central Bank during the years 1357-1402, and the Lasso and ARDL approach has been used by the software Stata. Based on this, in the model selected by the Lasso approach, the number of explanatory variables in this model includes GDP, government budget deficit, openness of the economy, foreign direct investment, real interest rate and inflation.

According to the estimation results with the approach ARDL, in the long term, the variables of openness of the economy, economic growth rate, and real interest rate have a significant effect on the government debt. The economic openness variable, which includes the total exports and imports, has a positive and significant effect on the government debt with a coefficient of 63.1833 units, and the economic growth variable has a significant and negative effect on the dependent variable with a coefficient of -19. 305. Also, the long-term estimation results indicate a significant and negative effect of the real interest rate on the government's debt in the long-term, and the increase of this variable through the increase of foreign direct investment can cause an increase in the value of the domestic currency and a reduced effect on the budget deficit. The result is a reduction in government debt. The results of the model for short-term dynamics indicated the significance of the variables of economic openness, real interest rates, budget deficit, economic growth, and government debt in the previous period. The results also indicate a positive and significant effect of the budget deficit in the short term on government debt. Also, the variable of economic growth has a positive effect on the accumulation of government debt in the short-term dynamics. Also, the real interest rate also has a negative effect on the accumulation of government debt in the short term.

5. Conclusion and Suggestions

The results showed that the variables of foreign direct investment, economic growth, budget deficit, economic openness, inflation and real interest rate were selected by Lasso. Also, in the long term, the economic growth variable and the real interest rate variable have a negative and significant effect on the dependent variable. In the long-term relationship between the variables, as reported, the economic openness variable in the long term, due to its great impact on the government debt, can have a greater effect on the dependent variable than the GDP and the real interest rate variables, and increasing It causes a large increase in the government's debt. Also, the results of short-term dynamics indicated a positive and significant effect of the variables of openness of the economy, the economic growth and the budget deficit, and the negative effect of the real interest rate variable on government debt.

6. Ethical Considerations

6.1. Compliance with ethical guidelines

The present study has followed the scientific principles of research.

6.2. Authors' Contribution

the authors contribute equally in writing this article.

6.3. Conflict of Interest

The authors declare that there is no conflict of interest in this research.

6.4. Acknowledgments

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