The Impact of Government Debt on Economic Growth in North Macedonia

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Abstract
This paper investigates the impact of the North Macedonian government debt on its economic growth through an econometric analysis. The data consists of relation between domestic and foreign general government debt to economic growth in North Macedonia. For this purpose, the appraisal utilizes the model of autoregressive distributed lag exploiting yearly data for the time-frame 1999 - 2020. Moreover, the assessment comprised additional variables to control the main variables and they are the following: Debt service payments, Foreign reserve position, Gross fixed capital formation as a percentage of GDP and Foreign Direct Investment inflow as a percentage of GDP. The data are converted to natural logarithm and it is found a solid negative relationship of domestic and external government debt to real growth rate of gross domestic product.

Keywords: domestic debt, external debt, real economic growth rate, Policy

JEL Classification codes: C22, E62, H63, O40

1. Introduction

Government debt have always placed main economic topic for discussion among the government globally. Its role becomes more actual during crisis, considering the last financial global crisis in 2007 and lately the pandemic Covid-19 and the actual crisis Russia-Ukraine. It addresses the owning of the country to lenders. The lenders incorporate: people, organizations and foreign governments. Government debt as an expression is regularly utilized reciprocally with the government sovereign obligation term. Ordinarily it articulates just for public obligation. Whereas a few nations additionally incorporate as obligation that needs to be payed to countries, areas and also districts. Consequently, there is a need for being cautious once we contrast government obligations among nations with ensure the definitions are the equivalent. Despite this expression, government obligation is the collection of the yearly budget deficit. These comes as a consequence of expenditures made by the government if they are becoming higher compared to what its gets over taxes that considered as income (Amadeo, 2020). As indicated by Irons and Bivens (2010) exists a lot of discussions in government approach regarding the upcoming dangers in the country’s economy in case they pass a particular specific limit for the proportion of government obligation and real growth rate of gross domestic product.
The theories for real growth rate of gross domestic product and the relation with other variables such as of inflation and unemployment (Phelps, 1967; Friedman, 1968, Fellner, 1960) empower us for additionally exploring if the relationship exists among real growth rate of gross domestic product and government obligation in North Macedonia. Moreover, analysing also the type of this relationship if it is positive or negative.

Furthermore, legitimization for borrowing of governments is deeply explained by neoclassical growth models, that recommends the capital requirement of scant for expanding it and amassing furthermore consistent of output per capita in country level (Madow et al., 2021). With the expansion of financial crisis worldwide brought additional interest (particularly for the developing countries) to increase their borrowings since the expenditures have increased more than their inflow of capital (Ogbonna et al., 2019). Additionally, other theories recommend for public obligation that impacts positively on economic development especially in the short-run by increasing the aggregate demand also output. In any case, the findings of literature highlight a negative relationship between economic growth and public debt which additionally brings to crowding out private investment, increase in long term of interest rates, increase in inflation, and also increase in future duty (Mhlaba et al., 2019). By increasing broadly, the internal debt might also bring to serious consequences to the economy. Internal debt service impacts in consumption of main government incomes, particularly considering that internal rates of interest remain greater compared to external interest rates. If the stock of debts increases, the cost of interest of internal borrowing might increase particularly in thin financial markets. Over the long period the increase in interest rates, impacts in crowding out private investments. This will follow to a lower consistent state capital stock by which also the output will decrease as well. In this manner, the impact of higher debt of one country in long term might decrease the output, consumption and also the welfare of economy. Borrowings in long term brings problems to new generations which leaves them with modest capital stock (Ákos and István, 2019).

The North Macedonia stands classified in Southeast European countries not very heavily indebted country with a total public debt of 59.3% of GDP according to the latest data of the Ministry of Finance or North Macedonia (Open Finance, 2022a). This debt ceiling is compatible with Maastricht criteria that specifies that the ratio of total debt to GDP should not exceed 60% at the end of the fiscal year. The forecasting of Fitch rating agency (Rating report, 17 November 2021) is that the gross general government debt to increase to 53.7% of GDP in 2021 and would reach the peak and stabilize at around 55.5% of GDP starting 2026. The main risk regarding the debt sustainability will be a failure to reduce the primary budget deficit and weaker growth. The 2021 deficit will be partly financed by the IMF Special Drawing Rights allocation equivalent to EUR160 million (1.4% of GDP). Increasing worldwide the rates of interest in addition to the expanding obligation weight for North Macedonia highlights additional crunch for debt emergency in the very near future. It is obvious that the public debt is not sustainable and that impacts in deterring investments and bringing down economic development in North Macedonia, along these lines diminishing the country’s worldwide competitiveness also expanding monetary market defenceslessness to global shocks. Moreover, the European Commission Staff Working Document for North Macedonia 2021 Report, indicated that Partial headway existed for the public enclosure and security. The findings say that 21.6% of citizens live in poverty in addition to 448,000 individuals are living below the relative poverty limit. The portion of individuals that live in danger of destitution was exceptionally great by 39.9%, even though it has a diminishing pattern, however staying on double rate compared to mean of EU27. Besides, social work centres capacities are weak. The public authority altered its 2021 financial plan, modifying up its deficit forecast from 4.9% of GDP to 6.5%. This reflects higher revenue assumptions (4.7%) and consumption increments (8.7%) coordinated towards the agricultural and wellbeing areas also by expansion of public
investments to MKD30 billion. The government aid connected with the pandemic is expected to be EUR150 million (1.3% of GDP) in 2021, that is much lower compared to 2020 where it was EUR1 billion (9% of GDP). The budget deficit of the government in the period of January-September 2021 was 3.5% of GDP, because of proceeded twofold digit revenue development (16% yoy) and 70% implementation of recalculated expenditures for the entire year. The main factor in increase of revenue is economic growth. Additionally, revenues are expected to increase further because of improvement of tax collection effectiveness and diminished avoidance by the Tax System Reform Strategy (Fitch ratings, 2021).

Since the ending of political crisis in 2016, North Macedonia had managed debt service to revenue ratio with the exception of spread of COVID-19 pandemics in 2020 when the ratio has increased. North Macedonia’s government spent about 24.9 billion Macedonian denars to pay its debt in 2019 whereas it had 203.8 billion Macedonian denars revenues, or 12.2% debt service to revenue ratio. The cost of debt profile has almost doubled in North Macedonia in 2020, registering increase in debt service payments to 50.2 billion Macedonian denars and decrease in total budget revenues to 189.6 billion Macedonian denars, or 26.4 % debt service to revenue ratio. (Ministry of Finance of NRM, 2022b). This recommends that 26.4% of the revenue created in 2020 remained utilized for meeting debt payment commitments that troubling signs. At the point when a state a large percentage from its revenue to pay own debts, it remains little to spend on capital expenditures that influences decrease in economic growth.

The interest for choosing North Macedonia in this research is on limited empirical studies on the abovementioned increase in domestic and external public debt, rapid increase in debt service to revenue ratio, fluctuation on total reserves including gold, decrease on Foreign Direct Investment as a percentage of GDP and decrease on Gross Fixed Capital Formation as a percentage of GDP.

The strife between a quick expansion in public debt and debt service payments brings to low degree of GDP development and growth for poverty in North Macedonia becomes special interest to study for researchers. This vulnerability incited the interest to analyse assuming a raising country debt has any impact on growth in North Macedonia.

2. Literature review

Scholastics, market analysts, specialists and others raised huge discussion for the variables that impact real growth rate of gross domestic product. Growth rate has kept on being the fundamental objective of development approach, after that can analysed other variables (Ramos and Hynes, 2019). The effect for increasing government obligation in relation to economic growth in European Union is additioanlly a touchy subject being broadly focussed from Mencinger et al. (2014) that look at immediate impact from greater obligation towards economic development within European Union member countries. As an outcome demonstrates a genuinely critical not-direct effect of public obligation proportions on yearly p.c. development rates.

Public obligation was additionally a worry for North Macedonia since its independence. In spite of the fact that contrasted with different nations, North Macedonia remained viewed as recuperating great from the worldwide monetary emergency; government obligation stayed a concern lately. Country obligations raised by double for the last 10 years, that is from 23% debt to GDP ratio in year 2008 up to 50.1% in year 2016 according to Ministry of Finance of the Republic of North Macedonia (2017). Albeit it might be considered low if you compare it neighbouring countries or western European states, still for a small economy that has North
Macedonia is measured maximum level that the country can reach to have a stable obligation. Numerous studies have illustrated for in case the government debt is above the threshold it reduces likely economic development, that in fact might demonstrate a non-linear and concave, that is opposite connection among public obligation to GDP development (Cecchetti, et al. 2010; Checherita and Rother, 2010; Clements, et al. 2003; Kumar and Woo, 2010; Reinhart and Rogoff, 2010; etc). It implies small degrees of government obligations influences while additionally raise GDP development. At the point when obligation arrives at a specific stage, an extra increment of its effect on GDP development could imply that it transforms into negative.

Other group of examinations that studied also the level of effect of various degrees of public obligation on GDP development exists with common conclusion that the negative correlation is present exclusively beyond a specific obligation to economic growth. The findings of Pattillo, et al. (2002) show a nonlinear, correlation of external levels of debt and GDP development utilizing a huge board informational index of 93 non-industrial nations during the period from 1969 until the year of 1998. They conclude that having high debt level brings to decrease in efficiency of investments and that results to decrease in economic growth. This outcome is similar to other research papers where the total factor productivity clarifies the greater part of the varieties in production. Between ongoing investigations, Clements, et al. 2003 discover uphold intended for a non-direct connection among external obligation as well as GDP development where they used a panel data from 55 less developed nations throughout 1970-1999. Their findings show dangerous net value for external obligation is from 20% to 30% of GDP (while for critical nominal value for external debt is higher than 50% of GDP). The results of Kjosev et al. (2021) show that general government debt in RNM affect positively economic growth up to the level of 30% debt-to-GDP ratio, while additional indebtedness probably might bring to adverse correlation. Additionally, Trpeski et al. (2020) conducted Granger causality test and indicated that the increase in public debt in North Macedonia, doesn’t essentially affect GDP per capita growth, whereas by conducting Vector Error Correction Model show negative correlation of public debt in both short run and long run economic growth.

3. Methodology, data and hypotheses

3.1 Methodology

With the purpose of verifying if the data are valid, and testing hypothesis, we have analysed published data being taken from main financial institution in North Macedonia and abroad. This includes the Ministry of Finance of the North Macedonia, the National Bank of North Macedonia, World Bank, State Statistical Office of North Macedonia, etc. the applied method is quantitative and also the research design is descriptive with the point of to give solutions to the research implications. The accumulated macroeconomic variables data are: External public debt (ExDebt), the Domestic public debt (DoDebt), Debt service payments (DSP), Foreign reserve position (FRP) all figures are represented in millions of USD, whereas the Growth rate of Gross Domestic Product per capita (GRGDP), Gross fixed capital formation (GFCF) and Foreign Direct Investment (FDI) are represented as a percentage of GDP. Taking into consideration availability of data that is limited, the variables are covering the period of time only from 1999 until 2020 that in total it makes 22 observations. Because of the shortage of access on the data in quarter basis, each variable is taken on a yearly premise. All the data are collected from secondary sources, since priory they had been checked by specialists and other
government institutions preceding their publication. Nonetheless, the data are presumed as reliable, however the chance of random error was not disregarded. The applied method is correlation and other techniques for studying the relation of real growth rate per capita and other independent variables. For this purpose, the data analysed in SPSS application software. The reason for choosing the specified above mentioned variables is based on economic theories and accessible literature related to the effect of government debt on economic growth in developing countries. As a dependent variable in this research with the purpose to proxy the economic growth was the growth rate of GDP per capita, whereas for the independent variables are considered government debt that are disaggregated into external and domestic debts. Except the independent variables additional control variables are used toward being between the relation dependent and independent variable. These control variables are: Debt service payments, Foreign reserve position, Gross fixed capital formation and Foreign Direct Investment. Barro and Sala (2004) show that the above mentioned control variables are reliably. Since the selected variables at some points show geometric growth it is compulsory to take their natural logarithms in order to linearize their changes through the time period. Subsequently, in the study, the ExDebt, DoDebt, DSP and FRP are converted to their natural logarithms. The converted logarithm permits to interpret the coefficients as elasticities. The variables GFCF and FDI are presented as a percentage of GDP.

The following linear regression model was analysed in equation 1, as follows:

\[ \log Y_{it} = a + \sum B \log X_{it} + \epsilon_{it}, \]

\[ i = 1, \ldots, n \]
\[ t = 1, \ldots, t \]

In this equation \( y_{it} \) represents the real growth rate of GDP per capita, \( t \) represents time, \( X_{it} \) represents the independent variables and \( \epsilon_{it} \) the error correction term. These data are analysed in the fourth chapter of this study.

3.2 Definition of variables

The real growth rate of GDP per capita (RGRGDP). RGRGDP is the real growth rate which is an inflation adjusted gross domestic product per capita.

The external public debt (ExDebt). ExDebt stands for general government external debt that needs to be payed to external moneylenders.

The domestic public debt (DoDebt). DoDebt stands for general government external debt that needs to be payed to internal moneylenders.

Debt service payments (DSP). DSP refers to payments to be made for: interest on foreign government debt, interest on domestic government debt, principal on external government debt and principal on domestic government debt.

Foreign reserve position (FRP). FRP include property of gold, SDR, reserves of IMF members held by the IMF, and foreign exchange under the control of monetary authorities in this case National Bank of Republic of North Macedonia. The gold part of these stores is esteemed by December 31 of each year.

Gross fixed capital arrangement as a level of GDP (GFCF). GFCF incorporates land upgrades; plant, machinery, and equipment purchases; and the improvement of streets, rail routes, and
such, including schools, workplaces, hospitals, private residences, and business and industrial structures. This variable is presented as a percentage of GDP.

Foreign Direct Investment inflow as a percentage of GDP (FDI). FDI are the influxes of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. This variable is presented as a percentage of GDP.

### 3.3 Hypotheses

The main hypothesis that we intend to examine in this study is as such: the internal and external public debt don’t have correlation with real growth rate of GDP per capita in North Macedonia. The other hypotheses that we examined are: DSP, FRP, GFCF and FDI don’t have correlation with real growth rate of GDP per capita in North Macedonia.

### 4. Empirical findings

In this chapter are provided the results from the equation one that is given in chapter three. The first table represents the mean score for both dependent and independent variables. Starting with the real growth rate of the GDP, the mean for the time period 1999-2020 is 2.43%, the mean for Log of Domestic Debt is 6.68 million Euro that is lower than the mean for Log of External Debt that is 7.5 million Euro. The descriptive statistics for other variables is as follows: the mean for GFCF is about 22 % of GDP, the mean for FDI is about 4.1 % of GDP, the mean for Log of FRP is 7.5 million Euro and the mean for Log of DSP is 5.6 million Euro. Additionally, the table shows that the minimum real growth rate of the GDP for North Macedonia was in COVID-19 pandemic in 2020, with the rate of negative 5.02%, whereas the maximum reached in year 2007, the year prior to the global financial crisis, reaching the record of 6.3%. The other variables registered this figures: minimum records for domestic public debt was in 1999, 4.73 million euro, maximum in 2020, 7.68 million euro; minimum for external public debt was in 2007, 6.92 million euro and maximum in 2020, 8.37 million euro; minimum for GFCF is in 1999, 15.79% of GDP and maximum is 2008, 25.84% of GDP; minimum for FDI is in 2012, 1.47% of GDP and maximum is in 2001, 12.66%; minimum for FRP is in 1999, 6.13 million USD and maximum is in 2020, 8.33 million USD and minimum for DSP is in 1999, 4.4 million euro and maximum is in 2020, 6.7 million euro.

|        | RGRGDP | LogDoDebt | LogExDebt | GFCF  | FDI    | LogFRP | LogDSP |
|--------|--------|-----------|-----------|-------|--------|--------|--------|
| N Valid| 22     | 22        | 22        | 22    | 22     | 22     | 22     |
| Missing| 0      | 0         | 0         | 0     | 0      | 0      | 0      |
| Mean   | 2.4330 | 6.6750    | 7.4977    | 21.9965 | 4.0685 | 7.5000 | 5.5791 |
| Std. Deviation | 2.74983 | .64940 | .47327 | 2.25550 | 2.69825 | .65386 | .56276 |
| Minimum| -5.02  | 4.73      | 6.92      | 15.79 | 1.47   | 6.13   | 4.40   |
| Maximum| 6.30   | 7.68      | 8.37      | 25.84 | 12.66  | 8.33   | 6.70   |

Source: own research
As an additional analysis in this research, the correlations of the independent variables and the dependent variable were analysed, which were studied through the Pearson correlation presented in Table 2 below. Analysing the studied correlations, we can conclude that some independent variables have positive correlations with the dependent variable, while some independent variables have negative correlations with the dependent variable. Ex. With the increase of the foreign direct investments in North Macedonia, the real growth rate has increased, whereas by increasing the domestic debt, the economic growth rate has decreased. None of the variables play significant role in determining the real growth rate of GDP per capita.

Table 2: Correlation matrix

|                      | RGRGDP | LogDoDebt | LogExDebt | GFCF | FDI | LogFRP | LogDSP |
|----------------------|--------|-----------|-----------|------|-----|--------|--------|
| Pearson Correlation  |        |           |           |      |     |        |        |
| RGRGDP               | 1.000  |           |           |      |     |        |        |
| LogDoDebt            | -.309  |           |           |      |     |        |        |
| LogExDebt            | -.344  |           |           |      |     |        |        |
| GFCF                 | -.059  |           |           |      |     |        |        |
| FDI                  | .038   |           |           |      |     |        |        |
| LogFRP               | -.151  |           |           |      |     |        |        |
| LogDSP               | -.119  |           |           |      |     |        |        |
| Sig. (1-tailed)      |        |           |           |      |     |        |        |
| RGRGDP               | .      |           |           |      |     |        |        |
| LogDoDebt            | .081   | .059      | .064      |      |     |        |        |
| LogExDebt            | .059   | .000      | .064      | .327 |     |        |        |
| GFCF                 | .397   | .064      | .327      | .    |     |        |        |
| FDI                  | .433   | .309      | .064      | .450 | .    |        |        |
| LogFRP               | .251   | .000      | .000      | .005 | .115|        | .      |
| LogDSP               | .298   | .000      | .000      | .126 | .313|        | .000   |
| N                    |        |           |           |      |     |        |        |
| RGRGDP               | 22     | 22        | 22        | 22   | 22  | 22     | 22     |
| LogDoDebt            | 22     | 22        | 22        | 22   | 22  | 22     | 22     |
| LogExDebt            | 22     | 22        | 22        | 22   | 22  | 22     | 22     |
| GFCF                 | 22     | 22        | 22        | 22   | 22  | 22     | 22     |
| FDI                  | 22     | 22        | 22        | 22   | 22  | 22     | 22     |
| LogFRP               | 22     | 22        | 22        | 22   | 22  | 22     | 22     |
| LogDSP               | 22     | 22        | 22        | 22   | 22  | 22     | 22     |

Source: own research

From the analysis we found that the independent variables describe a low fraction of changes in real growth rate of the GDP per capita, that is only 19.5%. Additionally, the internal and external public debt do not characterise significant factors for real growth rate of the GDP per capita. The fundamental inquiry of our examination regarding if the real growth rate of the GDP per capita is influenced through various degrees of public debt by significance level of 5%.
The outcomes likewise show that other independent control variables including GFCF as a percentage of GDP, FDI as a percentage of GDP, LogFRP and LogDSP have low significant effect on the determination of the dependent variable, the real growth rate of the GDP per capita. Although the Durbin-Watson measurement consistently demonstrates a result of 1.977, that shows that in the model exists a positive relation between the given provided variables.

According to table 1, the coefficient of logarithm of domestic debt from the estimated model results with negative 1.493, that implies with the increment of domestic public debt by 1 M€, as we mentioned above that the data are given in million euro, then the real growth rate of GDP per capita in RNM declines by 1.493%. The external public debt is negative 2.348 that implies with the increment of foreign public debt by 1 M€, then the real growth rate of GDP per capita in RNM reduces by 2.348%. Gross fixed capital formation as a percentage of GDP is only 0.018, that suggests with the increase of GCFC by one unit, then the real growth rate of GDP per capita in RNM increases by 0.018%. Foreign Direct Investment inflow as a percentage of GDP is negative 0.103 that advocates with the increase of FDI by one unit, then the real growth rate of GDP per capita in RNM reduces by 0.103%. Foreign reserve position is negative 0.299 that indicates with the increase of FRD by 1 M USD, as we mentioned above that the data are given in million USD, then the real growth rate of GDP per capita in RNM reduces by 0.299%. Debt service payment is 2.412 that indicates with the increase of DSP by 1 M€, as we mentioned above that the data are given in million €, then the real growth rate of GDP per capita in RNM increases by 2.412%. The prob. value is 0.722 (higher than 0.05), in this case the null hypothesis is rejected, and suggest that internal and external public debt and other independent control variables have relation with real growth rate of GDP per capita in RNM.

Table 3: Estimation of the model

| Model       | Coefficients |
|-------------|--------------|
| Constant    | 18.808       |
| LogDoDebt   | -1.493       |
| LogExDebt   | -2.348       |
| GFCF        | 0.018        |
| FDI         | -0.103       |
| LogFRP      | -0.299       |
| LogDSP      | 2.412        |
| R Square    | 0.195        |
| P-value     | 0.722        |
| Durbin-Watson statistic | 1.977       |

*Source: author’s calculations*
Conclusions

The goal of the research study is to examine the effect of government debt on economic growth represented by real growth rate of GDP per capita in RNM, through utilizing panel data consisting 22 observations that is actually from 1999 until 2020. The assessed variable as dependent is real growth rate of GDP per capita in RNM and independent variables are: internal and external public debt expressed in million euro and used in natural logarithm, foreign reserve position expressed in million USD, debt service payments expressed in million-euro debt service payments and both are also used in natural logarithm, whereas gross fixed capital formation and foreign direct investment inflow are expressed as a percentage of GDP of North Macedonia.

The outcomes from the study demonstrate that the model is not highly significant considering the fact by which selected variables as independent are representing only low fraction of changes in real growth rate of GDP per capita in RNM as dependent variable, with the figure of only 19.5%. Moreover, both domestic and external public debt signifies negative correlation with real growth rate of GDP per capita in RNM. These results are not reliable with the outcome of preceding studies that analyse the relations between government debt and economic growth, recommending that when debt increases the economy increases as well. Related studies and conclusions are found also by: (Mencinger et al. 2014; Cecchetti, et al. 2010; Checherita and Rother, 2010; Clements, et al. 2003; Kumar and Woo, 2010; Reinhart and Rogoff, 2010; Pattillo, et al. 2002; Kjosev et al. 2021 and Trpeski et al. 2020. It is recommended that future studies to be focused in different time frames as well as to include eventually other independent variables in order to compare the obtained results with the current study.

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