International Journal of Economic Practice and Policy

Volume XX, Issue 2, Year 2023

Original Scientific Article

UDC 336.27(497.7)
336.5(497.7)
DOI 10.5937/skolbiz2-47612

WHAT IS THE PURPOSE OF THE PUBLIC DEBT IN NORTH MACEDONIA - CURRENT, CAPITAL OR SOCIAL SPENDING

Ivana Bećiragić[*]
Faculty of Economic, University Ss. Cyril and Methodius, Skopje, Republic of North Macedonia

Borče Trenovski
Faculty of Economic, University Ss. Cyril and Methodius, Skopje, Republic of North Macedonia

Abstract: *North Macedonia, as one of the small and open economies in the region, is facing an increase in the budget deficit and public debt (especially in the last couple of years), which, in conditions of reduced fiscal capacity, is increasingly emphasizing the issue of the distribution of funds from borrowing. The government's intention is to increase public debt to generate investments in the infrastructure and create future benefits for the economy as a whole, as well as the potential for future debt recovery. But, is this really the case? In reality, capital expenditures are stagnating, while current budget expenditure and social transfers are constantly rising. This paper investigates the dynamics of the rise in public debt and the trends in capital expenditure, current expenditure, and social transfers. Furthermore, we explore the effects each category of social transfers (pensions, unemployment benefits, social assistance, and health insurance transfers) has on the level of public debt in the country. We employ a VARMAX model on quarterly data from 2008 to the second quartile of 2022. The results of the VARMAX model show that a short-term increase follows the shock in public debt in the current budget expenditure. This suggests that the government has been increasing the public debt mostly to finance current budget expenditures instead of investing in economic and social infrastructure. In addition, the analysis of the relationship between the public*

[*] ivana89velkovska@gmail.com

debt and the four different categories of social transfers shows that the shock in public debt is followed by a short-term increase in health insurance transfers.

Keywords: *VARMAX model, public debt, social expenditure, capital expenditure, current budget expenditure*

JEL classification: *E22, G31, H55, H53, H6*

KOJA JE SVRHA JAVNOG DUGA U SEVERNOJ MAKEDONIJI - TEKUĆA, KAPITALNA ILI SOCIJALNA POTROŠNJA

Sažetak: *Severna Makedonija kao predstavnik malih i otvorenih ekonomija u regionu, suočava se sa povećanjem budžetskog deficita i javnog duga (posebno u poslednjih nekoliko godina), što u uslovima smanjenog fiskalnog kapaciteta sve više naglašava pitanje raspodele sredstava iz zaduživanja. Namera Vlade je povećanje javnog duga kako bi se generisale investicije u infrastrukturu, stvorile buduće koristi za privredu u celini, kao i potencijal za budući oporavak duga - Ali da li je to zaista tako? U stvarnosti, kapitalni rashodi stagniraju, dok tekući budžetski izdaci i socijalni transferi stalno rastu. U ovom radu pokušavamo da istražimo dinamiku između rasta javnog duga i kretanja kapitalnih izdataka, tekućih rashoda i socijalnih transfera. Nadalje, fokusiramo se na istraživanje efekata koje svaka kategorija socijalnih transfera (penzije, naknade za nezaposlene, socijalna pomoć i transferi zdravstvenog osiguranja) ima na nivo javnog duga u zemlji. Koristimo VARMAX model na kvartalnim podacima za period od 2008. do drugog kvartila 2022. godine. Rezultati VARMAX modela pokazuju da šok javnog duga prati kratkoročno povećanje tekuće budžetske potrošnje. Ovo sugeriše da je država povećavala javni dug uglavnom za finansiranje tekućih budžetskih rashoda umesto ulaganja u ekonomsku i socijalnu infrastrukturu. Osim toga, analiza odnosa javnog duga i četiri različite kategorije socijalnih transfera pokazuje da šok javnog duga prati kratkoročno povećanje transfera zdravstvenog osiguranja.*

Ključne riječi: *VARMAX model, javni dug, socijalni izdaci, kapitalni izdaci, tekući budžetski rashodi*

1. INTRODUCTION

We live in a post-pandemic period facing high inflation, high interest rates and tight fiscal space, resulting in rising public debt. The public debt in North Macedonia has still not surpassed the Maastricht criteria of 60% of GDP. However, the vulnerability of small and open economies like the Macedonian one leaves room for concern about the level of public debt and the structure of public expenditures.

North Macedonia is a small open economy in South East Europe with rising public debt. According to Trenovski and Mijovic-Spasovska (2018) between 2000 and 2008, the public debt in Macedonia declined from 47,9% of GDP to the lowest level of 23% in 2008. Their study also showed that from 2008 onwards, the debt began to rise, and it became an important source of assets to cover public expenditures, which were unproductive, serving short-term budget interests and did not yield the much-needed returns. The conclusion indicates that irresponsible borrowing could trigger a debt crisis in Macedonia, and it is justified only when it is used to finance capital investment whose contribution exceeds the cost of borrowing. However, the last decade was marked by an underwhelmingly low realization of capital expenditure in the country. On the other hand, according to the public finance data, in 2022, the level of public debt to GDP was 57.1%, which is below the Maastricht criteria but still poses the question of its sustainability.

In addition, recent global developments in the security, economic, energy and social spheres have further impacted the global financial markets and increased the cost of borrowing, which further puts the focus on the efficiency and purpose of the funds provided through public borrowing. Taking into account the above, the structure of public expenditures financed with public debt appears of particular interest, given that each has a different connection and impact on the economic activity and growth of the country. Thus, in this paper, we try to analyze the relationship between public debt and the constant increase in current, capital and social expenditures as a phenomenon that must be closely observed in order to prevent any missteps on the path of fiscal sustainability.

Most of the available literature in the field analyses the impact of capital expenditure on economic growth (Shkodra, Krasniqi, & Ahmeti, 2022; Dzambaska & Lozanoska, 2015; Shaqir, 2015; Ivanovski, Narashanov, & Korunovska, 2020; Trenovski, Merdzan, & Peovski, 2022; Andonova, Nikolov, & Velkovska, 2021). Most of these studies show that capital expenditure in North Macedonia has a positive impact on economic growth, even though the level of public investment is considered low in general. Some studies confirm the weak or negative relationship between current expenditures and economic activity, while other studies show the negative effect of the increased level of public debt on economic activity in the country. However, the number of studies regarding social protection and social investment roles, especially their connection to public debt, is very limited. Thus, this analysis tends to explore the relationship between capital expenditure, social expenditure and current expenditure and the public debt in North Macedonia, but also the relationship between the separate social expenditure categories (pensions, health expenditure, unemployment benefits and social assistance) and their potential effects on public debt sustainability.

The structure of this paper is as follows: in the first part, we present the literature review, giving the reader a glance at what has been done so far in the field; the second part provides an overview of the trends of important indicators used in the paper in order to provide a descriptive analysis of the topic; the third part presents the econometric analysis and its results, and in the fourth part, we present the concluding remarks.

2. LITERATURE REVIEW

Public spending as a share of GDP should go up during booms and down in recessions, while deficits increase in booms and decrease in recessions. Instead, according to Alesina (2006), in some OECD countries, fiscal policy is generally counter-cyclical, and these countries have accumulated large amounts of public debt in the past. Some economists refer to fiscal policy as "active" or "passive", depending on its responsiveness to government debt shocks (Leeper, 1990). What we are doing in this paper is analyzing how the different categories of public expenditures (current versus capital versus social expenditure) affect the level of public debt in North Macedonia.

Using both government debt and government expenditures as proxies for government size, Affonso and Jalles (2016) suggest that bigger governments tend to hamper economic activity, and this finding is invariant to the selected government size proxy. In addition, Reinhart and Rogoff (2010) find that across both advanced countries and emerging markets, high debt/GDP levels (90 per cent and above) are associated with notably lower growth outcomes. Although moderate public debt should improve welfare and enhance growth, Cecchetti et al., 2011 show that it starts to drag growth beyond the threshold of 85% of GDP. Omitting debt feedback can result in incorrect estimates of the dynamic effects of fiscal shocks in VAR models (Favero & Giavazzi, 2010), and this is why we are investigating the relationship between expenditure and debt.

When the ultimate goal of social and economic infrastructure is economic growth and development, it would be beneficial to take a step back and understand the relationship between public expenditures and public debt. This is especially important for small and open economies with limited fiscal space and rising public debt, which are an integral part of a broader regional economic area such as North Macedonia within South East Europe. Further down, we summarize the limited research in the field conducted by local authors, and we wish to build upon it.

The financial recovery in 2021 after the COVID-19 pandemic was a period of low, even negative interest rates in Europe. However, since the start of the war in Ukraine and the rise in inflation, the monetary policy has tightened, and interest

rates have risen. According to Holzner (2022), higher interest rates could make it difficult to refinance public debt both in the core and peripheral economies, with a potential threat of widespread recessions, particularly in emerging markets, including the CESEE region. Analyzing the threshold to which the public debt-to-GDP ratio has a positive effect on economic growth for the period 1995 to 2017 for European transition economies (including the Western Balkans), Fetai, Avdimetaj, Bexheti, & Malaj (2020) concluded that there are different levels of threshold values of public debt-to-GDP ratio among different countries). Using pooled OLS, fixed and random effects models, GMM (Generalized Method of Moments), and bootstrap method, this study confirmed that for less developed European transition countries, the threshold values of the debt-to-GDP ratio are lower than for more developed ones in the sample.

Shrinking fiscal space and rising public debt pose the question of the sustainability of public expenses more than ever. Capital expenditure and social protection both take a big portion of state budgets. Analyzing their relationship with public debt and economic growth is crucial in understanding the risk they pose versus the potential they represent when talking about public finance and fiscal policy. A study that examines the share of public revenues and public expenditures in the gross domestic product in several countries in Southeast Europe for the period 2008 to 2019 concludes that due to the premature market opening and lengthy transition process, the ratio of public revenues and public expenditures is unbalanced (Vučić, Marinović Matović, & Kostić, 2020). However, while the negative gap is not harmful by itself, government expenditures should be directed towards productive investment activities.

Regarding social protection, the European countries differ in scope and generosity, with Scandinavian and Continental countries having the highest social spending ratio to GDP. In contrast, the Central European countries dedicate the smallest share of their GDP to social protection (Tashevska, 2018). Furthermore, the countries in South East Europe have the smallest percentage of social protection to GDP. Analyzing government expenditure for the period 2002-2019 in the countries of Southeastern Europe, Shkodra, Krasniqi and Ahmeti (2022) use economic growth as a dependent variable and the wages, salaries, goods, services, subsidies, social transfers and capital expenditures as independent variables to examine the effect of government spending on economic growth. The results from the regression analysis suggest that higher investment in wages and social transfers support economic growth.

Dzambaska (2014) analyses the relationship between public expenditures and economic growth in the Republic of Macedonia using multiple linear regression analysis and quarterly data from 2005 to 2013. The results confirm the theory of a positive impact of capital expenditure and increased employment on economic

growth. Namely, in times of recession, the macroeconomic policy measures aimed at increasing employment and public investment expressed through the public expenditure category are the economy's driving force. Another study by Dzambaska and Lozanoska (2015) also investigated the importance of capital expenditure for economic growth in Macedonia, covering the period from 2005 to 2013. They find that most public expenditures in the Republic of Macedonia consist of current expenditures, transfers, and purchases of goods and services. In contrast, the share of capital expenditures is low and is financed through borrowing.

Another study also shows that capital expenditures significantly affect economic growth in Macedonia, while public spending on salaries is negatively correlated with economic growth (Shaqir, 2015). Using multiple regression analysis, Miftari and Ziberi (2019) researched the short-term and long-term effects of public investments in the Republic of North Macedonia on economic growth from 2008 to 2017. They found that in the long run, the impact of public investment on economic growth is symbolic, given that a very small percentage of public expenditures goes for public infrastructure investments. Velichkovska and Sadiku (2019) investigated the impact of government expenditures on economic growth in the Republic of Macedonia from 2000 to 2016 using a VAR model with quarterly data. The results reveal a positive response of GDP to an increase in government expenditure, which aligns with the macroeconomic theory of expansionary fiscal policy. However, this study also proposes reforming the public expenditure structure, especially in the share of capital expenditures that drive economic growth.

Nikoloski (2020) examines the effect of government expenditures on the economic growth of the Republic of North Macedonia from 2004-2015. The conclusions of his study imply that in the Republic of North Macedonia, the effects of capital expenditures with small exceptions are often small and even negative. On the other hand, the structure of public expenditures is unfavourable because of the high share of wages and social transfers. However, Ivanovski, Narashanov and Korunovska (2020) who were testing the impact of capital expenditures on the GDP by using the econometric model of the Granger causality in the VAR environment in order to determine if there are two-way connections between GDP and capital expenditures in North Macedonia, did not find Granger Causality between capital expenditures and GDP for the analyzed period 2006-2019.

Municipal finance also seems to be a big factor in public finance sustainability in North Macedonia. Using a random-effects Generalized Least Squares (GLS) panel regression for 2015–2019, Trenovski, Medzan and Peovski (2022) conclude that capital expenditure significantly determines municipal revenues in

both estimated models. According to this study, using such knowledge can help governments formulate policies that provide sustainable and effective fiscal decentralization, lowering the pressure on central governments in developing economies. Using an empirical macroeconomic model, Andonova, Nikolova and Velkovska (2021) show that addressing the infrastructure gap is very important for growth in Macedonia. Namely, full capital budget utilization at the regional level would positively contribute to economic growth immediately and in the following period. This would occur even if total debt increased in nominal terms, while in relative terms, the debt-to-GDP would reduce in the long run by generating additional economic output.

Regarding social protection expenditure, using secondary analysis of data obtained from government agencies that coordinate poverty reduction programs and social policy institutions in the Republic of North Macedonia, Sharlamanov and Mitevska Petrushevska (2022) found that although poverty has been reducing over the last few years, it remains at a high level compared to other countries. Another analysis of secondary data by Veljanovska Blazhevska (2022) reveals that "social policy in North Macedonia is oriented towards favouring services instead of cash transfers, increased consumer targeting rather than universal access, reduced state service provision at the expense of increased private initiatives, strengthening local government involvement in social protection, conditional cash transfers and reducing the institutional capacity of the state". Furthermore, a paper examining the impact of human capital on economic growth in North Macedonia from 2000 to 2019, using econometric analysis of health expenditures time series, concludes that there is a positive relationship between health expenditures and economic growth in North Macedonia (Cvetanoska Mitev & Trpeski, 2022).

The literature review showed that most of the available literature in the field focuses on the impact of capital expenditure, while the number of studies regarding social protection and social investment is limited. The larger portion of the studies that focus on capital expenditure in North Macedonia analyze its impact on economic growth. Studies that tackle social protection focus on its effects on poverty and income inequality. Our study contributes to the literature by analyzing the relationship between capital social expenditure and public debt.

3. DESCRIPTIVE ANALYSIS

The level of public debt in North Macedonia has been rising in the last decade. It was at its lowest value of 23% of GDP in 2008 and has increased more than twofold since then. Initially, this was a sign that the Macedonian economy was becoming more trustworthy among international creditors. However, the constant increase of public debt has raised the question of its sustainability and has been a

hot topic among academia and the public ever since. The public debt to GDP indicator has risen above the Maastricht criteria threshold only in 2021, surpassing it by 1 percentage point. This is perceived as a red light for public debt sustainability, although some studies claim that the threshold might be lower for lower-income countries (Fetai et al., 2020). The biggest increase in public debt was seen in 2020 and 2021 because of the COVID-19 pandemic, while in 2022, the level of public debt showed a decline of almost 4 percentage points compared to the previous year.

Budget expenditure in North Macedonia can be divided into four separate categories:

1) Current expenditure for wages, salaries, public procurements, transfers and expenditures for interest payments;
2) Transfers including social transfers, other transfers and subsidies;
3) Capital expenditure for inventory and infrastructure projects and
4) Financial expenditure related to interest for domestic and foreign debt.

The social transfers in Macedonia are constantly rising, although they are significantly lower than current budget expenditures. Relative to the increase in current budget expenditures and social transfers, the level of capital expenditure is much lower, and the trend was stagnating from 2006 to 2022. The budget expenditure is the highest among the three categories and has increased the most in the analyzed period.

Regarding capital expenditure, 2018 was a bad year for infrastructure investment. This year was marked by a change of government in North Macedonia, which has been often criticized for its low levels of realization of capital expenditure. On a positive note, since 2020, capital expenditure has been increasing, reaching its highest level the previous year.

Social transfers have been only half of the current expenditure and approximately two-thirds of all transfers. However, social assistance, which targets the most vulnerable in society, is just a small fraction of the expenditures mentioned above. Even though current expenditure is rising together with transfers, this does not mean that the social infrastructure in North Macedonia is improving because social transfers seem to lag behind the trend, and social assistance is very low.

Social protection expenditure is divided into four categories:

1) Pensions
2) Healthcare
3) Unemployment benefits
4) Social assistance.

The analysis of the social protection expenditure structure and its four categories shows that pensions represent the largest part of social protection in North Macedonia, with the steepest increase in the last decades. Health protection expenditure comes second concerning both the amount and the yearly increase. In contrast, the amount and the change in unemployment benefits and social assistance are minor relative to health protection and pensions.

Social assistance is not linked to employment, social insurance payments, pensions, unemployment benefits and health insurance. Its universal character versus the concept of conditioning the right to social protection to employment is especially important to improve social expenditures' reach. According to data published by the Macedonian Ministry of Finance, the budget expenditures related to social assistance are only 9.8% of total social transfers, 6.6% of all the transfers and 5.1% of the current budget expenditures, and this has not improved for the last fifteen years. On the other hand, the amount of social assistance has increased in the last fifteen years in its absolute value and as a percentage of GDP. The increase in 2021 is as much as 180% compared to 2006. However, as mentioned above, this increase is minor in its absolute value. It is minuscule relative to the high amounts and steeply increasing trends of social transfers, total transfers or the current expenditure.

When analyzing the sustainability of social and economic investments, one must also consider the level of effectiveness of capital expenditure and social protection expenditure to gain insight into the whole picture. The level of effectiveness of capital expenditure can be measured by its relation to economic growth, and this has been the subject of many studies (as presented in the literature review of this paper).

On the other hand, when analyzing the effectiveness of social protection expenditure, one must investigate its relationship with poverty and inequality. The limited number of empirical studies regarding social protection effectiveness in North Macedonia is due to the lack of data on poverty and income inequality. The State Statistical Office has started publishing these data (Laeken indicators) using a uniform methodology only since 2010, which makes for a short time series. The regional data on the subject is also not uniform in its methodology and lacks availability.

According to the Laeken indicators, the poverty rate before pensions and social transfers in North Macedonia in 2020 was 42.1% - almost half of the population. Ten years ago, the poverty rate before pensions and social transfers was 42.8%, which means that for the last decade, it has declined by only 0.7 percentage points and remains exceptionally high. In 2020, the poverty rate decreased by 16.4 percentage points due to pensions and an additional 3.9 percentage points after

the distribution of social transfers. It seems that pensions have a big impact on reducing poverty in North Macedonia, while other social categories, including social assistance for the most vulnerable, bring only a small decline in the poverty rate and should be strengthened by introducing new measures and implementing reforms in the social protection system.

Regarding income inequality measured through the Gini coefficient, the value for 2020 was 46.1, and after pensions, it declined by 11.9 points, i.e., 34.2. After social transfers, the value of the coefficient is decreased by an additional 2.8 points. Similar to their effect on the poverty rate, pensions are also dominant in decreasing income inequality over the effect of other social transfers.

4. ECONOMETRIC ANALYSIS AND RESULTS

This part of the analysis is focused on the empirical investigation aiming to determine the relationship between capital expenditure, social expenditure, current expenditure, and public debt in North Macedonia. In addition, we also analyze the relationship between the separate social expenditure categories (pensions, health expenditure, unemployment benefits and social assistance) and their potential effects on public debt.

The effectiveness, on the one hand, and the sustainability, on the other hand, are the two sides of the same coin when analyzing capital and social expenditure. In this paper, we focus on sustainability and do not investigate the effectiveness of capital expenditure and social expenditure on economic growth or poverty and income inequality. However, it should be subject of future research. Regarding the sustainability of capital and social expenditure, it should be noted that they can be described as sustainable for this study if they do not cause a sharp increase in public debt. Thus, their sustainability level is measured by their impact on the public debt in North Macedonia.

Academic debates often elaborate on whether the public debt is increasing to finance capital expenditure and foster economic growth or to cover the rising current expenditure and transfers. Accordingly, in Model 1 we use the following variables:

1) Public debt as a percentage of GDP – "**PD**"
2) Current expenditure in million MKD - "**CRE**"
3) Capital expenditure in million MKD – "**CE**"
4) Transfers in million MKD – "**TR**"

The three main budget expenditure categories are current, capital, and transfers. Answering the question of their relationship with public debt could give an important indication of public debt sustainability.

Another dilemma in the academic debates is the effect of the different categories of social expenditures on public debt. For this purpose, in Model 2, we incorporate the following variables:

1) Public debt as a percentage of GDP – "**PD**"
2) Budget expenditures for pensions in millions of MKD – "**PN**"
3) Budget expenditures for unemployment benefits in millions of MKD – "**UN**"
4) Budget expenditures for social assistance in millions of MKD – "**SP**"
5) Budget expenditures for health protection in millions of MKD – "**HE**"

In both models, we also add two control variables:

1) The economic growth rate – "**GDP**"
2) Public revenues in millions of MKD – "**PR**"

When control variables (exogenous variables) are added to the VAR model, the model is extended to the Vector Autoregressive Moving-Average with Exogenous Inputs (VARMAX) model. Here's the typical representation of a VARMAX (p, q) model with k exogenous variables:

$$Y_{(t)} = c + Y_{(t-1)}A_1 + Y_{(t-2)}A_2 + \cdots + Y_{(t-p)}A_p + X_{(t)}B + \varepsilon_{(t)} \quad (1)$$

Where:

• Y(t) is the p x 1 vector of endogenous variables at time t.

• c is a p x 1 vector of constants (intercept terms).

• A1, A2, ..., Ap are p x p coefficient matrices associated with the lagged endogenous variables. Each A matrix represents the impact of the lags of the endogenous variables on the current values of the endogenous variables.

• Y(t-1), Y(t-2), ..., Y(t-p) are the lagged vectors of the endogenous variables at time t-1, t-2, ..., t-p, respectively.

• B is a p x k coefficient matrix associated with the exogenous variables. It represents the impact of the exogenous variables on the current values of the endogenous variables.

• X(t) is the k x 1 vector of exogenous variables at time t.

• ε(t) is a p x 1 vector of error terms (residuals) at time t, representing the unexplained variation in the endogenous variables.

The VARMAX (p, q) model with exogenous variables allows for the inclusion of k exogenous variables that can directly affect the endogenous variables. The model captures both the dynamic relationships among the endogenous variables

through lagged terms (VAR) and the influence of the exogenous variables on the endogenous variables (X). We use quarterly data in both samples, starting with the first quarter of 2008 until the second quarter of 2022 (included), i.e., we cover 14 years and 6 months and have 59 observations per sample. The data we use is available online in the statistical database of the Ministry of Finance of North Macedonia.

Before we start our analysis, it should be noted that due to the presence of a seasonal component in the quarterly data, we performed a deseasonalization of the data. This calculation is available upon request. In addition, we have performed the Dickey-Fuller unit tests, and according to the results (available upon request), the variables for current expenditure, transfers and public debt are not stationary. In addition, the variables social assistance, pensions, health protection expenditure, and public debt show the presence of a unit root. When transforming the variables mentioned above into their first difference form, they become stationary, and this is why, in Model 1 and Model 2, we use the first difference of these variables. We also used the first difference for the control variable for public revenues.

This study uses the VARMAX methodology to determine the relationship between public debt and current capital and social expenditure. Concerning the schedule of the endogenous variables in the model, it should be noted that it follows the economic logic and intuition arising from the research question of this study. The results for Model 1 are presented in Table 1. There are seven statistically significant coefficients, some of which are accepted with a level of significance of 10%.

The results for Model 2 are presented in Table 2. The obtained results show that there are eight statistically significant coefficients with a 5% level of significance. According to the results from Model 1 and Model 2, we could draw the following conclusions:

- The positive coefficient in the equation where the current budget expenditure is the dependent variable in Model 1 suggests that a one-unit increase in the lagged value of public debt leads to an increase in the current value of current budget expenditure;
- The positive coefficient in the equation where the health expenditure is the dependent variable in Model 2 suggests that a one-unit increase in the lagged value of public debt leads to an increase in the current value of health expenditure;
- The positive coefficient in the equation where the public debt is the dependent variable in Model 2 suggests that a one-unit increase in the lagged value of health expenditure also leads to an increase in the current value of public debt.

Table 1

VARMAX results for Model 1

Variable	Coefficient	p-value*
dCRE		
dCRE lag 1	-0.64	0.00*
CE lag 1	-0.13	0.66
dTR lag 1	-0.08	0.90
dPD lag 1	334.27	0.06**
GDP	25.91	0.81
dPR	-0.20	0.11
dCE		
dCRE lag 1	0.05	0.41
CE lag 1	-0.05	0.67
dTR lag 1	-0.13	0.67
dPD lag 1	-61.91	0.44
GDP	27.41	0.59
dPR	0.09	0.13
dTR		
dCRE lag 1	-0.04	0.08**
CE lag 1	-0.02	0.65
dTR lag 1	-0.52	0.00*
dPD lag 1	59.85	0.09**
GDP	-19.79	0.38
dPR	0.00	0.09**
dPD		
dCRE lag 1	0.00	0.37
CE lag 1	0.00	0.83
dTR lag 1	0.00	0.56
dPD lag 1	-0.06	0.60
GDP	-0.25	0.00*
dPR	0.00	0.21

Note. Authors' calculations using statistical software STATA 13

Table 2

VARMAX results for Model 2

Variable	Coefficient	p-value*
dSP		
dSP lag 1	-0.21	0.09**
dPN lag 1	-0.08	0.12
UN lag 1	0.04	0.77
dHE lag 1	0.07	0.13
dPD lag 1	15.82	0.11
GDP	-0.24	0.97
dPR	0.01	0.13
dPN		
dSP lag 1	-0.21	0.41
dPN lag 1	-0.53	0.00*
UN lag 1	-0.29	0.37
dHE lag 1	-0.09	0.36
dPD lag 1	-5.17	0.80
GDP	-10.53	0.43
dPR	0.00	0.57
UN		
dSP lag 1	-0.13	0.15
dPN lag 1	0.05	0.16
UN lag 1	0.64	0.00*
dHE lag 1	0.00	0.96
dPD lag 1	-0.45	0.95
GDP	-6.11	0.20
dPR	-0.01	0.09**
dHE		
dSP lag 1	0.17	0.49
dPN lag 1	0.06	0.57
UN lag 1	-0.75	0.02*
dHE lag 1	-0.46	0.00*
dPD lag 1	62.85	0.00*
GDP	-3.76	0.78
dPR	0.02	0.09**
dPD		
dSP lag 1	0.00	0.82
dPN lag 1	0.00	0.39
UN lag 1	0.00	0.72
dHE lag 1	0.00	0.00*
dPD lag 1	0.00	0.41
GDP	-0.25	0.00*
dPR	0.00	0.05*

Note. Authors' calculations using statistical software STATA 13

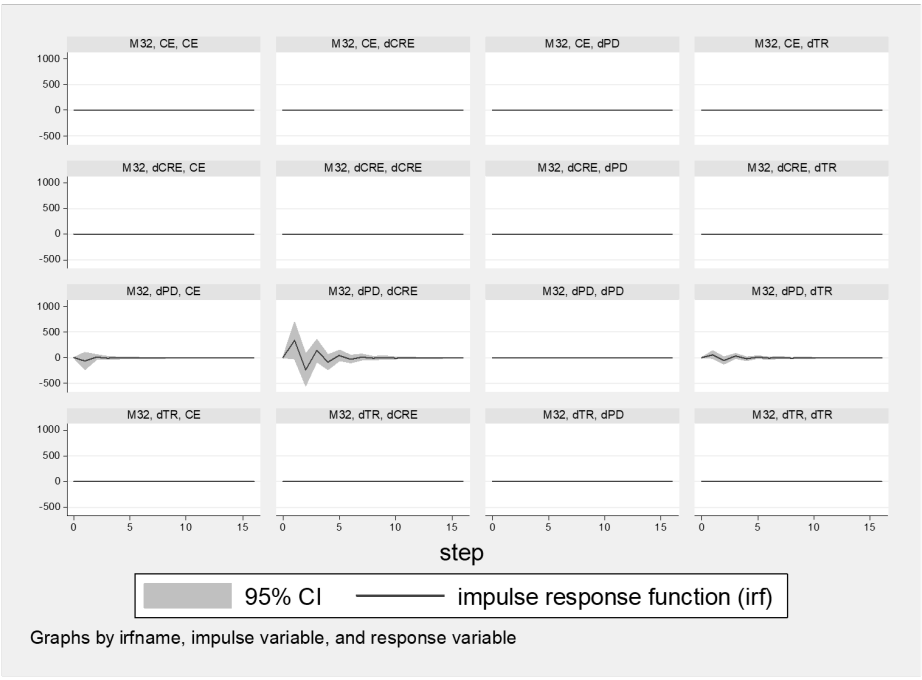

Figure 1. Impulse response function for Model 1

Note. Authors' calculations using statistical software STATA 13.

Following the calculations of the results of the VARMAX models, we used VAR stability tests to ensure that the VAR models were stable with the chosen lag lengths. According to the results, the VAR models satisfy the eigenvalue stability condition and all the eigenvalues lie inside the unit circle. Because we used time series, we also tested for autocorrelation in the models using the Lagrange-multiplier test. We concluded that there is no autocorrelation in the models at the chosen lag length. The results from these tests are available upon request.

Graphs 1 and 2 show the impulse response functions for Model 1 and Model 2, respectively. What we can conclude from the impulse response functions for Model 1 is that the shock in public debt is followed by a short-term increase in the current budget expenditures. In addition, the impulse response functions for Model 2 show that the shock in public debt is also followed by a small short-term increase in all social expenditure categories. However, the highest increase following the shock in public debt is noted for the health protection expenditure.

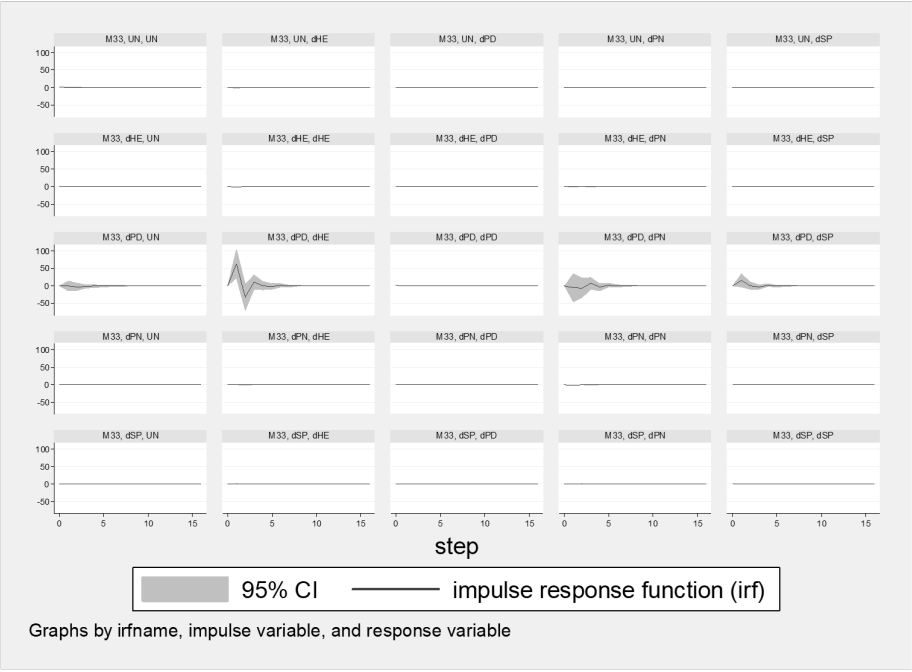

Figure 2. Impulse response function for Model 2

Note. Authors' calculations using statistical software STATA 13.

Furthermore, the calculation of the Granger causality Wald test (Table 3 and 4 for Models 1 and 2, respectively) shows that the variable public debt predicts the trend of the variable current budget expenditure with a significance level of 6%. In Model 2, the variable public debt predicts the trend of the variable health protection expenditures with a significance level of 5%, and the variable for health protection expenditure predicts the trend of the variable public debt, indicating a double causality between the public debt and the health protection expenditures. Trying to disentangle the direction of causality between public debt and health protection expenditures, we can use the results from the impulse response functions, which suggest that a shock in the public debt is followed by an increase in the health protection expenditures, but not the other way around.

Table 3

Granger causality test results for Model 1

VAR-Granger causality Wald test			
Ho: There is no Granger causality			
Ha: There is Granger causality			
Equation			
\ Excluded	**chi2**	**df**	**Prob > chi2**
dCRE			
CE	0.19	1	0.66
dTR	0.01	1	0.90
dPD	3.49	1	0.06**
All	4.75	3	0.19
CE			
dCRE	0.67	1	0.41
dTR	0.17	1	0.67
dPD	0.57	1	0.44
All	1.26	3	0.73
dTR			
dCRE	3.04	1	0.08**
CE	0.19	1	0.65
dPD	2.71	1	0.09**
All	6.70	3	0.08**
dPD			
dCRE	0.78	1	0.37
CE	0.04	1	0.83
dTR	0.33	1	0.56
All	3.57	3	0.31

Note. Authors' calculations using statistical software STATA 13.

Table 4

Granger causality test results for Model 2

VAR-Granger causality Wald test

Ho: There is no Granger causality

Ha: There is Granger causality

Equation \ Excluded	**chi2**	**df**	**Prob > chi2**	**Equation \ Excluded**	**chi2**	**df**	**Prob > chi2**
dSP				dHE	0.00	1	0.97
dPN	2.42	1	0.12	dPD	0.00	1	0.95
UN	0.08	1	0.77	All	3.36	4	0.49
dHE	2.22	1	0.13	**dHE**			
dPD	2.52	1	0.11	dSP	0.46	1	0.49
All	6.62	4	0.15	dPN	0.31	1	0.57
dPN				UN	5.28	1	0.02*
dSP	0.66	1	0.41	dPD	9.07	1	0.00*
UN	0.79	1	0.37	All	15.10	4	0.00
dHE	0.81	1	0.36	**dPD**			
dPD	0.06	1	0.80	dSP	0.05	1	0.82
All	2.76	4	0.59	dPN	0.71	1	0.39
UN				Uisto N	1.12	1	0.72
dSP	2.00	1	0.15	dHE	7.34	1	0.00*
dPN	1.93	1	0.16	All	8.30	4	0.08

Note. Authors' calculations using statistical software STATA 13.

The results from the descriptive and the econometric analysis are consistent. The results from the VARMAX model, the impulse response functions and the causality tests also show that the public debt is correlated with an increase in current budget expenditure.

On the other hand, even though the government projects the capital expenditure at a high level every fiscal year, at the end of the year, the realization of that expenditure is stubbornly low, while the public debt has increased. The results from the correlation analysis and the scatterplots indicated that there is no

statistically significant correlation between capital expenditure and public debt in the country. The results obtained in the VARMAX model and the causality tests confirmed the same. According to the impulse response function, following the shock of the public debt, capital expenditures show a small and short-term decrease.

Focusing on the social transfers and the relationship that each category of social transfers has with the public debt, the VAR results from Model 2 and the impulse response function reveal that the shock in public debt is followed by a short-term increase in all categories, but is the most prominent with the health protection expenditures.

To summarize, the econometric analysis shows that the increase in public debt in North Macedonia is followed by an increase in current budget expenditures, but there is no statistically significant relationship with capital expenditure. In addition, all social expenditure categories show small short-term increases after the shock in public debt. However, this effect is the most prominent in the case of health protection expenditures.

5. CONCLUSION

In this study, we have investigated the relationship between the current budget expenditures, capital expenditures and social protection expenditures versus public debt, trying to provide evidence-based conclusions and add to the debate on public debt sustainability in North Macedonia concerning the expenditure structure. For this purpose, we have employed a VARMAX model, using quarterly data covering the period from the first quarter of 2008 to the second quarter of 2022.

The literature review showed that most studies focus on the impact of capital expenditure on economic growth, while the number of studies regarding social expenditure in North Macedonia is limited. Additionally, those studies that tackle social protection focus on its effects on poverty and income inequality.

The results of our analysis can be summarized as follows. The shock in current capital and social expenditures and the shock in the four separate social protection categories (pensions, unemployment benefits, health protection expenditures and social assistance) do not seem to impact the level of the public debt in North Macedonia. On the other hand, in Model 1, the shock in public debt is followed by a short-term increase in all the other variables in the model - the current budget expenditures, the capital expenditures and the transfers. However, the highest increase following the shock in public debt is noted for the current budget expenditure.

In addition, the impulse response functions for Model 2 show that the shock in public debt is also followed by a short-term increase in all social expenditure categories. This model shows that the highest increase following the shock in public debt is in the health protection expenditure.

Furthermore, the VARMAX model results and the Granger causality tests also show that the shock in public debt is followed by a short-term increase in current expenditures, capital and social expenditures, and an increase in the four social expenditure categories. It is noticeable that the impact of the shock in public debt is the strongest when it comes to current expenditures and health protection expenditures.

To conclude, none of the budget expenditures categories put the level of public debt in danger for the analyzed period. However, it is evident from the results that the current budget expenditures in North Macedonia have the highest impact on the level of public debt, and because of that, policymakers should be particularly cautious regarding their increase in the near future.

REFERENCES

Afonso, A., & Jalles, J. T. (2016). Economic performance, government size, and institutional quality. *Empirica*, 43, 83–109.

Alesina, A., Campante, F. R., & Tabellini, G. (2006). Why is fiscal policy often procyclical? *Journal of the European Economic Association*, *6*(5), 1006-1036.

Cecchetti, S. G., Mohanty, M. S., & Zampolli, F. (2011). The real effects of debt. *BIS Working Papers* No. 352.

Cvetanoska Mitev, M., & Trpeski, P. (2022). The impact of health expenditure on economic growth in North Macedonia. Zbornik radova Ekonomskog fakulteta u Istočnom Sarajevu, 11(24).

Djambaska, E. (2014). Government expenditures' effects on economic growth in the Republic of Macedonia. In *Contemporary trends and prospects of economic recovery* (46-65). France, Nice*:* CEMAFI International.

Djambaska, E., & Lozanoska, A. (2015). Capital expenditures and their importance for the economic growth in the Republic of Macedonia. *Economic Development,* 3, 107-120.

Favero, C. A., & Giavazzi, F. (2007). Debt and the effects of fiscal policy. *NBER Working Paper*, No. 12822.

Fetai, B., Avdimetaj, K., Bexheti, A., & Malaj, A. (2020). Threshold effect of public debt on economic growth: An empirical analysis in the European transition countries. *Zbornik radova Ekonomskog fakulteta u Rijeci : časopis za ekonomsku teoriju i praksu, 38*(2), 381-406.

Garvanlieva Andonova, V., Nikolov, M., Velkovska, I., & Petrovska, A. M. (2021). Economic growth agenda: The effects of full utilization of capital budgets among statistical planning regions in North Macedonia. *European Spatial Research and Policy*, *28*(2), 131–146.

Holzner, M. (2022). Public Debt in Central, East, and Southeast Europe. *CESifo Forum,* 23(1), 35–39.

Ivanovski, Z., Narashanov, Z., & Korunovska, V. (2020). Granger Causality Test for the Government's Capital Expenditures on the GDP of the Republic North Macedonia in VAR Environment. *UTMS Journal of Economics 11*(2), 183–201.

Leeper, E. M. (1991). Equilibria under 'active' and 'passive' monetary and fiscal policies. *Journal of Monetary Economics*, *27*(1), 129–147.

Miftari, F., & Ziberi, B. (2019). Public investments incentive factors of economic growth – Case study of Republic of North Macedonia. *Knowledge - International Journal*, *31*(1), 187–192.

Nikoloski, A. (2020). The impact of public expenditures on the economic growth of the Republic of North Macedonia. *Technium Social Sciences Journal, 8*(1), 249-258.

Reinhart, C. M., & Rogoff, K. S. (2010). Growth in a time of debt. *American Economic Review: Papers & Proceedings,* 573–578.

Shaqir, E. A. (2015). Volume and structure of public expenditures in the Republic of Macedonia. In *Proceedings from International Multidisciplinary Conference on Social Sciences and Arts – SGEM 2015*.

Sharlamanov, K., & Mitevska Petrusheva, K. (2022). Poverty as a Social Phenomenon in the Republic of North Macedonia. *Social Security in the Balkans – Volume 2,* 62-83.

Shkodra, J., Krasniqi, A., & Ahmeti, N. (2022). The impact of government expenditure on economic growth in Southeast European countries. *Journal of Management Information & Decision Sciences,* 25, 1-7.

Tashevska, B. (2018). Social expenditure in the European countries. *Contributions, 49*(1-2), 151-161.

Trenovski, B., Merdzan, G., & Peovski, F. (2022). Municipal Revenue Determinants in the Southeastern European Economy: Evidence from North Macedonia. *Studia Regionalne i Lokalne, 87*(1), 22-36.

Trenovski, B., & Mijovic-Spasova, T. (2018). Public Debt in Southeast Europe – Why to enable public participation? *MPRA Paper, No. 88381*.

Velichkovska, K., & Sadiku, L. (2019). Government expenditures' effects on economic growth in the Republic of Macedonia. *Trends in Economics, Finance and Management Journal, 1*(1), 63-72.

Veljanovska Blazhevska, K. (2022). The Social Security Policy of the Republic of North Macedonia: Reform Process, Opportunities and Perspectives. *Social Security in the Balkans – Volume 2,* 13-83.

Vučić, V., Marinović Matović, I., & Kostić, Z. (2020). Public revenues and public expenditures analysis in Southeast European countries. *International Journal Knowledge, 38*(1), 45-51.

Delivered: 02.11.2023.
Accepted: 05.12.2023.