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THE ROLE OF THE FISCAL STRATEGY OF THE REPUBLIC OF NORTH MACEDONIA FOR ACHIEVING SUSTAINABLE DEVELOPMENT OF THE NATIONAL ECONOMY

AUTHOR'S SUMMARY

of a dissertation thesis for acquisition of the educational and scientific degree of Doctor of Philosophy in Professional Field: 3.8. Economics, Doctoral Programme: Planning

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I. GENERAL CHARACTERISTICS OF THE DISSERTATION THESIS

1. Contemporaneity and importance of the topic

The doctoral dissertation entitled "The Role of the fiscal strategy of the Republic of North Macedonia in achieving sustainable development of the national economy" uses quantitative analysis and modern econometric models to answer the question “What is the specific importance of fiscal policy for economic development?” The author has defined the key factors and determinants of economic growth, such as government spending, capital expenditure, etc. and used a vector autoregression (VAR) model to estimate the impact on GDP and collect reliable information to determine which of the available measures and instruments would directly or indirectly boost the factors that may have positive or negative effects on economic growth. Previous research on the topic does not make sufficient use of quantitative econometric analyses of the effects of fiscal policy in the Republic of North Macedonia (RNM), which is why we believe that this research fills this gap.

2. Research subject and object

The subject of the dissertation research are the effects of Republic of North Macedonia’s fiscal policy on its macroeconomic development and public debt.

The object of research are the policies, strategies and instruments of the fiscal policy intended to ensure sustainable development as well as methods for evaluating the short-term and medium-term effects of fiscal policy on the GDP and the public debt of the Republic of North Macedonia. A special emphasis in the study is placed on assessing the relevance of quantitative econometric models based on vector autoregression (VAR-models) to define systematically and determine the essential dynamics of multiple time series in the macroeconomic domain as well as to perform a systematic analysis of the results of the study of economic and financial time series based on which an appropriate fiscal strategy could be adopted and implemented.

3. Objective and tasks of the dissertation thesis

The main objective of the research is to use econometric models to study the effects of fiscal policy on macroeconomic development in the Republic of North Macedonia, to assess fiscal impacts in terms of their intensity, direction, time lag of effected changes, and GDP interdependence. This will help determine the main parameters for conducting a reasonable fiscal policy and can serve as a framework for analysis and evaluation of previous and future fiscal strategies of the Republic of North Macedonia.

In the context of the formulated main research objective, the following research tasks were set:

1. To make a critical analysis of the current literature related to the topic with a focus on modern theoretical concepts of economic development;
2. To present in a systematized form the theoretical concepts of fiscal policy and its impact on macroeconomic development;
3. To present the theoretical determinants of public debt and the effects of deficit fiscal policy;
4. To assess the effectiveness of fiscal policy on the economy of the Republic of North Macedonia through an empirical analysis using econometric vector autoregression models (VAR models);
5. To perform a strategic analysis of the Fiscal Strategy of the Republic of North Macedonia 2017-2019.
6. To evaluate the Fiscal Strategy of the Republic of North Macedonia 2020-2022.

4. Research methods

The thesis research problem and object are focused on the macroeconomic effects of fiscal policy, analysed by regression and econometric models (VAR-models), as well as a comprehensive assessment of the previous and current fiscal strategies that aim to ensure sustainability of the public debt of the Republic of North Macedonia.

Contemporary macroeconomic scientists are engaged in heated debates and polemics regarding the assessment of the effects of increased public consumption and capital expenditures on economic activity, i.e. on gross domestic product as an aggregate measure of overall economic activity. This fact underlies the dissertation, which is based on empirical studies with quantitative models aiming to prove the impact of fiscal policy on macroeconomic trends and public debt and thus to determine relevant econometric models for the Macedonian economy and strategies for good fiscal management. The models and variables are selected according to the theoretical foundations of modern fiscal economics and quantitative finance, empirical research and the specifics of the Macedonian economy and statistics. The latter implies dealing with insufficiently long time series of macroeconomic indicators and possible structural breaks in the series of indicators.

The complexity of the research problem requires the use of scientific methods that would achieve the results laid down in the objectives of the research. As an econometric research technique, Vector auto-regression (VAR) specifies the current state as a function of a limited number of lags. The VAR model aims to explain the linear interdependence between time series and includes multiple variables. As one of the most successful models for analysing time series variables, it is a particularly useful method for explaining economic and financial time series. The statistical analysis software *Eviews* was used for data processing, in which the VAR model was developed, while the *Anova* software was used for basic regression analysis.

The analysis was made with 20-year time series of quarterly data from the first quarter of 2000 to the last quarter of 2019 in millions of denars. Regarding the data and their analysis, we should point out that the variables in the model specification are expressed in real values. Nominal values of total budget expenditure have been converted to (real) values at 2005 prices, using the inflation rate as a valuation factor. The database comprises GDP data for the period 2004–2011 at constant prices published by the SSO, in which 2005 is used as the base period. The GDP values for the period before 2004 are calculated using the real growth rates published by the SSO for this period. Considering that the quarterly data in the time series show certain seasonality the actual values of the series are seasonal.

The research is based on quantitative analyses for several reasons**:**

1. The impact of fiscal policy on macroeconomic development can only be studied using quantitative regression models, which, although limited to detecting certain dynamics and changes in time series, can be sued to forecast the future development of selected macroeconomic variables.
2. A complex and comprehensive study of the impact of fiscal policy on macroeconomic development is possible only by using econometric models that quantify the current relationship of the studied variables.
3. The VAR methods provide an opportunity to systematically capture the multidimensional dynamics of multiple time series in the field of macroeconomics and, in conditions of confirmed relationship, to quantify the future values of the analysed variables.
4. The use of quantitative methods to improve fiscal policy management is still modest for the Republic of North Macedonia and is largely based only on theoretical reports.

5. Research questions and new knowledge

The research problems and subject matter define above raise the following research questions:

1. Using the VAR model, can we accurately determine whether there is a two-way impact relationship, i.e. a correlation between the GDP and the public consumption in the Republic of North Macedonia?
2. Applying the Granger Causality test to the VAR model, can we accurately determine whether there is a two-way impact relationship, i.e. a correlation between the GDP and the capital expenditure as part of the budget of the Republic of North Macedonia?
3. Does the medium-term budget framework determine all the planned needs for financing budget deficits in the medium term, the necessary funds for repaying previous debts as well as for financing the projects that are not implemented by the central government?

4. Does the medium-term budgetary framework ensure the transition of public debt to moderate growth in the medium term?

5. Is the risk management policy essential for the management of public debt?

6. Is the risk management policy a key link between the proposal, formulation, adoption and implementation of a fiscal governance policy?

The research is expected to provide new knowledge regarding:

1. The applicable methods for assessing the possibility of using the main regression models to quantify the impact of fiscal policy on macroeconomic developments;

2. The capabilities of the VAR model for quantifying the impact of fiscal policy on macroeconomic development;

3. Possibilities for using the *Granger Causality* tests to quantify the impact of fiscal policy on macroeconomic developments;

4. How the application of quantitative models for estimating public consumption affects GDP;

5. To what extent the use of quantitative models shows how GDP affects public consumption;

6. Measuring the elasticity of public consumption in relation to GDP by applying quantitative models;

7. Determining the dependence of GDP on capital expenditures by applying quantitative models;

8. Determining the dependence of capital expenditures on GDP by applying quantitative models;

9. Possibilities to determine the medium-term budget framework;

10. Defining a policy for public debt management;

11. Determining the weaknesses of the country's previous and current Fiscal Strategy.

6. Research hypotheses

The following posed research hypotheses related to the formulated research questions were tested by conducting empirical research and were confirmed or rejected:

The main research hypothesis was formulated as: The application of vector auto-regression models provides an accurate measurement of the impact of fiscal policy on macroeconomic trends and public debt, which contributes to a continuous improvement of fiscal strategy and prudent fiscal policy management required for the sustainable development of the national economy.

The auxiliary hypotheses, the confirmation of which would lead to the confirmation of the main hypothesis, were formulated as:

1. Using the VAR model, we can accurately determine the presence of a two-way relationship of influence, i.e. a correlation between the GDP and the public consumption in the Republic of North Macedonia;

2. By using Granger Causality test in a VAR environment, we can accurately determine the presence of a two-way relationship of influence, i.e. a correlation between the GDP and the capital expenditure as part of the budget of the Republic of North Macedonia;

3. A continuous improvement of the fiscal strategy ensures prudent management of public finances and fiscal sustainability;

4. The medium-term budgetary framework ensures macroeconomic stability and fiscal consolidation, i.e. low budget deficit and sustainable debt management;

5. The medium-term budget framework defines all planned needs for financing budget deficits for the medium term, the necessary funds for the repayment of previous debts, as well as the financing of projects that are not part of the central government;

6. The medium-term budget framework ensures a moderate growth of the public debt in the medium term;

7. Risk management policy is central to public debt management;

8. The risk management policy is a key link between the proposal, formulation, adoption and implementation of a management policy.

7. Assumed constraints to the dissertation thesis

The study of the effectiveness of fiscal policy is a complex issue, since, in addition to determining the final effect of certain types of public expenditure on the national GDP, it also implies an analysis of the current tax structure of the country, the efficiency of public revenue collection and, in this context, tax evasion, the payment of certain types of taxes, the size of the tax burden (fiscal pressure), the coordination between fiscal and financial policy, budget planning, transparency, etc.

The author did not aspire to examine all of the aforementioned determinants of fiscal policy effectiveness. The analysis focuses on the effectiveness of fiscal policy by determining the impact of public spending and capital spending on GDP, as well as the sustainability of public debt. In general, the fiscal strategy was analysed in terms of the main macro-fiscal risks affecting the budget deficit, which means that not all risks have been taken into account. The analysis of the data and time series does not reveal seasonality adjustments of the budget balance (seasonal adjustment of the individual categories of budget revenues and expenses), nor adjustment of the primary budget balance for the internal absorption deficit, i.e. for the effects arising from the composition of GDP as the effect of wages, which decreased during the analysed period were not analyses and the effects of tax revenues on net imports were not assessed. During the analysed period, they were insignificant, but nevertheless it should be expected that the increase in primary costs can affect negatively the exchange rate.

II. STRUCTURE AND CONTENTS OF THE DISSERTATION THESIS

The dissertation consists of an introduction, three chapters, a conclusion, and exhibits. The full volume of the dissertation is 180 pages without the list of references. The text of the dissertation includes 65 figures and 2 tables. The main figures and tables are shown in an Exhibit of 31 pages, which includes 28 tables and 48 figures. The list of references contains a total of 90 sources.

The dissertation is structured as follows:

Introduction

Chapter One. Modern theoretical concepts regarding the effects of fiscal policy on economic development

1. Theoretical definition of public finance

1.1. Public finance – essence, functions, and concepts

1.2. Fiscal numerators – definition, dilemmas, and contradictions

1.3. Evaluation of the effects of fiscal policy on macroeconomic development

Chapter Two. The effects of fiscal policy on the economy of the Republic of North Macedonia – an empirical research

1. Evaluation of the fiscal position of the Republic of North Macedonia

1.1. Budget balance

1.2. Budget expenditures

1.3. Budget revenue

1.4. Public debt

2. Evaluation of the impact of public consumption on the GDP of the Republic of North Macedonia using a VAR (p) model

2.1. Variables and data

2.2. Co-integration test of the analysed variables

2.3. Methods

2.4. Results and discussion

3. Granger causality test of the impact of capital expenditure on the GDP of the Republic of North Macedonia in a VAR environment

3.2. Variables and data

3.1. Co-integration test of the analysed variables

3.3. Results and discussion

Chapter Three. Strategic aspects for good public finance management

1.1. Main hypotheses related to the fiscal strategy and public finance management

1.2. Fiscal strategy and medium-term fiscal framework

1.3. Budget deficit and financing

2. Public debt

2.1. Public debt management policy

2.2. Public debt risk management

3. Comparative analysis of macroeconomic and fiscal forecasts

3.1. Comparative analysis of the macroeconomic and fiscal forecasts for the period 2020 - 2022 with the 2019–2021 Revised fiscal strategy

3.2. Comparative analysis of the macroeconomic and fiscal forecasts for the period 2021 - 2023 with the 2020–2022 Revised fiscal strategy.

3.2. Fiscal risks and sensitivity analysis

4. Guidelines for improving public finance management

4.1. Alternative financing strategies

4.2. Improving public finance management

Conclusion and recommendations for further research

List of references

Exhibits

III. SUMMARY OF THE CONTENTS OF THE DISSERTATION THESIS

The **Introduction** presents the importance and relevance of the topic of the dissertation as well as its object and subject, its objectives, goals and tasks, its research methods, and the research questions it answers. It also presents the main and the auxiliary hypotheses and specifies which questions remain outside the scope of the dissertation due to the assumed constraints framework.

Chapter One of the dissertation presents modern theoretical concepts of the impact of fiscal policy on economic development.

An important feature of classical public finance is its "neutrality". To meet this criterion of the classical doctrine, the government has to refrain from any measures that would affect the market mechanism in terms of distribution. Classical theory advocates extreme rigor in the use of public borrowing and a strict budget balance in public financing, as government spending is seen as a risk of expanding the sphere of government activity and ineffective government spending.

Contrary to this view, Keynes argues that a policy should be implemented to strengthen effective demand with monetary and fiscal measures above the level of real income. Keynes was also an early proponent of government intervention in private economic relations, as capitalism continually follows the emergence of a chronic insufficiency of global demand.

Contrary to Keynes' concept, the concept of the new economic thought is based on the premise that a policy of reducing the fiscal burden can influence the development of private initiative. According to Samuelson, fiscal policy should be implemented through taxation and public spending to prevent a downturn in the business cycle, to maintain a high level of employment of all factors of production and to avoid marked inflation or deflation.

In the second half of the 1970s, the supply side economics emerged as a new theoretical aspect in economics and an enhancement of economic thought. It is based

on the premise that the main cause of economic disturbances lies on the supply rather than the demand side, thus again rejecting Keynes' theory that demand is the main drive of economic trends.

It is important to note that the fiscal policy is one of the main tools of the new economic theory as well because it is based on the premise that the policy of reducing the fiscal burden can be used to develop private initiative. The economy needs to control inflation with fiscal policy measures and capacity building.

New economic thought contains theories for reduction of government intervention and keeping the role of the government within certain limits. It deals with fiscal deficit, which has become a universal or global problem. According to the practical experience of various countries around the world, the global fiscal deficit is a significant generator of inflation because since financing is provided through additional emissions. Therefore, all tools and are aimed at reducing the fiscal deficit because of the great negative consequences it causes.[1] Countries are intensively considering combinations of measures and instruments, i.e. the implementation of combined policies aiming to reduce this negative economic phenomenon.[2] If the monetary tool is disregarded, some countries effect fiscal deficit regulations by means of fiscal policy, which in turn led to another negative economic phenomenon - the so-called income crowding out.

The inclusion of the so-called automatic stabilizers in the countries' fiscal policy is not related to government's discretionary fiscal measures as there is an inverse relationship between the size of the implemented discretionary fiscal packages and the effect of the so-called automatic stabilizers. The weight of automatic stabilizers is usually three times that of a fiscal package. Whether countries introduce more or less ambitious fiscal measures depends on the country and its specific conditions.[3] It should be emphasized here that the effectiveness of the fiscal policy to stimulate economic activity is measured by the so-called fiscal multipliers.

Economic analyses point to another major global problem - high public debt and adverse reactions in financial markets. The answer to this question will likely depend on each country's initial budget position. Empirically, there are different findings and results across countries regarding the nature of fiscal policy. In general, empirical studies show that fiscal policy is countercyclical or neutral in most developed countries, while pro-cyclical in developing countries.

According to Lane, such differences in fiscal policy behaviour stem from countries' ability to implement fiscal control procedures. The author’s argument is the

[1] Lawrence J. C., M. Eichenbaum and C. L. Evans. Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy, Journal of Political Economy, Vol. 113, No. 1 (February 2005), pp. 1-45.
[2] Afonso, A.; Claeys, P. (2008). The dynamic behaviour of budget components and output. Economic Modelling, 25, 93-117.
[3]Baunsgaard, T. and Symansky, S. A. (2009). Automatic Fiscal Stabilizers: How Can They Be Enhanced Without Increasing the Size of Government? IMF Staff Position Note, No. 09/23, Washington, DC: International Monetary Fund. c. 221.

positive relationship of the relevant factor with the level of economic development, measured in terms of GDP per capita in a study of OECD countries.[4] Empirical evidence of the cyclicality of fiscal policy in developing countries can be found in publications by a number of authors, such as Gavin and Perotti et al. on revenues collected in good times.[5]

In their study, Afonso and a group of professors considered three components of fiscal policy for a group of 132 developed and developing countries in the period 1980-2007.[6] Their results show that, for most of the countries in the sample, fiscal policy is rather stable than responsive to economic conditions. This finding implies that in most countries fiscal policy is neutral. Regarding the discretionary component of fiscal policy, a number of publications demonstrate that the discretion associated with budget expenditures is strongly and negatively correlated with the quality of institutions, as well as with political and budgetary constraints.[7] In their publications, Debrun and Kapoor examine the performance of automatic stabilizers in an analysis of a sample of 40-year data series of 49 developed and developing countries.[8]

Their results strongly support the opinion that fiscal stabilization works mainly through automatic stabilizers. However, the authors point out that relying solely on automatic stabilizers as a means of fiscal stabilization has some limitations and potential drawbacks. Thus, automatic stabilizers may be insufficient in the event of an acute crisis or when the influence of other economic policy instruments is limited.

Although a number of economists believe that fluctuations in the aggregation of output determine an optimal response to changing preferences or technology, most economists believe that some fluctuations result from rigidity or coordination errors. These changes in the national product, especially for the balance of the actual over the potential product determined by the available factors of production, are socially costly. In this case, adjustments to the central budget deficit can also improve social wealth in the long run. A similar statement about "countercyclical fiscal policy" dates back to the Keynesian era, and Blindor and Solow present one of the classic analyses.[9]

Countercyclical fiscal policy originates automatically from the design of tax and transfer programs (public spending). In fact, personal income taxes and transfer payments are the most effective automatic stabilizers, i.e. when the national product and

[4]Lane, P. (2003), The cyclical behaviour of fiscal policy: evidence from the OECD. Journal of Public Economics, Vol. 87, No. 12, pp. 61-75.
[5]Gavin, M. and Perotti, R. (1997). Fiscal policy in Latin America. NBER Macroeconomics Annual, No. 12, pp. 11-71.
[6]Afonso, A., Agnello, L. and Furceri, D. (2008). Fiscal policy responsiveness, persistenceand discretion. ECB Working Paper Series No. 954.
[7]Afonso, A., Agnello, L. and Furceri, D. (2008). Fiscal policy responsiveness, persistenceand discretion. ECB Working Paper Series No. 954.
[8]Debrun, X. and Kapoor, R. (2010). Fiscal Policy and Macroeconomic Stability:Automatic Stabilizers Work, Always and Everywhere. IMF Working Paper No. 10/111, Washington, DC: International Monetary Fund.
[9]Elmendorf W. D. & Mankiew N. G. Government Debt. NBER Working Paper No. 6470, 1998.

income are high, tax liabilities increase and the fairness of government benefits decreases with the decrease of the number of employees. When the national output and income are low, these effects are reversed and a deficit is inevitable.

Countercyclical fiscal policy can also be implemented on a discretionary basis. This can include changes in taxes, introduction of new taxes, changes in tax rates or changes in public spending volumes. These discretionary measures are by far different from the automatic stabilizers discussed above as they require specific legal procedures.

However, in addition to these two fiscal instruments, in practice governments resort to applying the flexibility method formula, which is essentially a combination of the method of automatic stabilizers and a discretionary policy. It is implemented according to a previously developed system that is activated in the event of certain changes in the level of national income and employment, i.e. when one of the two variables drops to a certain level, tax rates and transfer payments are changed automatically to achieve countercyclical effects. In essence, it is the dynamic version of the built-in stabilizers. In theory, however, some scholars hold the opinion that the use of fiscal policy to achieve countercyclical goals is a bad idea.

If fiscal policies are to be countercyclical, in volatile economic times when there is a risk of inflation increase, the government must be prepared to cut spending or raise taxes, or both. History has shown that such unusual political decisions are rarely made. Today, such decisions are implemented in the fiscal policies of the peripheral countries of the EU.[10] Accordingly, if the government stimulates the economy with favourable policy measures, but does not want to impose restrictive policy measures, it has to tighten its budget. This analysis shows that it would be better for the government not to resort to a countercyclical approach in its fiscal policy even when its budget is fairly balanced and to act in favour of a long-term economic prosperity. These three goals are not one-sided propositions, i.e. they must be followed continuously. If these principles are followed, then fiscal policy will result in a long-term maximum economic welfare.[11]

Special emphasis in this section is also placed on fiscal multipliers, i.e. the multiplier effects of changes in individual of budget expenditures. Fiscal multipliers measure changes in real GDP as a result of changes (increase or decrease) in a unit of fiscal variable. There are various classifications of the types of fiscal multipliers in the available literature. In terms of changes in fiscal variables, there are three types of fiscal multipliers:

- Government spending multiplier;
- Tax multiplier;
- Balanced-budget multiplier.

[10] Brook, A. M. (2003). Recent and prospective trends in real long-term interest: fiscal policy and other drivers. OECD Working Paper #21.

[11] Santow J. L. (1998). The Budget Deficit: The Causes, the Costs, the Outlook, New York Institut of Finance. c. 210-212.

Government spending multiplier is related to the increase or decrease in government spending (purchase of goods and services from the budget, salaries for public administration, etc.) that has a direct impact on aggregate demand and real GDP, since government spending (G) is an integral component of aggregate demand. Therefore, the government spending multiplier refers to the ratio of changes in real GDP Δy caused by changes in government spending ΔG, i.e. $(\Delta y/\Delta G)$.

Tax multiplier refers to changes in aggregate demand and real GDP. For example, an increase in taxes reduces the disposable income of households and businesses, so the aggregate demand and real GDP are reduced due to the reduction of household spending (c) and business investments (i). Therefore, the tax change multiplier is obtained as the ratio of the changes in the real output of the economy caused by tax changes $(\Delta y/\Delta t)$.

Balanced-budget multiplier shows the effect of changes in government spending on the economy's balanced output, as changes in government spending are financed with an equal increase in taxes, and therefore they are actually balanced by a balanced increase, so no budget deficit is created.

The balanced budget theorem was derived by the Nobel Prize laureate T. Havelmo, which is why it is often referred to as the Havelmo theorem of the multiplier effect of a balanced budget. It states that a balanced budget where changes in spending are financed by taxes of the same amount, has a multiplier effect of 1. Before this theorem was derived, the prevailing opinion in economic theory was that the same growth in spending and taxes has a neutral effect on the revenue.[12]

The theoretical literature on the effectiveness of fiscal policy includes several models: the Keynesian model, the IS-LM model for open and closed economies, demand-side models that incorporate rational expectations, the Ricardian equivalent, interest premiums, reliability models, and uncertainty models (including some new classic models).[13] The latest studies on the size of fiscal multipliers suggest, contrary to the standard Keynesian view, that the fiscal multiplier associated with tax cuts provides larger multiplier effects in the long run than the fiscal multiplier associated with increases in government spending. Arguments for this statement can be seen if one follows the opposite direction of the action of the multiplier (the decrease in government spending and the increase in taxes have a negative impact on real output) through the process of the so-called fiscal consolidation, i.e. fiscal adjustment.

Economists who believe that the fiscal multiplier of tax cuts is greater than the fiscal multiplier of increased budget spending justify this result by arguing that tax cuts not only stimulate aggregate demand, but also provide strong incentives to invest and

[12]Hemming, R., Kell.M and Mahfouz,S. (2002.). The Effectivness of Fiscal Policy in Stimulating Economic Activity-A Review of Literature. IMF Working Paper. WP/02/208.

[13]Hemming, R., Kell, M. and Mahfouz, S. (2002). The Effectiveness of Fiscal Policy in Stimulating Economic Activity - A Review of the Literature. IMF Working Papers.

produce. This opinion is well argued in the study of Alesina.[14] Fiscal adjustment essentially boils down to reducing the budget deficit and public debt.

The authors propose two fiscal adjustment approaches:

- Reduction of government spending, aka Eb-approach (expenditure-based approach);
- Tax increase, aka Tb-approach (tax-based approach).

Of course, fiscal adjustment can also be implemented through a combination of the two approaches. What is important in this study is the authors' observation that both approaches in addition to effects on aggregate demand have significant effects on aggregate supply. The latter, undoubtedly, has obvious implications for the level of fiscal multipliers. The approach of fiscal adjustment by reducing government (budget) spending creates positive effects on the aggregate supply side mainly by improving the business climate in the countries where it is applied as the announced reduction in government spending affects the expectations of business entities, i.e. reduces investor uncertainty and increases the propensity to invest - this is normal, as economic agents (in this case investors) expect lower budget deficits, lower inflation rates and lower interest rates.

In the long run, this approach also allows for an increase in capital goods as a result of mitigating the crowding out effects. A fiscal adjustment approach of increasing taxes in turn reduces the incentive to invest and creates distortions in the economy. Therefore, the authors conclude that fiscal adjustment by cutting government spending can be accompanied by mild and short-run recessions or even no recessionary disturbances, while the approach of increasing taxes leads to prolonged and deep recessions, which actually indicates greater effects of the fiscal multiplier accompanied by changes (in this case from increases) in taxes.

Different macroeconomic schools have different views on the impact of changes in public consumption on real output (GDP) and hence on the level of fiscal multipliers. The two-sector Keynesian model allows for crowding out through changes in interest rates and exchange rates, which affects the size of fiscal multipliers but does not change their polarity.[15]

In the standard IS-LM model proposed by Hicks, fiscal expansion financed by borrowing leads to higher interest rates and the subsequent contraction of private investment and spending.[16] The impact of fiscal stimulus depends on the sensitivity of investment and money demand depending on the interest rate level and price flexibility. In the Mandel-Fleming IS-LM open economy model, there is additional crowding out

[14]Alesina, A and Giavazzi, F. (2013). Fiscal Policy after the Financial Crisis. University of Chicago Press.

[15]Hemming, R., Kell, M. and Mahfouz, S. (2002). The Effectiveness of Fiscal Policy in Stimulating Economic Activity - A Review of the Literature. IMF WorkingPaper No. 02/208, Washington, DC: International Monetary Fund.

[16]Ilzetzki, E., Mendoza, E. G. and Vegh, C. A. (2010), "How Big (Small?) are FiscalMultipliers?", NBER Working Paper No. 16479.

by means of the exchange rate, i.e. higher interest rates attract foreign capital, the inflow of which increases the exchange rate This reduces exports and mitigates the effect of the initial fiscal stimulus.[17] According to this model, discretionary fiscal policy has a greater effect on output under a fixed exchange rate than under a flexible exchange rate.

This part also assesses the effects of fiscal policy on macroeconomic development. The conclusion is that VAR-models have the greatest application in the empirical literature. The main differences among the empirical studies stem from the alternative approaches to identifying fiscal shocks, which can be divided into four groups[18]:

• Using artificial variables to cover specific fiscal episodes and situations related to political decisions or elections;

• Introduction of signal constraints in impulse response functions;

• Approach based on Choleski decomposition;

• Use of lags in fiscal policy decision-making and information on the elasticity of fiscal variables in relation to economic activity.

Empirical studies do not provide a general picture of the direction and size of the impact of fiscal policy instruments on output. De Castro and De Cos examined the effects of fiscal policy on key macroeconomic variables in Spain using quarterly data from 1980-2004. Their findings show that an increase in government spending leads to higher economic activity in the short run, while in the long run these effects reverse and become negative.[19] An increase in budget spending leads to a higher rate of inflation and an increase in interest rates. In terms of net tax revenue, the authors find a low positive correlation to output in the short run, while the effects are negative in the medium run. Higher revenues also stimulate spending, with the authors pointing out that attempts to achieve fiscal consolidation by increasing the tax burden may not be effective. The shock to net tax revenue leads to a negative short-term effect on inflation, while the effects on interest rates are positive and durable. Mountford and Uhlig examine the main (unexpected) budget revenue and expenditure shocks and the lagged (expected) shocks using US quarterly data for the period 1955–2000.[20]

The main results show that the best fiscal policy to stimulate economic activity is to combine tax cuts with loan financing. However, the authors point out that the implementation of such a policy increases the public debt and has negative consequences for the economy in the long run. The increase in budget spending

[17]Hemming, R., Kell, M. and Mahfouz, S. (2002). The Effectiveness of Fiscal Policy in Stimulating Economic Activity - A Review of the Literature. IMF WorkingPaper No. 02/208, Washington, DC: International Monetary Fund.

[18]Perotti, R. (2004). Estimating the effects of fiscal policy in OECD countries. Universityof Bocconi, Working Paper.

[19]De Castro, F. and De Cos, P. H. (2006). The economic effects of exogenous fiscalshocks in Spain: an SVAR approach. ECB Working Paper No. 647.

[20]Mountford, A. and Uhlig, H. (2005). What are the effects of fiscal policy shocks? SFB649 Economic Risk, Discussion Paper No. 039, Berlin.

financed with loans has a lower intensity effect on the economic activity in the first year after the shock. Therefore, an increase in budget spending (financed either with loans or tax increases) leads to a crowding-out of investment, but without promoting interest rate growth.

Afonso and Sousa investigated the macroeconomic effects of fiscal policy using quarterly data for the US, UK, Germany and Italy through a Bayesian SVAR approach.[21] Another author, Ilzetzki, used a SVAR approach and a panel of 44 countries to examine the impact of public spending on economic activity, i.e. to determine the value of the multipliers taking into account some economic aspects of the countries in the sample.

Regarding country development, their results show that the effects of public spending are more pronounced in developed countries than in developing countries. Regarding debt, the results show that the impact multiplier for countries with public debt higher than 60% of GDP is statistically insignificant and becomes negative in the long run.

Chapter One conclusions:

1. An important feature of classical public finance is its "neutrality". To meet this requirement of the classical doctrine, governments had to refrain from any measures that would affect the market allocation mechanisms.

2. The classical theory recommends extreme rigor in the use of public borrowing and a strict budget balance in public financing since government spending is seen as a risk of expanding the sphere of government activity and unproductive government spending. Contrary to this view, Keynes argued that a policy should be implemented to strengthen effective demand, with monetary and fiscal action and above the level of actual income. Keynes was also an early proponent of government intervention in private-economic relations, as capitalism continually followed the emergence of a chronic insufficiency of global demand. The concept of the new economic thought starts from the premise that the policy of reducing the fiscal burden can act on the development of private initiative. According to Samuelson, fiscal policy should be used through taxation and public spending to prevent a downturn in the business cycle, to maintain a high level of employment of all factors of production and without marked inflation or deflation;

3. The effectiveness of the fiscal policy to stimulate economic activity is measured by the so-called fiscal multipliers that work for both taxation and government spending. Fiscal multipliers measure changes in real GDP as a result of changes (increase or decrease) per unit of a fiscal variable. A reduction in personal income taxes increases private spending, i.e. when the government reduces the taxes and increases its spending, this leads to an increase in income and profits;

[21]Afonso, A. and Sousa, R. M. (2008). The Macroeconomic Effects of Fiscal Policy. Working Paper No. 56, School of Economics and Management, Lisbon.

4. In general, fiscal adjustment by cutting government spending can be accompanied by mild and short-lived recessions or even no recessionary disturbances, while the approach of increasing taxes leads to prolonged and deep recessions, which in fact points to a stronger multi-fiscal effect accompanied by changes (in the case of increases) in taxes.

Chapter Two is entitled "The Effects of Fiscal Policy on the Economy of the Republic of North Macedonia - An Empirical Study" and presents an assessment of the fiscal position of the Republic of North Macedonia. In order to assess the fiscal position of the Republic of North Macedonia and to create a model for regression analysis, the variables in the model are expressed in real values. The nominal values of total budget revenues and budget expenditures have been converted to (actual) values at 2005 prices, using inflation as a valuation factor. The database contains data on GDP in constant prices published by RNM's State Statistical Office (SSO), where 2005 is used as the base for the period 2004-2011. The GDP values for the period before 2004 are calculated using the real growth rates published by the SSO for that period. Given that we are using quarterly data with seasonal fluctuations, the data have been transformed using the Tramo/Seats[22] method of seasonally adjusted time series.

The analysis of the fiscal position of the Republic of North Macedonia showed that during the analysed period (2000-2018), total public revenues varied between 27.6% and 29.6% of GDP, while the share of tax revenues was relatively stable and was between 16% and 17% of GDP. The need for an active fiscal policy meant that budget spending increased year-on-year in nominal terms, with current spending as a percentage of GDP varying between 28.3% and 30.3% of GDP and capital spending between 1.85% and 4.84% of GDP. This clearly shows that the government used budget deficits to overcome crises as well as to implement the Skopje 2014 project, but in contrast economic growth has been moderate in the range between 3 and 3.5%. The growth of deficits is a reflection of the accelerated growth of the national and public debt, which from 20.5% and 23% in 2008 reached as much as 39.9%, i.e. 48.8% of GDP respectively in 2016 – a nominal increase of more than UR 4 bln.

The fiscal assessment of the Republic of North Macedonia shows that both budget deficit and increases in public debt are used to stimulate economic activity. As a result of various economic and non-economic factors, the Macedonian economy faced periods of crisis and recession and the most frequently used countercyclical measure was its fiscal policy. The fiscal assessment of the movements of the analysed variables, i.e. GDP, budget balance, budget expenditures, budget revenues, government and public debt, does not give a clear idea of the effects of the used measures on economic growth. The fiscal assessment shows that the Macedonian economy grows in conditions of

[22]Gomez,V and Maravall, A. Program Tramo (Time Series Regression with Arima Noise, Missing Observations and Outliers) and Seats (Signal Extraction in Arima Time Series), 2000.

budget surplus and reports negative growth rates in conditions of large budget deficit. Moreover, one of the most frequently discussed questions is whether a significant increase in government debt observed in the period from 2008 to 2016 and manifested as a rapid growth of public debt has ensured the desired economic growth rates of the Macedonian economy. Therefore, we explored the effects of fiscal instruments on the real sector through their impact on GDP. The analysis of this ratio allows us to assess the relationship between GDP and public consumption in the Republic of North Macedonia. In an attempt to answer the above question, the interdependence between public consumption (budget expenditures) and GDP should be determined, but also the nature and intensity of the impact should be investigated.

The nature and intensity of this relationship cannot be determined precisely without determining the influence of the historical values of a variable on its current or future values with a time lag, i.e. proving that the fiscal policy in the analysed period has an anticyclical character. Econometric models with greater sophistication are needed to determine whether the Republic of North Macedonia is pursuing a fiscal policy that effectively mitigates the economic cycle, i.e. fiscal policy that reinforces the effect of automatic stabilizers, which as a rule have a countercyclical behaviour.

For this purpose, in the dissertation, an assessment of the impact of public consumption on the GDP of the Republic of North Macedonia was made, by using the VAR (p) model. The VAR model is useful for determining the mutual influence of time series. Two main models are used for time series analysis that estimate the relationship between variables over time: Vector Auto Regression (VAR) and Vector Error Correction (VECM). In this analysis, the VAR model is used as the basis for estimating Impulse Response Functions, which actually show how one variable can respond to sudden changes in the other variable.

Since the main objective of the study is to confirm or reject the hypothesis that public consumption affects the gross domestic product in the Republic of North Macedonia and vice versa - that the gross domestic product affects budget spending (public consumption), we use the VAR model to investigate whether there is a bidirectional relationship between GDP and public consumption in the Republic of North Macedonia. We tested special hypothesis 1 using three separate hypotheses.

Before starting to apply the VAR model, it was necessary to perform a co-integration test and determine whether the series are non-stationary. In single models, stochastic trends can be overcome by using first differences. Stationary series can then be estimated and forecasted. There are two solutions for determining co-integration:

- to use a tabular regression test (using the Box-Jenkins 3-stage method), or
- to use either the Engle & Granger co-integration test or the Philips & Ouliaris test.

The use of tables is one of the methods for estimating the co-integration of time series. Both tests are based on co-integration residuals. The tests are simple unit root

tests applied to the series of residuals. The null hypothesis for both tests is that the series are not co-integrated, meaning that rejecting the null hypothesis will determine the series to be co-integrated. The two methods differ in how they estimate the serial correlation of the residuals. Engle & Granger use a parametric (ADF) approach while Philips & Ouliaris use a non-parametric approach.

The null hypothesis is that the series are not co-integrated. In the Engle & Granger co-integration test, the P-value is greater than 0.05, i.e. the null hypothesis cannot be rejected. We can conclude that the series are not co-integrated.

In the Philips-Ouliaris co-integration test, the null hypothesis is the same, the values are greater than 0.05, which proves that the time series are not co-integrated.

This part of the dissertation presents the results of an econometric analysis of the time series of GDP and public consumption carried out using a vector auto-regression model VAR (p), using two long-term time series: Data on the movement of GDP and public consumption of the Republic of Northern Macedonia for the time interval 2000 Q1 - 2019 Q4. The study used a time series of 20 years by quarters, i.e. we have 80 observations. Eviews statistical analysis software was used for data processing, in which the VAR model was developed to prove the individual hypotheses. In our case, the null hypothesis of the VAR model states: Public consumption does not affect GDP and vice versa.

The VAR model is tested using the ordinary least squares (OLS) method. In the model, it is crucial to determine the maximum lag length, bearing in mind that if the lag is too large, degrees of freedom are lost and statistically insignificant coefficients and multicollinearity are obtained. Information criteria are used to select the optimal number of lags, such as: AIC, SC, HQIC. The interpretation of the coefficients is the same as in the other models, i.e. they are ceteris-paribus effects and their significance is based on usual OLS standard errors and t-statistics (test-stats).

To test the null hypothesis in the model we use p-value. If the p-value is greater than 5% we cannot reject the null hypothesis and should accept it; if the p-value is less than 0.05, we reject the null hypothesis, that is, we accept the alternative hypothesis. The results of the three-lag VAR model show that the null hypothesis of the VAR model is: public consumption does not affect GDP, and vice versa, GDP does not affect public consumption. To be able to determine which coefficients are significant, we need a p-value. The standard error indicates the deviation of the forecast from the series, and the t-statistic is the fraction between the coefficient and the standard error. For this purpose, we compile a VAR system, i.e. the model is mathematically expressed as follows:

D(GDP) = C(1)*D(GDP(-1)) + C(2)*D(GDP(-2)) + C(3)*D(GDP(-3)) + C(4)*D(PUBLIC_CONSUMPTION(-1)) + C(5)*D(PUBLIC_CONSUMPTION(-2)) + C(6)*D(PUBLIC_CONSUMPTION(-3)) + C(7)

D(PUBLIC_CONSUMPTION) = C(8)*D(GDP(-1)) + C(9)*D(GDP(-2)) + C(10)*D(GDP(-3)) + C(11)*D(PUBLIC_CONSUMPTION(-1)) + C(12)*D(PUBLIC_CONSUMPTION(-2)) + C(13)*D(PUBLIC_CONSUMPTION(-3)) + C(14)

VAR estimation is performed using the Ordinary Least Squares (OLS) method. The p-value results obtained allow us to determine the significance of the coefficients. As a result of the VAR model, we have 6 lag coefficients and one constant for each equation. The following conclusions were made after applying the VAR model:

- The coefficients for the first, second and third lags of GDP are statistically significant for the current GDP;
- The coefficients for the first and third lags of public consumption are statistically significant for the current GDP;
- The coefficient c is statistically significant for the current GDP;
- The coefficient for the third lag of GDP is statistically significant for public consumption;
- The coefficient for the first lag of public consumption is statistically significant for public consumption;
- The Durbin-Watson coefficient is 1.968, which is close to 2, confirming that there is no serial correlation in the VAR model.

One of the assumptions of a reliable regression model is that it has no heteroscedasticity, that is, the data is homoscedastic. A commonly used test for heteroscedasticity is the Breush-Pagan-Godfrey test, which we performed using the Eviews software package. For this test, we have one independent variable (public consumption) and one dependent variable (GDP).

Heteroscedasticity is not confirmed if the resulting value is greater than 0.05. In our case, the Chi-square value is 0.5173>0.05, so we can conclude that the data set has homoscedasticity and can be used in a regression model.

Considering the VAR model results, we may conclude that one, two and three lags in GDP are significant for GDP, i.e. changes in GDP one, two, and three prior periods affect current GDP as well as public consumption with one and three lags also affects GDP. To assess the validity of the VAR model, it is necessary to perform a residual test, i.e. test of the autocorrelation coefficients of the residuals. To test autocorrelation residuals, we use the basic tool for determining autocorrelation residuals, which is the "Impulse Response Function". As we have already noted, we use the VAR model as the basis for estimating impulse response functions, which actually show how one variable can respond to sudden changes in the other variable. We estimate how a shock (innovation) to one variable affects the other variable by following the response in the VAR model. Regarding the use of the function, we do not use standard errors (Response Standard Errors). Regarding the definition of Impulse, we use the decomposition (Cholesky dof adjusted). Regarding the Cholesky components, the first composition is GDP and the second is public consumption.

The results of the analysis show the response of GDP to shocks (changes) in GDP and public consumption that are within the standard deviation and vice versa, the response of public consumption to shocks (changes) in GDP and public consumption

that are within standard deviation. It is clearly seen that some values of the impulse responses start from zero, i.e. with a zero lag. These zero values are actually an indicator of the fast (instant) response to random shocks, which is actually explained by the Cholesky decomposition of the specific ordering of the variables. Some impulse response values do not have initial zero values, which confirms that GDP responds to shocks from changes in GDP, just as public consumption has an impulse response and responds to previous shocks in public consumption. A standard deviation of changes in public spending causes a statistically significant response to GDP two periods later. If we look at the graphs in Figure 1 by column, the first column gives the responses to the changes in the two series after the GDP shocks, and we can conclude that GDP responds positively and immediately to GDP changes and shocks. The second graph in the first column shows a value greater than zero in the zero lag of public consumption relative to the zero lag of GDP. Regarding the second column, the responses to changes in public consumption are given, and in the bottom row we can see that public consumption responds positively and immediately to changes and shocks to public consumption.

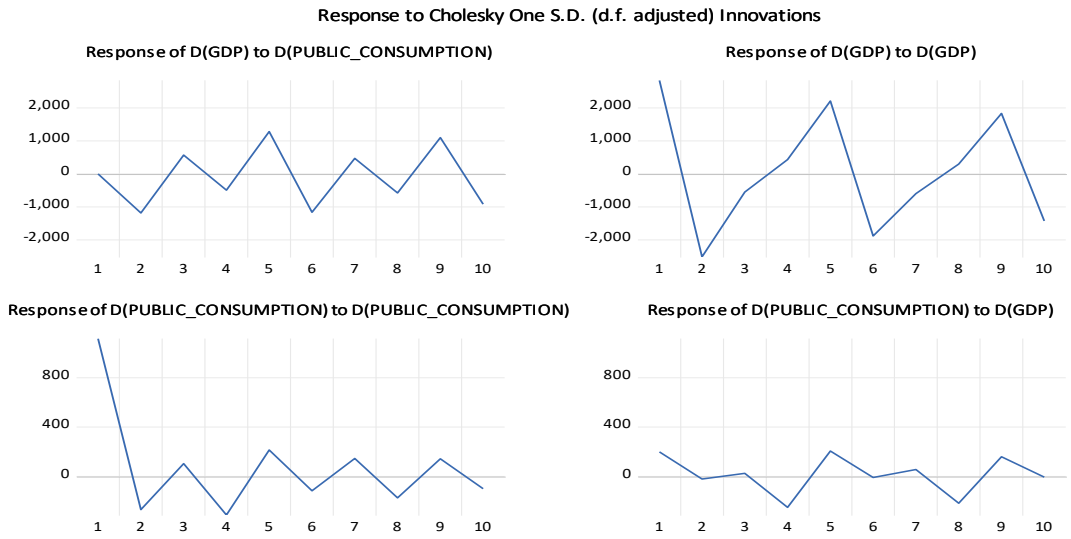

Fig. 1. Responses to Cholesky One Innovation

Source: Author's calculations using the Eviews software application

A standard deviation of changes in GDP causes a statistically significant response to public spending four periods later. What we can conclude from the first graph in the second column is that GDP responds to changes (shocks) in public spending. In fact, this confirms that, in general, public consumption in the Republic of North Macedonia is not elastic to changes in GDP, and that the level of GDP is affected by the size and changes in GDP from previous periods, as well as by current public consumption and from previous periods. Based on the above analysis and the results of the study, the following individual hypotheses should be accepted:

- Public consumption affects GDP - accepted.

- GDP affects public consumption - accepted.
- Public (budget) spending is non-elastic in terms of GDP volume - accepted.

Based on the acceptance of separate hypotheses, it follows that special hypothesis 1 is confirmed: There is a bilateral influence between public (budgetary) consumption and GDP of the Republic of North Macedonia.

In this part of the thesis, we test for Granger causality in the VAR environment of capital expenditure (as part of the government budget) and GDP. The analysis of the impact of capital expenditure on GDP is done by applying the Granger causality econometric model in a VAR environment. To test the VAR model we use the ordinary least squares (OLS) method. For the analysis, we use time series with 56 observations, i.e. quarterly GDP and capital expenditure data from 2006 Q1 to 2019 Q4. In order to ensure additivity and reduce the potential for heteroscedasticity of the residuals, data transformation is performed – we use the logarithms of GDP and capital expenditure. To determine the stationarity of the series and the possibility of their co-integration we use unit root tests, the coefficient of determination (R squared), the Durbin-Watson statistic, and tests for co-integration between the GDP and capital expenditure time series (lngdp and lnpcap_exp). The analysis begins with testing the equation for presence of unit roots in the two variables. For this purpose, the classic Dickey and Fuller ADF test (Augmented Dickey-Fuller Test) is applied. The null hypothesis states: The first differentiation of the logarithm of GDP has one root. The test uses 2 lags. The result of the ADF test statistic for the t-statistic is -18.09, but the absolute value is taken, which means that it is greater than the critical values of the test by 1%, 5%, and 10%. Therefore, the null hypothesis is rejected at a risk of error of less than 1%. The least squares method (Least Squares NLS and ARMA) is used for the estimation.

Comparisons between the coefficient of determination and the Durbin-Watson test give an indication that a spurious regression may be present. To test this assumption, the residuals are tested for stationarity using the Eangle-Granger and Phillips-Ouliaris tests. The results of both (Eangle-Granger and Phillips-Ouliaris) tests confirm that the series are not co-integrated. The null hypothesis states precisely that the series are not co-integrated. The p-value is greater than 0.05, i.e. the null hypothesis cannot be rejected. We can conclude that the series are not co-integrated.

The Phillips-Ouliaris co-integration test gives the same results. The null hypothesis is the same, the values are greater than 0.05, which proves that it cannot be rejected, that is, the series are not co-integrated. This gives reason to assume that there is no long-term co-integration dependence between the two variables (GDP and capital expenditure) and, since the series are non-stationary, their first differences, which are stationary, should be used further in the analysis.

Prior to analysing the coefficients and t-statistics, we analysed further the lag structure (VAR Lag Order Selection Criteria) to determine whether the number of lags in the model was specified correctly. The results of the vector auto-regression should

be confirmed after estimating the autocorrelation of the residuals. To this end, we test the residuals with two methods. The Portmanteu Test for Autocorrelations (VAR Residual Portmanteu Test for Autocorrelations) was performed. The null hypothesis of the VAR Residual Portmanteu Test for Autocorrelations is: there is no autocorrelation between the residuals for lagged h. There are no values for the first four lags because the model has four lags. The p-value for the fifth lag is greater than 0.05, indicating that the null hypothesis cannot be rejected, i.e. we can confirm that there is no autocorrelation between the residuals. To further check the autocorrelation of the residuals, we proceed with the VAR Residual Serial Correlation LM.

The first null hypothesis of VAR Residual Serial Correlation LM is: there is no serial correlation for lagged h. The p-value values for all five lags are greater than 0.05, indicating that the null hypothesis cannot be rejected, i.e. we can confirm that there is no autocorrelation between the residuals. The analysis continues by testing the normality of the residuals. We proceed with the test for normality of the results, using the Cholesky method of covariance (Lutkepohl). The null hypothesis is: the residuals are multivariate normal. The p-values for skewness (0.8223), Kurtosis (0.4443) and the overall Jarque-Bera normal distribution value (0.7337) were greater than the selected level of significance (5%), which shows that they are not statistically significant, therefore, the null hypothesis cannot be rejected, i.e., we can confirm the normality of the residuals.

The VAR model can only be used if there is no heteroscedasticity of the residuals. For this purpose, we use the VAR Residual Heteroscedasticity Test (Levels and Squares), a least squares test. The null hypothesis is: the residuals are not heteroscedastic. The value of p-value is greater than 5%, therefore the null hypothesis cannot be rejected, i.e. the residuals are confirmed to be non-heteroscedastic. The residuals in the model are homoscedastic, which meets the requirement for applying the ordinary least squares method.

Finally, we proceed with the Granger causality test. The null hypothesis of the model is: capital expenditure and all accumulated capital expenditure together are not Granger causal with respect to GDP. The size of the Chi-sq test as well as the probability (p-value = 0.1558 > 5%) indicate that the null hypothesis cannot be rejected either for the first lag of capital expenditure or for all four capital expenditure. We can conclude that capital expenditure is not Granger causal with respect to GDP..

The second dependent variable is capital expenditure. The null hypothesis states that GDP (in its first lag as well as in all four lags) is not Granger causal with respect to capital expenditure. The Chi-sq test as well as the probability (p-value = 0.0163 < 0.05) show that the null hypothesis can be rejected and the alternative hypothesis that GDP, the first and four lags are Granger causal can be accepted in relation to capital expenditure. We can conclude that GDP is a Granger causal with respect to capital expenditure.

The VAR model results show that:

• The coefficients for the first, second and fourth lags of GDP are statistically significant for the current GDP;

• The coefficient for the first lag of capital expenditure is statistically significant for the current GDP;

• The coefficient for the first, second and fourth lags of GDP is statistically significant for capital expenditure;

• The coefficients for the first, second and third lags of public consumption are statistically significant for public consumption;

• The Durbin-Watson statistic for both variables is approximately equal to 2, which proves that there is no autocorrelation in the regression residuals.

To test the VAR model we use the Wald statistical test, setting the coefficients C (5) to C (8) to zero, i.e. under the null hypothesis that capital expenditure is not Granger causal to GDP. The null hypothesis states that capital expenditure ratios are zero and the null hypothesis cannot be rejected, according to the Chi-square value and the p-value = 0.1239 which is greater than 0.05. Accordingly, the null hypothesis is confirmed that capital expenditure is not Granger causal with respect to GDP. We assign values for the coefficients of C (10) to C (13) that are equal to zero, which is consistent with the null hypothesis that GDP is not Granger causal with respect to capital expenditures. The null hypothesis states that the coefficients of GDP are zero and it can be rejected according to the Chi-square value as well as p-value = 0.0163 which is less than 0.05. This confirms the null hypothesis that GDP is Granger causal with respect to capital expenditure.

Based on the above analysis, we accept the following hypotheses:

- Capital expenditure is not Granger causal with respect to GDP - accepted.
- GDP is Granger causal with respect to capital expenditure - accepted.

As these two auxiliary hypotheses are accepted, then:

Special hypothesis 2: There is no interdependence between capital expenditure and GDP of the Republic of North Macedonia – accepted.

This study proved that capital expenditure, which is the main instrument for GDP growth and economic growth, as well as the most frequently used instrument for countercyclical economic policy, does not have Granger-causal influence on the GDP of the Republic of North Macedonia for the analysed period 2006-2019, i.e. GDP cannot be predicted with certainty based on defined capital expenditure volumes. This confirms that not only the volume and dynamics of the realization of capital expenditure but also the structure, i.e. the quality of capital expenditure are important to ensure stabilization and development effects. This definitely shows the need to select projects that have a propulsive effect for the national economy, so that capital expenditure becomes a factor for boosting the GDP growth.

Chapter Two conclusions:

1. The analysis of the fiscal policy of the Republic of North Macedonia showed that during the analysed period (2000-2018), total public revenues varied between 27.6% and 29.6% of GDP, while the share of tax revenues was relatively stable and was between 16 % and 17% of GDP. As a result of an active fiscal policy, budget expenditure was found to be increasing year-on-year in nominal terms, with current expenditure as a percentage of GDP varying between 28.3% - 30.3% of GDP and capital expenditure between 1.85% – 4.84% of GDP. This clearly shows that the government used budget deficits to overcome crises as well as to implement the Skopje 2014 project, but in contrast economic growth was moderate in the range between 3 and 3.5%. The growth of deficit is a reflection of the accelerated growth of the state and public debt, which from 20.5% and 23% in 2008 reached as much as 39.9%, i.e. 48.8% of GDP in 2016, which is a nominal increase of more than EUR 4 billion.
2. The fiscal assessment shows that the Republic of North Macedonia tend to use the budget deficit as well as to increase public debt in order to stimulate economic activity.
3. The assessment of the impact of public consumption on the RNM's GDP was made using the VAR (p) model. The results of the VAR model lead to the conclusion that public consumption in the Republic of North Macedonia is not elastic to changes in GDP, and that the level of GDP is affected by the size and changes in GDP from previous periods as well as public consumption from current and previous periods.
4. In order to assess the effectiveness of budget expenditures and determine their impact on the country's economic growth, the Granger causality econometric model was successfully used in the VAR environment of capital expenditures as part of the state budget on GDP. This study proved that capital expenditure, which is the main instrument for GDP growth and economic growth, as well as the most frequently used instrument for countercyclical economic policy, does not have Granger-causal influence on the GDP of the Republic of North Macedonia for the analysed period 2006-2019, i.e. GDP cannot be predicted with certainty based on defined capital expenditure volumes. This confirms that not only the volume and dynamics of the realization of capital expenditure but also the structure, i.e. the quality of capital expenditure are important to ensure stabilization and development effects. This definitely shows the need to select projects that have a propulsive effect for the national economy, so that capital expenditure becomes a factor for boosting the GDP growth.

Chapter Three, entitled "Strategic aspects for good public finance management", presents an overview and assessment of the Fiscal Strategies of the

Republic of North Macedonia for the period 2020-2022, 2021-2023 as well as its comparison with the Revised Fiscal Strategies 2019-2021 and 2020-2022. Moreover, it presents and analysis of the possible effects for the budget deficit and the government debt of several key macro-fiscal risks. In addition, this section analyses the exposure of external government debt to market risk as well as the effect of different financing strategies on the level of debt, debt service costs and portfolio structure.

This chapter of the thesis presents the characteristics of public debt until 2020 and the functions of independent regulatory and auditing bodies. A special research emphasis is placed on public debt management policy. Forecasts and limits for the size and structure of sovereign and public debt for 2020-2022 and 2021-2023, medium-term and short-term limits, as well as risk are analysed. There is a focus on quantitative analysis using the analytical tool MTDS (Medium Term Debt Strategy) developed by the IMF and the World Bank. The study offers an overview of the dynamics of public expenditure and a comparison of budget deficits over the same periods with an analysis of their implications for the government. In fact, the analysis had to confirm or refute two separate hypotheses, which we tested using several special hypotheses.

Medium-term financial planning in the Republic of North Macedonia is implemented by means of a Fiscal Strategy, which, in accordance with the law, is adopted for a period of three years and includes fiscal policy guidelines and objectives, the main macroeconomic forecasts and indicators, determines the amounts for the main categories of estimated revenues and approved funds as well as budget deficit and debt projections for the period. The Fiscal Strategy is a key tool for medium-term budget planning and evaluation of new financing initiatives. The medium-term budgetary framework links medium-term budgetary decisions to those set for the deficit and debt target levels. Improving the management of public finances and the continuous improvement of the fiscal strategy are among the main priorities of the roadmap for accession to the EU.

The fiscal strategy is a reflection of the medium-term fiscal goals and strategic priorities of the government of North Macedonia. In order to strengthen fiscal discipline, the medium-term Fiscal Strategy introduces limits on budget expenditures, namely general limits and limits per budget user. For example, it aims to gradually slow down the annual growth rate of the total expenditure of the budget of the Republic of North Macedonia from 14.2% in 2019 to 5.2% in 2022. Combined with the expected revenue collection, this provides gradual narrowing of the overall budget deficit from 2.5% of GDP in 2019 to 2.3% in 2020 and 2% in 2021 and 2022. Thus, budget deficit limits as the main indicator for determining fiscal policy are maintained at almost the same level in absolute terms as well as a percentage of GDP as they were in the previous Fiscal Strategy (2019 - 2021). Staying on the path of gradual consolidation confirms the course of fiscal discipline, and unchanged budget deficit forecasts further strengthen the

predictability of fiscal policy. The primary budget deficit has also been reduced from 1.2% of GDP in 2019 and 2020 to 0.8% in 2021 and further to 0.5% in 2022.

Public debt dynamics in the next period will depend on the medium-term budgetary framework, the execution of capital projects, as well as the repayment of the debt (a principal of about EUR 2.3 billion for the period 2019 - 2022). Budget execution so far as well as the revised economic growth forecasts and the maintained course of fiscal discipline lead to a significant revision of debt projections as the revised Fiscal Strategy assumes public debt at 49.8% of GDP in 2018 compared to a significantly lower levels of the public debt of 48.5% of GDP. The discipline-oriented fiscal policy, with a gradual narrowing of the general budget deficit and an approximate balancing of the primary budget deficit in the medium term (respectively 2% and 0.5% of GDP in 2022), is a major factor for reducing the public debt from a projected 42.2% of GDP in 2019 to 39% of GDP in 2022.

By slightly easing the tax policy with a simultaneous adjustment of certain tax rates, a multiple effect is expected to be achieved, i.e. it aims to provide greater tax coverage and fair and streamlined administrative processes as well as provide support for the private sector, which would lead to a reduction of tax evasion. The spending part of RNM’s budget in the next period is planned with the overall objective to achieve strategic priorities, accelerate the economic growth and the processes of integration in the EU and NATO. The average share of the total budget expenditures of the Republic of North Macedonia for the period 2021 - 2023 is about 32.5% of GDP.

It is expected that by 2023 the budget deficit will be about 15.8 billion denars. This means that a gradual fiscal consolidation is foreseen in this medium-term period, i.e. the share of the budget deficit in GDP will decrease from 3.2% in 2021, 2.2% in 2022 and 2.0% in 2023. Therefore, we can conclude that the individual hypothesis which states that: the medium-term budget framework is determined by the need to finance medium-term budget deficits, by paying off previous debts and the implementation of projects outside the central government, is considered confirmed.

The sovereign debt of the Republic of North Macedonia on March 31, 2020 was EUR 4,579.4 million, i.e. 41.8% of GDP. Within the national debt, the dominant share is the debt of the central government, which amounts to EUR 4,568.6 million, while the debt of the municipalities amounts to EUR 10.8 million. The total public debt on March 31, 2020 was EUR 5,559.9 million, which is 50.7% of GDP. Compared to the EU member states, the Republic of North Macedonia remains a moderately indebted country whereas, according to a Eurostat publication of 24 Apr. 2019, the average public debt of the EU countries (28) at the end of the fourth quarter of 2018 was 80% of GDP.

The Public Debt Management Policy provides a framework for the government of the Republic of North Macedonia to act towards a reasonable management of the country's public debt in the medium term. The level of public debt is considered

sustainable if it allows timely servicing of obligations due to long-term debt and depends on many factors such as the degree of development of the domestic financial market, the liquidity of the international capital market, the interest rate of economic growth, the rate of inflation, the level of budget deficit/surplus, etc. In order to keep the level of public debt within a sustainable range without compromising fiscal sustainability, a limit is set for the level of total public debt not to exceed 60% of GDP in the medium and long term.

The dynamics of public debt in the next period will be a reflection of the medium-term budgetary framework and the implementation of capital projects. A disciplined fiscal policy with a projected narrowing of the general budget deficit and an approximate balancing of the primary budget deficit in the medium term (respectively 2% and 0.5% in 2022) will contribute to a gradual reduction of the government debt from 42.2% of GDP in 2019 to 39% of GDP in 2022. Following the moderate increase in guaranteed debt until 2021 due to the implementation of projects mainly in road infrastructure with state-guaranteed loans and its reduction in 2022, the public debt is expected to decrease in the following years significantly below the defined limit for the medium-term and long-term level of public debt, i.e. public debt in the next period will not threaten the sustainability of fiscal policy. Furthermore, the projected path is consistent with the government's fiscal policy objective to stabilize and subsequently reduce public debt in the medium term and to bring it at the end of 2022 to a level approximately similar to its percentage of GDP in 2018.

Based on the above, we can conclude that the individual hypothesis that the public debt management policy provides a framework for reasonable management of the country's public debt in the medium term is confirmed. Hence the hypothesis: Through the medium-term budgetary framework, it contributes to maintaining macroeconomic stability and fiscal consolidation, i.e. low budget deficit and sustainable debt management is also confirmed.

In the conditions of large fluctuations of economic variables, there is a need for active management of risks, to which the debt portfolio in the Republic of North Macedonia is exposed. The main objective of public debt management is to meet the needs and financial obligations of government financing at the lowest costs in the medium and long term with an acceptable level of risk exposure. The ATR (Average True Range) indicator measures the average time it takes for interest rates to change. A higher value of this indicator indicates that the majority of the debt portfolio will not be subject to major changes in interest rates and such a portfolio is less risky. In the period 2020 - 2022, a slight increase in interest rate risk is noticeable due to the decrease in the indicator for the average time of interest rate change.

The decrease in the average time to change interest rates is due to the decline in this indicator of external debt. Namely, the increase in the domestic debt ATR indicator is consistent with the decision to borrow through long-term instruments on the domestic

securities market in the next period, which are instruments with a fixed interest rate. In the period 2020-2022, the average time to change interest rates is well above the set floor for 2020. Guaranteed debt-to-GDP obligations maturing in the period 2019 to 2022 show a modest increase, but they are serviced independently of borrowers. In order not to allow the budget of the Republic of North Macedonia to lead to a situation of risk of activation of guarantees, the process of issuing new guarantees is strictly regulated and subject to certain criteria that applicants for guarantees must meet.

Based on the above, we can conclude that the individual hypothesis: Risk management policy is central to public debt management, is confirmed.

Medium-term economic and fiscal forecasts are always accompanied by a degree of uncertainty and risk. The possible occurrence of risk events, which assume different conditions from those assumed for the medium-term forecasts discussed above, would lead to deviations from the main medium-term forecast, i.e. different implementation of the key fiscal variables. Therefore, this part of the fiscal strategy analyses the possible effects of several main macro-fiscal risks on the budget deficit and government debt. The analysis covers the exposure of external government debt to market risk as well as the impact of different financing strategies on the level of debt, debt servicing costs and portfolio structure.

In order to examine the behaviour of the debt portfolio of the Republic of North Macedonia with regard to market risk, a short simulation of the impact of changes in interest rates and the exchange rate on the cost of servicing the external public debt was carried out. The main conclusions that can be drawn from this analysis are as follows:

1. Interest costs for servicing external government debt are sensitive to interest rate changes. If interest rates in 2020 increase by 1 percentage point compared to the baseline forecast, this would lead to an increase in interest expenses of 5.0% or EUR 4.8 million, with similar effects in 2021 and 2022. This sensitivity can be explained as the attitude of the debt portfolio to interest rate risk.

2. A possible depreciation of the euro against other currencies in the portfolio (US dollars, Japanese yens and special drawing rights) by 10% leads to an increase in service costs by 0.6% in 2020, i.e. with EUR 3.0 million. From the results obtained, it can be concluded that possible adverse movements of the exchange rates of other currencies against the euro will not lead to a significant increase in servicing costs due to the fact that the majority of external government debt is denominated in euro.

In order to improve the decision-making process related to the financing of the state's needs and to successfully realize the set goals of the public debt management policy, within this strategy a quantitative analysis was prepared using the analytical tool MTDS (Medium-Term Debt Strategy). This tool was developed by the World Bank and the IMF and aims to identify the costs and risks associated with potential financing strategies. The MTDS model analyses three alternative financing strategies.

The first alternative envisages securing the financing needs of the government through the internal market of government securities, the international capital market, funds from the World Bank for budget support, and funds extended by from international financial institutions to finance projects. This strategy is primarily aimed at reducing the exposure to refinancing risk. The value of the ATM indicator at the end of 2022 is increasing, which indicates a reduced risk of refinancing, and also the risk of interest rate changes is the lowest in this strategy. This strategy is a slightly more expensive option compared to other alternatives.

The second alternative has the same ratio of internal to external financing as the first alternative and an unchanged structure of external financing, but in contrast provides for more financing through the issuance of treasury bills and less net financing through long-term instruments. The purpose of this strategy is to reduce funding costs by issuing a larger amount of short-term denar instruments that have a lower interest rate than long-term instruments in the domestic government securities market. In terms of costs, this alternative is slightly cheaper than other strategies, but is associated with far greater risk for the portfolio. This strategy shows the highest values of the indicators debt due in 1 year and debt adjusted in 1 year while the currency risk is the lowest in terms of the share of foreign currency debt in total debt.

The third alternative implies greater reliance on external financing and lower net borrowing on the domestic government securities market. Greater emphasis is put on borrowing on the international capital market through Eurobonds, while the domestic market is expected to buy back maturing securities and low net borrowing at all maturities. This alternative has the most pronounced refinancing risk and currency risk due to the greater volume of financing from foreign sources.

Thus, according to the analysis of the results of the application of the alternative approaches, the first alternative is considered the most favourable one in terms of portfolio risk (refinancing risk and interest rate risk indicators) due to the greater focus on longer maturities of domestic market, although it is a slightly more expensive option compared to the other alternatives. The second and third alternatives perform better in terms of costs but are less favourable in terms of refinancing risk and interest rate risk indicators. In addition, the first strategy further develops and maintains an efficient and liquid domestic government securities market and makes it capable of meeting the needs of the government in the conditions of external shocks. Based on the above, we can conclude that the individual hypothesis: Application of the MTDS (Medium Term Debt Strategy) model determines the optimal strategy for debt financing, is confirmed.

Maintaining general fiscal discipline in the medium term is one of the priorities in the planning and budgeting process, which will lead to:

a) Medium-term fiscal consolidation;

b) Resource allocation based on programmes and programme indicators;

c) Medium-term budget framework providing reliable guidance for the future allocation of budget funds per budget user.

The measures included in the Public Finance Reform Program for the period 2018–2021 (within the priorities for an improved fiscal framework, planning and budgeting, budget execution and transparent government reporting) are aimed at establishing fiscal rules and fiscal advice, strengthening and improving the budgeting program, providing improved project information, continuing the process of introducing a comprehensive medium-term budget framework (MBF), creating an Integrated Information System for Public Finance Management and promoting openness.

In the next period, the Ministry of Finance, in cooperation with the World Bank and the UK government, as well as through sectoral budget support from the EU, will continue to work on the preparation of regulations, guidelines, manuals, etc. aimed at putting into operation the new Law on Budgets, further improvements of the PFS system, development of a detailed plan for all work processes in the Ministry of Finance and their mapping, as well as preparation of a detailed technical specification for the Integrated Information System for Public Finance Management.

Chapter Three conclusions can be summarized as follows:

1. The medium-term budgetary framework is the main tool for linking medium-term budgetary decisions with those set for the deficit and debt targets. Improving the management of public finances, and hence the continuous improvement of the Fiscal Strategy as one of the most important strategic documents of the government, is among the key priorities of the government and is also a priority on the road to EU accession. In order to strengthen fiscal discipline, the medium-term Fiscal Strategy introduces limits on budget expenditures, namely general limits and limits per budget user.

2. According to the Fiscal Strategy 2020-2022, the annual growth rate of the total expenditure of the budget of the Republic of North Macedonia is gradually decreasing from 14.2% in 2019 to 5.2% in 2022. Combined with the expected collection of revenues, this will ensure a gradual reduction of the overall budget deficit from 2.5% of GDP in 2019 to 2.3% in 2020 and 2% of GDP in 2021 and 2022. Thus, the limits of the budget deficit as the main indicator for setting fiscal policy are kept at almost the same level in absolute terms as in the previous Fiscal Strategy (2019-2021) and at the same level as a percentage of GDP.

3. The fiscal policy in the period 2021-2023 is characterized by a return to the established commitment to further strengthening of the public finance management and fiscal sustainability, which should contribute to maintaining macroeconomic stability, and fiscal consolidation, i.e. lower budget deficit. The financing of the planned deficit, as well as the repayment of the debt, is provided by loans from foreign and domestic sources. In order to maintain the level of public debt in a sustainable framework without compromising fiscal sustainability, the limit for the level of general public debt in the

medium and long term is set not to exceed 60% of GDP. In this way, a limit is set for the currency structure of the government debt - the minimum threshold of debt in euros in the general portfolio of government debt in foreign currency is 85%. In order to protect the government debt portfolio from possible future market shocks (e.g. adverse changes of interest rates, which directly lead to increases of the budget of the Republic of North Macedonia), one of the objectives of the debt managers is to maintain an optimal interest structure of the government debt portfolio. Therefore, a limit has been set for the interest structure of the government debt - the minimum threshold of the debt with a fixed interest rate should be 60%.

4. The medium-term budget framework ensures the maintenance of an optimal currency and interest structure of the portfolio;

5. Alternative strategies for financing the public debt are presented in the guidelines for improving the management of public finances. For this purpose in the Fiscal Strategy 2020-2022. and 2021–2023, a World Bank-recommended MTDS analytical tool is used to quantify costs and risks and find the optimal balance between them. The model enables comparison of potential debt management strategies by analysing the costs and risks arising from different debt portfolios and cash flows

6. Maintaining overall fiscal discipline in the medium term is one of the priorities in the planning and budgeting process, which will lead to:

- Medium-term fiscal consolidation;
- Resource allocation based on programmes and programme indicators;
- Medium-term budget framework providing reliable guidance for the future allocation of budget funds per budget user.

The last part of the dissertation is **Conclusion and recommendations**. In this part, we confirm the achievement of the main goal of the dissertation work, which was, first, to assess fiscal impacts in terms of their intensity, direction, time lag, interdependence with GDP, which will determine the main parameters for conducting a reasonable fiscal policy and secondly, to compare and assess the current and the previous Fiscal Strategy of the Republic of North Macedonia in terms of their public debt sustainability effectiveness. In the context of the formulated main research objective, a number of research tasks were completed. They fully correspond to current debates in modern macroeconomic science about the effects of increased public consumption and capital expenditure on economic activity, i.e. on gross domestic product as an aggregate measure of overall economic activity. This was the basis of the empirical research which used quantitative models to prove the effects of fiscal policy on macroeconomic trends and public debt and thus to analyse relevant econometric models for the Macedonian economy and to determine fiscal strategies for prudent fiscal management**.**

Several conclusions emerge from the assessment of the fiscal position of the Republic of North Macedonia:

- The budget deficit in Macedonia, as the main indicator of fiscal performance, after the first years of independence was maintained at a relatively low level and averaged 1.3% of GDP in the period after 1995, and in 2000 a budget surplus of 2.6% of GDP was reported;
- As a result of the conflict in Macedonia in 2001 and 2002, the budget deficit was higher - respectively 6.3% and 5.6% of GDP. A period of balanced budget followed until 2009, when as a result of the policy to mitigate the consequences of the financial crisis, a budget deficit of 2.7% of GDP was expected;
- Significant growth was observed from 2012 to 2015, when the RNM's government implemented an expansionary fiscal policy aimed mainly at financing the Skopje 2014 project, which led to the creation of serious budget deficits of 3.80% in 2012, and 4.19% in 2014;
- A period of fiscal consolidation and compliance with the Maastricht criteria followed until the onset of the COVID-19 crisis, when the government used massive fiscal interventions to mitigate the effects of the crisis, deepened the budget deficit and increased the public debt even above the upper debt threshold of 60% of GDP.

Despite such fiscal interventions, economic growth over the analysed ten-year period was moderate in the range between 3% and 3.5%.

The main question economic policymakers face is regarding the effectiveness of fiscal measures and especially budget deficits and increased public spending, as well as public spending for economic growth expressed as real GDP growth. The fact that on average almost 12% of the budget expenditure was allocated to capital investment and this increase did not affect the GDP growth, it is necessary to see what is the quality of the budget expenditure in order to determine its impact on the economic growth of the country.

For this purpose, after the fiscal assessment of the Republic of North Macedonia, the effects of fiscal instruments on the real sector were analysed in terms of their impact on GDP using a linear regression model. The regression showed that GDP in one period affects the level of GDP in another period. This, of course, also applies to budget spending, since it is known that acquired privileges in relation to public spending are hardly subject to downward adjustment. Also, economic variables and instruments of monetary and fiscal policy usually have a time lag.

As a result of analysis, it is suggested that regression models can be used to determine the existence of a two-way relationship between GDP and public consumption, but there are limitations to their application, which necessitates the use of vector autoregression models. It is not possible to determine exactly the nature and intensity of the relationship without determining the influence of the values of past periods of a variable on its current or future values (its time lag), i.e. to prove that the fiscal policy in the analysed period has an anticyclical character.

The research focuses on two main issues related to the fiscal policy in Macedonia. First, what is the response of the main fiscal policy to the cyclical movements of the economy (ratio of public consumption to GDP). Second, what are the effects of public and capital spending on economic activity and other macroeconomic aggregates (capital spending relative to GDP).

The analysis aims to assess the impact of public consumption on the GDP of the Republic of North Macedonia using the VAR (p) model. The VAR model was used as a basis for estimating the impulse response functions, which actually shows how one variable can react to sudden changes in the other variable in the analysed case: GDP and public (budgetary) consumption.

The results showed that GDP of the Republic of North Macedonia responds to changes (shocks) in public consumption after two periods, while public (budgetary) consumption of the Republic of North Macedonia responds to changes in GDP after 4 periods. To see the quality of budget expenditures and determine their impact on the country's economic growth, we tested Granger causality in the VAR environment of capital expenditures, as a share of the government budget on GDP. Granger causality is a concept that is applied to the analysis of multiple time series and the interaction between them. Here comes the question of series relationship and which series affects the other series i.e. whether one series can influence the other series. This research proved that capital expenditure, which is the main instrument of GDP growth and economic growth, as well as the most frequently used instrument of countercyclical economic policy (Granger causality) did not affect GDP for the analysed period 2006–2019, that is by determining capital expenditure, GDP cannot be predicted with certainty.

As a result of the conducted research and analysis of the fiscal position of the Republic of North Macedonia, the following conclusions can be drawn:

1. The obtained result and the proof of the special and individual hypotheses of the study confirm the main hypothesis of the dissertation, which states: The application of vector autoregression models provides a precise determination of the impact of fiscal policy on macroeconomic trends and public debt, which contributes to the continuous improvement of fiscal strategy and the prudent management of fiscal policy. The confirmation of the hypothesis coincides with the generally known and newly discovered empirical facts.

2. It should be noted that the application of quantitative econometric research on the effects of fiscal policy in the Republic of North Macedonia has not been studied from a theoretical and empirical point of view (there are relatively few literary sources and publications, analyses, etc.). In general, public consumption in the Republic of North Macedonia is not elastic to changes in GDP. This is explained by the fact that the current level of GDP is affected by its size and changes in previous periods, as well as the public consumption from the current and previous periods.

3. The quality (structure) and dynamics of capital expenditures do not correspond to the commitment of the government to ensure dynamic and sustainable economic development, which necessitates the need for their strict selection in the future and implementation of projects that have a propulsive nature for the national economy, whereby capital expenditure will become a factor which promotes GDP growth.

4. Using econometric models and a vector regression VAR (p) model, the Granger causality test and quarterly data for the ten-year period 2008–2018, we obtained results that show that fiscal policy in Macedonia during this period has a countercyclical character and moves in the same direction, i.e. enhances the effect of automatic stabilizers.

5. The obtained results are not sensitive to the econometric calculation models used as well as to the influence of the economic cycle and the different time values of the variables that are used as instruments for the endogenous variable.

By applying the VAR (p) approach, an answer was given to one of the research questions, namely whether and to what extent fiscal policy affects the economy in North Macedonia. The empirical research using econometric vector autoregression models (VAR models) to determine the effects of fiscal policy on macroeconomic trends led to the following conclusions:

- The calculated fiscal multipliers suggest that the increase in primary spending has a positive initial impact on economic activity, but in the medium term their effects become negative;
- The reduction of tax revenues has a positive effect on economic activity in the medium term, while in the short term it has no effect;
- The results obtained from the impulse-response function suggest a certain "squeezing" of the private sector by the state, if the impact of primary costs is analysed;
- An expansionary fiscal policy, driven by a reduction in tax revenues, shows a strengthening of credit growth, i.e. crowding out effects;
- A positive shock to primary expenditure and tax revenues generally implies a higher rate of inflation, with the effects of tax revenues being more pronounced;
- Expansionary fiscal policy driven by primary spending and/or tax revenue implies some tightening of the monetary policy considering the response of the Treasury bills interest rates.

The author has evaluated and analysed the current Fiscal Strategy of the Republic of North Macedonia for the period 2020-2022 and has compared it with the Fiscal Strategy for 2021-2023 in the third chapter of the dissertation. In addition, the possible effects of the realization of several main macro-fiscal risks on the budget deficit and government debt, the exposure of the external government debt to market risk, as well as the effect of different financing strategies on the level of debt, were analysed in terms of debt servicing costs and portfolio structure. The following conclusions were drawn from the evaluation and the comparative analysis:

- The medium-term budgetary framework is the main tool for linking medium-term budgetary decisions with those set for deficit and debt targets;
- In order to strengthen fiscal discipline, the medium-term Fiscal Strategy introduces limits on budget expenditures, namely general limits and limits per budget user;
- In order to maintain the level of public debt within a sustainable framework, without compromising fiscal sustainability, the limit for the level of the general government debt in the medium and long term is set to not exceed 60% of GDP;
- A limit has been set for the currency structure of the government debt - the minimum threshold of debt in euros in the general portfolio of government debt in foreign currency is 85%;
- A limit has been set for the interest rate structure of the government debt - the minimum threshold for debt with a fixed interest rate is 60%;
- Applying the MTDS model allows for a comparison of potential debt management strategies by analysing the costs and risks that arise from different debt portfolios and cash flows.

Finally, we can conclude that the Fiscal Strategy of the Republic of North Macedonia is a good tool that should ensure the maintenance of overall fiscal discipline in the medium term as one of the priorities in the planning and budgeting process. However, only their consistent implementation can ensure the desired and necessary medium-term fiscal consolidation. The strategy should definitely serve economic policy makers as a reliable guide for the future distribution of budget funds for each budget user. In this way, fiscal policy will become predictable without additional discretionary decisions so that automatic stabilizers will perform the function of generating sustainable and dynamic economic growth.

However, the main recommendation to the economic policy makers in the Republic of North Macedonia is to implement an intelligent system in the management of public finances - SMART finances. This system is based on a clear strategy, sustainability, accountability, orientation to reforms, and transparency as its acronym itself suggests (S-strategic, M-sustainable, A-accountable, R-reform-oriented, T-transparent). SMART finance will guarantee that governments shall plan for longer terms and more effectively in terms of strategy to improve the performance and enhance their investment strategies as well as to achieve fiscal consolidation, transparency and accountability. Its implementation requires the enforcement of an Organic Budget Law, which will actually support the SMART finance system, i.e. it will represent the biggest fiscal reform in the last two decades. With this law, traditional incremental budgeting will be transformed into result-oriented budgeting. The new Budget Law will define fiscal rules and establish a Fiscal Council.

The main reforms should concern medium-term planning and budgeting, the Integrated Financial Management Information System (IFMIS) and the establishment

of a Fiscal Council and fiscal rules and principles. These are actually new and powerful mechanisms for planning, implementation and supervision.

In medium-term planning and budgeting, the law must provide for a medium-term, five-year Fiscal Strategy based on a sectoral approach. Performance-based budgeting should also be implemented by introducing and monitoring key performance indicators (KPIs) to improve the effectiveness and efficiency of public spending by linking public sector spending to results. Results-based budgeting aims to ensure that key decision-makers and policy-makers systematically consider the results to be achieved by spending. In this way, the goal of determining the priorities and policies in the budget is achieved according to the so-called value for money concept, which means that budget funds will be allocated where they give the greatest effect in achieving the goals of higher standard and better quality of life for the citizens.

The new Budget Law should also include mechanisms for better planning and execution of capital projects. Budget users, as part of the budgeting process, will be required to submit a feasibility study to the Ministry of Finance for all new major investment proposals to be assessed by a Public Investment Management Agency (PIMA). A common methodology for the preparation and evaluation of projects and the calculation of shadow prices has to be developed for implementation of the methodology for capital investment projects. In the context of the Recovery and Accelerated Growth Plan, these mechanisms will contribute to better planning and implementation of large infrastructure investments, as well as their positioning in terms of effects for the economy as a whole. Also, all public-private partnership projects will be monitored in an integrated manner through the single register of PPPs, as well as all state aid in the economy will be monitored in an integrated manner by the government.

One of the most important reforms to be introduced by the new Budget Law is the modern Integrated Financial Management Information System (IFMIS). The main objective of IFMIS is to improve the efficiency and transparency of operations by connecting the existing fragmented systems on a centralized web-based platform utilizing the advantages of the latest digital technologies. IFMIS will provide integrated monitoring of revenue and expenditure from planning to final implementation, which will influence the improvement of budgeting and budget execution. The system will establish a multi-annual budgetary framework, enable the introduction of a public investment management function linked to the future public-private investment system, an automated system for monitoring liabilities, including multi-annual liabilities and centralized data on liabilities, management of fixed assets and debt management. Its integration will enable comprehensive and timely access to public finance data, which will contribute to increased efficiency in liquidity planning and financial flow management.

The new Budget Law will facilitate the path to fiscal consolidation, that is, a gradual and sustainable reduction of the budget deficit. By applying the new legal

norms, a better and more accurate model of public finances will be created, which will distribute the funds from the citizens to the citizens in the best way. SMART finance will be pivotal for the implementation of the Plan for Recovery and Accelerated Economic Growth, which in the medium term should lead to the desired higher rates of economic growth.

Despite the global economic crisis and the challenges it poses, economic policy makers should not abandon the path of reforms. On the contrary, in addition to current anti-crisis activities, one must also think in the long term. This is the right answer and the right course of action to build a strong and prosperous economy and better living conditions for the citizens.

Finally, the dissertation thesis gives some directions **for future research** that can be set as objectives for subsequent publications, such as:

1. Application of a de-aggregated approach for cyclical adjustment of the budget balance, which is based on cyclical adjustment of individual categories of budget revenues and expenses;

2. Calculation of the potential output by applying methods that belong to the group of quasi-theoretical or methods based on multivariate filters, which can serve as an additional check of the stability of the obtained results;

3. Correction of the primary budget balance and the internal absorption gap, i.e. on the effects arising from the composition of GDP;

4. Analysing the effect of wages, which during a certain period show a downward correction of the tax revenue shock;

5. Assessing the effects of tax revenues on net imports. In the analysed period, they are insignificant, but the increase in primary costs should be expected to have a negative effect on foreign trade in the first year of the forecast period.

In this regard, this dissertation research can be expanded by investigating the individual effects of certain categories of primary expenditure and tax revenues on the economic activity and other key macroeconomic aggregates considering that different categories may have different implications for the economy.