

ESTIMATES OF THE EFFECTIVENESS OF MONETARY POLICY IN THE REPUBLIC OF SERBIA

ПРОЦЕНЕ ЕФИКАСНОСТИ МОНЕТАРНЕ ПОЛИТИКЕ У РЕПУБЛИЦИ СРБИЈИ

Jadranka Đurović Todorović

University of Niš, Faculty of Economics, Niš, Serbia
jadranka.djurovic@eknfak.ni.ac.rs
ORCID: 0000-0002-8910-2067

Marina Đorđević

University of Niš, Faculty of Economics, Niš, Serbia
marina.djordjevic@eknfak.ni.ac.rs
ORCID: 0000-0002-9909-315X

Milica Ristić Cakić

University of Niš, Faculty of Economics, Niš, Serbia
milica.ristic@eknfak.ni.ac.rs
ORCID: 0000-0003-3665-2361

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Abstract: Numerous empirical studies conducted in the last few years have proven that monetary policy has a significant impact on preserving the sustainability of the entire economic system of a country. Bearing in mind that the effectiveness of monetary policy in developing countries is especially questioned when the structure of the financial system limits the effectiveness of its instruments, the paper analyzes the monetary policy of the Republic of Serbia. The subject of research in this paper is the analysis and measurement of the effectiveness of monetary policy in the period from 2002-2022. In order to analyze the efficiency, a regression analysis of the determinants of monetary policy was performed. The results show that the government must pay much more attention to monetary policy in order to improve its effectiveness in the future.

Key words: monetary policy, fiscal policy, Republic of Serbia

Анстракт: Бројна емпиријска истраживања спроведена у последњих неколико година доказала су да монетарна политика има значајан утицај на очување одрживости

целокупног економског система једне земље. Имајући у виду да је ефикасност монетарне политике у земљама у развоју посебно доведена у питање када структура финансијског система ограничава ефективност његових инструмената, у раду се анализира монетарна политика Републике Србије. Предмет истраживања у овом раду је анализа и мерење ефикасности монетарне политике у периоду од 2002-2022. године. У циљу анализе ефикасности, извршена је регресиона анализа детерминанти монетарне политике. Резултати показују да влада мора посветити много више пажње монетарној политици како би побољшала њену ефикасност у будућности.

Кључне речи: монетарна политика, фискална политика, Република Србија.

JEL classification: E52, E58

1. INTRODUCTION

Bearing in mind that a large number of empirical studies have proven that monetary policy has a significant impact on the development of the

economic system of a country and the maintenance of price stability, it is necessary to pay special attention to it when conducting economic policy. The management of monetary policy explicitly implies an understanding of the role of money in economic processes.

The role of money in determining the flow of economic processes is the subject of sharp disagreement among monetarists, given that one group believes that money controls economic processes while others believe that money is a neutral factor in those processes.

"According to the views of inactive money, it is usually assumed that the amount of money is adjusted to the real needs of economic development, so that money is reduced to a passive element of the system" (Komazec & Risti, 1992). On the other hand, the idea that monetary policy instruments can influence the improvement of the economic structure is not new either. Modern economies attach great importance to monetary policy instruments.

Recognizing the complex actions of monetary policy, it is clear that a monetary policy strategy cannot produce results without a fiscal policy strategy. In other words, a partially managed monetary policy usually remains ineffective.

Therefore, the coordination of monetary and fiscal policy for the purpose of stabilization and development policy is of crucial importance for any country. However, simultaneously achieving economic stability and a high rate of economic growth is also a very complex problem.

The interaction between monetary and fiscal policy has often been modeled as a "non-cooperative game." The central bank and the government undoubtedly have their own priorities. In academia, for the last 30 years, priority has been given to fiscal policy. Fiscal policy is thought to play a more fundamental role in prices. As a result of such an attitude, the interaction between monetary and fiscal policy gained even more importance.

The subject of research is the effectiveness of monetary policy in the Republic of Serbia. The main goal of the research is to assess the impact of monetary policy on economic growth in the Republic of Serbia. Research tends to assess trends in the determinants of monetary policy, assess their impact on economic growth, and make recommendations for further research.

The current financial crisis in the Republic of Serbia has undoubtedly triggered numerous dilemmas regarding the concept of monetary policy implementation. In this regard, a large

number of researchers around the world examine the effectiveness of their concepts of applied monetary policy and the adequacy of sets of monetary instruments for conducting economic policy. The work, in accordance with the defined subject and goal of the research, starts with the following hypothesis:

H₁: Effective implementation of monetary policy has a positive effect on the economic growth and development of the Republic of Serbia.

The research is divided into four parts. In the first part of the paper, an overview of current research on the subject of this paper is given. In the second part, the effectiveness of the monetary policy in the Republic of Serbia in the last 20 years was reviewed.

The third part, based on quarterly data in the period from 2002 to 2022 and relevant statistical methods, gives the results of the research. In the conclusion of the paper, the guidelines for the creators of monetary policy were pointed out, and suggestions were given for increasing the efficiency of its instruments.

The analysis in the paper, based on the author's theoretical and empirical analysis, should produce results that can represent a contribution to the reference literature and have practical value. The research also provides recommendations to monetary policy decision-makers in order to achieve the economic development of a country.

2. LITERATURE REVIEW

The instruments of monetary policy have been the subject of debate by numerous theorists (Poole, 1970). In the 1970s, Poole pointed out that three instruments can be decisively determined through which it is possible to see the effects and

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According to this author, monetary policy should be based on the money supply and the free variation of the interest rate.

Another way of conducting monetary policy is the management of the interest rate on the money market, while the third most important instrument is the combination of the money supply and the interest rate. Explicitly, choosing the appropriate concept of monetary policy implies looking at the phase of the economic cycle in which a particular economy is located.

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The choice of an adequate monetary policy not only affects the economic development of a country but also determines the growth of the employment rate, the productivity of the economy, and the growth of exports (Finglenton et al., 2015). Monetary policy, as an important segment of economic policy, is also the basis for solving major fiscal and other macroeconomic imbalances. (Ajayi, 1974; Ali et al., 2008). On the other hand, monetary policy cannot independently achieve economic goals. Therefore, it is necessary to observe monetary policy in coordination with other economic policies, especially fiscal policy.

Crises, especially the "Great Depression" (Great World Depression, 1928–1939), indicated that monetary policy could be "ineffective." Namely, during the crisis in the USA, it was determined that monetary policy, as well as debt management, must be coordinated with fiscal policy in order to ensure the goals of high employment and the reduction of inflation.

A decade later, views on the effectiveness of monetary policy have changed, with some economists emphasizing monetary policy while another group advocates the importance of fiscal policy. In some quarters, monetary policy is viewed as more important than fiscal policy in terms of its impact on inflation and output fluctuations (Rasche & Williams, 2005).

Theorists who downplayed the importance of monetary policy started with the paradox of the role of money. Namely, there is a paradox in monetary policy that the main goal of central banks, price stability, is getting less and less attention from these institutions.

In recent years, monetary policy has continued to evolve in light of the economic and political environment. Most attention was paid to the

ultimate goal of monetary policy, but also to the question, "Should price stability be the only goal of monetary policy?" (Borio, 1997).

There are many studies on the impact of monetary policy on the economic development of a particular country (Chowdhury, 1986; Enache, 2009).

A positive impact on economic growth has been confirmed (Ajisafe & Folorunso, 2002; Okoro, 2013). The effect of monetary variables such as the interest rate, inflation rate, and monetary aggregates M1, M2, and M3 was especially emphasized. Okoro (Okoro, 2013) investigates the effects of monetary policy on economic growth in Nigeria from 1970 to 2010.

The research results indicate a negative correlation between the gross domestic product and the inflation rate, while a positive effect of the money supply on economic growth was identified. Recent research (Wu et al., 2022) emphasizes the importance of fiscal and monetary policy coordination, indicating that the coordination of these two policies has the potential to boost market confidence and is the foundation for structural changes in the medium and long term. Once there is a breakdown in the coordination of these policies, it leads to negative effects on economic growth and negative effects on debt growth. Additionally, an expansive monetary policy can lead to inflation (Kvrgi et al., 2011).

A large number of studies emphasize the impact of monetary policy on incomes, employment rates, asset prices, and interest rates (McKay & Wolf, 2023).

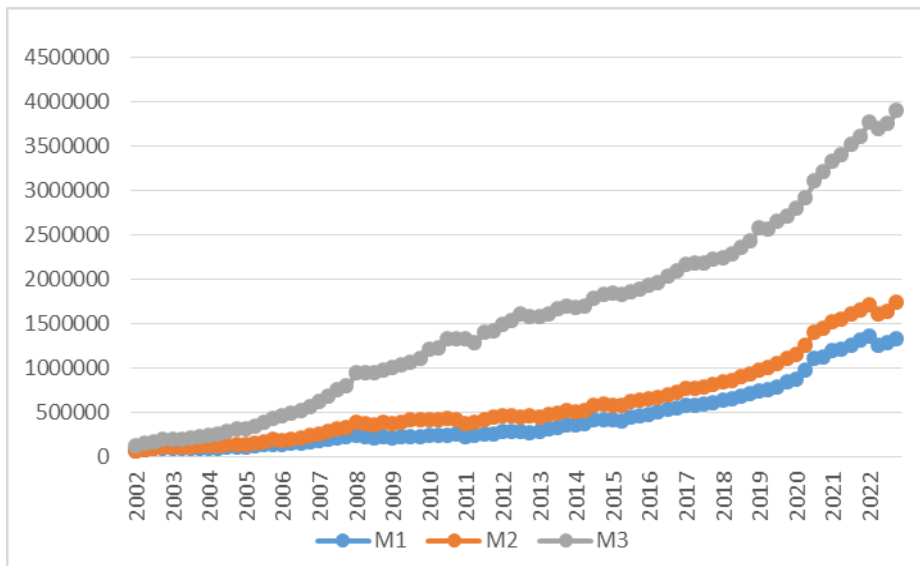
3. EMPIRICAL OBSERVATIONS OF MONETARY POLICY IN THE REPUBLIC OF SERBIA

The main goal of the National Bank of Serbia is to achieve and maintain price stability, thereby achieving the stability of the entire financial system and the sustainability of its economy. In the inflation targeting regime, the reference interest rate is the main instrument of monetary policy.

Aggregates of the money supply are adapted to the economic development of the Republic of Serbia.

Money supply M1 includes ready money in circulation and funds on giro, current, and other accounts of the owner. Money supply M2, in addition to M1, includes other dinar deposits, both short-term and long-term. Money supply M3, in addition to M2, includes short-term and long-term foreign currency deposits.

Graph 1. Movement of basic monetary aggregates in the Republic of Serbia (in millions of dinars), 2002-2022.



Source: Authors based on data from the National Bank of Serbia

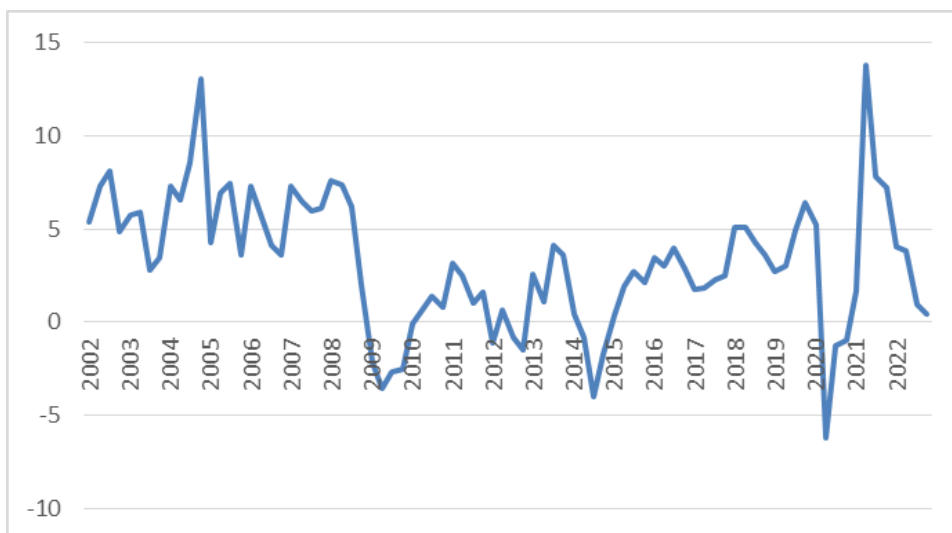
The graph shows the increase in money supply in the Republic of Serbia in the period from 2002 to 2023.

The dynamics of growth were uneven and jumpy in certain periods. In certain years (2009, 2021), a decrease in the money supply is recorded, which is a consequence of the crises that occurred before that period. Credit expansion and a high level of

public spending can be cited as additional causes of fluctuations in the money supply.

If we compare the movement of the gross domestic product in the observed years with the dynamics of the money supply in the same period, then we will unequivocally determine the existence of a difference, because the growth rate of the money supply is higher compared to the growth rate of the gross domestic product.

Graph 2. Trends in gross domestic product in the Republic of Serbia (in%), 2002–2012



Source: Authors based on data from the Republic Statistical Office of Serbia

Based on Graph 1 and Graph 2, we can conclude that the movement of the money supply was not in all years coordinated with the growth rate of the gross domestic product, which means that the

movement of the money supply took place according to the needs and requirements of real economic categories.

4. EFFECTS OF MONETARY POLICY ON ECONOMIC GROWTH AND DEVELOPMENT IN THE REPUBLIC OF SERBIA: RESULTS OF EMPIRICAL ANALYSIS

Using SPSS Statistics 26 data processing software, an econometric analysis of the generated empirical data of the study was conducted. The data were collected from the websites of the National Bank of Serbia and the Republic Institute of Statistics. The estimated database includes quarterly data for the period 2002–2022. In order to examine the influence of monetary determinants on the

economic growth of the Republic of Serbia (GDP), a correlation and then a regression analysis were conducted. The following determinants of the monetary policy of the Republic of Serbia were analyzed:

Variable	Description
M1	Narrow money
M2	Broad money (M2)
M3	Broad money (M3)
R	Reference interest rate

The results of the correlation analysis are shown in Table 1.

Table 1. Results of the correlation analysis of determinants of monetary policy and gross domestic product

		<i>lnBDP</i>	<i>lnM1</i>	<i>lnM2</i>	<i>lnM3</i>	<i>R</i>
<i>lnBDP</i>	R	1	.925**	.946**	.932**	-.725**
	sig		.000	.000	.000	.000
	N	108	84	84	84	65
<i>lnM1</i>	R	.925**	1	.989**	.952**	-.897**
	sig	.000		.000	.000	.000
	N	84	84	84	84	65
<i>lnM2</i>	R	.946**	.989**	1	.982**	-.875**
	sig	.000	.000		.000	.000
	N	84	84	84	84	65
<i>lnM3</i>	R	.932**	.952**	.982**	1	-.859**
	sig	.000	.000	.000		.000
	N	84	84	84	84	65
<i>R</i>	R	-.725**	-.897**	-.875**	-.859**	1
	sig	.000	.000	.000	.000	
	N	65	65	65	65	65

Note: *ln* is the natural logarithm

Source: Authors

The results of Pearson's correlation coefficient indicate the strength of the relationship between the determinants of monetary policy and gross domestic product. Bearing in mind that the correlation analysis is based on the determination of the correlation coefficient *r*, which ranges from -1 to +1, we can conclude that there is a high level

of correlation between the analyzed monetary determinants and gross domestic product. Based on the results of the correlation analysis, it can be concluded that the greatest degree of agreement exists between quasi-money (M2) and gross domestic product (GDP). The results of the regression analysis are shown in Table 2.

Table 2. Results of regression analysis

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R2	F	sig
	B	Std. Err.	Beta					
(Constant)	11.544	0.105	0.000	109.988	0.000	.856	488.278	.000
<i>lnM1</i>	0.183	0.008	0.925	22.097	0.000			
(Constant)	11.421	0.093	0.000	123.260	0.000	.894	694.546	.000
<i>lnM2</i>	0.188	0.007	0.946	26.354	0.000			
(Constant)	11.507	0.101	0.000	114.076	0.000	.869	545.289	.000
<i>lnM3</i>	0.169	0.007	0.932	23.351	0.000			
(Constant)	14.035	0.016	0.000	870.114	0.000	.526	69.859	.000
<i>R</i>	-0.015	0.002	-0.725	-8.358	0.000			

Source: Authors

The results of the regression analysis show a significant influence of monetary determinants on the gross domestic product. Each of the determinants of monetary policy describes a high percentage of the variance of the dependent variable (over 85%, except for the reference interest rate, 52.6%).

In the second step of assessing the influence of the analyzed monetary determinants, an additional regression analysis was conducted. Due to the presence of correlation between determinants, a stepwise optimization algorithm was used to obtain a multivariate model.

Table 3. Results of regression analysis 2

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R2	F	sig
	B	Std. Error	Beta					
(Constant)	11.733	0.151	0.000	77.866	0.000	.770	211.179	.000b
lnM2	0.164	0.011	0.878	14.532	0.000			

Source: Authors

In the first regression analysis model, all determinants of monetary policy were included. After optimization, only one quasi-money variable (M2) remained in the predictive model as the most important factor, while M1, M3, and R were excluded from the model as predictors that do not have sufficiently good individual predictive potential. It can be concluded that the monetary policy of the Republic of Serbia had a positive effect on economic development in the analyzed period. Therefore, we can conclude that the implemented monetary policy in the analyzed period had a significant impact on preserving the sustainability of the economic system of the Republic of Serbia. Given that monetary policy is implemented at the level of the National Bank of the Republic of Serbia, it must be emphasized that fiscal policy is also responsible for achieving the goals of monetary policy. Namely, it is impossible to effectively implement monetary policy without other management policies, such as fiscal policy. The coordination of monetary policy and fiscal policy should therefore be one of the important goals of the economic policy of the Republic of Serbia in the future as well (Orevi et al., 2020).

CONCLUSION

It can be concluded that the implemented monetary policy, in coordination with other economic policies, can influence the achievement of the economic development of the Republic of Serbia. The starting hypothesis in the research that the effective implementation of monetary policy has a positive effect on the economic growth and development of the Republic of Serbia has been confirmed.

Given that one of the key goals of macroeconomic policy, especially in developing countries, is the

achievement and preservation of economic stability in order to achieve economic growth, it is necessary for monetary policy instruments to be effective. The paper examines the effects of monetary policy on the economic growth and development of the Republic of Serbia and the manner in which monetary policy was conducted in the period from 2002 to 2022.

Monetary policy in the conditions of the crisis caused by the COVID-19 pandemic had the difficult task of influencing the mitigation of the consequences of the crisis with an adequate monetary policy. Thus, the movement of the gross domestic product in this period was uneven in relation to the movement of the money supply. However, monetary policy played a key role in stabilizing the economy with its measures. The National Bank of Serbia has undertaken numerous monetary measures to overcome the economic crisis caused by the COVID-19 pandemic, and the reduction of the reference interest rate was one of those measures. The growth of the money supply and the increase in the inflation rate were expected as the accompanying consequences of the measures taken by the National Bank of Serbia, given that the increased liquidity injected into the economy could not be fully absorbed and transmitted in the form of an increase in the gross domestic product but partially resulted in price growth. However, the current increase in inflation, which is largely the result of monetary measures, will not have negative consequences on the economy to the extent that there would have been a significant reduction in the gross domestic product if the measures of the National Bank of Serbia had not been applied.

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SUMMARY

There is a deep schism among monetarists as to whether or not money regulates economic processes, or whether or not it is a neutral factor in influencing the flow of economic processes.

The success of Serbia's monetary policy is the focus of this study. The study's primary objective is to evaluate how monetary policy has affected economic expansion in Serbia. Trends in the determinants of monetary policy, their effects on economic growth, and suggestions for future study are common foci of academic inquiry. The theoretical and empirical analysis presented in the paper should yield results that add to the existing body of knowledge and are useful in some way. The study also includes suggestions on how monetary policy might help advance economic growth in a country.

Money supply in the Republic of Serbia rises between 2002 and 2023 according to an examination of monetary policy factors. The dynamics of growth were erratic and choppy at times. As a result of the crises that occurred prior to those years, the money supply drops in specific years (2009, 2021). Changes in the money supply can also be attributed to factors like credit expansion and heavy government spending. The significance of the factors influencing monetary policy and GDP is revealed by the values of Pearson's correlation coefficient. The examination of correlations shows that quasi-money (M2) and GDP have the highest level of concordance. We can draw the conclusion that the Republic of Serbia's economic development may be affected by the monetary policy in place, provided it is coordinated with other economic policies. The study's findings corroborate the study's null hypothesis, which posited that well-executed monetary policy would boost the economy of the Republic of Serbia.