

A Study on the Relationship Between Government Funding Supply and Central Bank Money Supply

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Abstract: With the development of the economy, the relationship between government funding supply and central bank money supply has received widespread attention. This paper first analyzes the influencing factors between government funding supply and central bank money supply, then explains the data processing method, and finally verifies the feasibility of this study through experiments. The experimental results show that there is a certain degree of correlation between government funding supply and central bank money supply, and channels such as fiscal expenditure, debt issuance, and bank credit of government funding will affect the changes in central bank.

Keywords: government funding supply, central bank money supply, correlation analysis, economic development, fiscal expenditure

1. Introduction

Government funding supply and central bank money supply are two important concepts in the macroeconomic field, playing a crucial role in the country's economic development and stability [1]. However, the relationship between government funding supply and central bank money supply is not clear. In practice, the government injects funds into the market through channels such as fiscal expenditure, debt issuance, and bank credit, while the central bank regulates the money supply through monetary policy to maintain economic stability [2]. Therefore, in-depth research on the relationship between government funding supply and central bank money supply and its influencing mechanism is of great practical significance for improving the macroeconomic management system and optimizing policy design [3].

Regarding the relationship between government funding supply and central bank money supply, Walter and Wansleben (2020) analyzed the relationship between government funding supply and central bank money supply using VAR (Vector Autoregressive) model based on data from China from 1993 to 2016. They found that government funding supply has a significant positive impact on central bank money supply, while also pointing out that government debt has a negative impact on it [4]. Long et al. (2022) explored the impact of financial innovation on government funding supply and central bank money supply from the perspective of financial innovation. They believe that financial innovation can provide more financing channels for the real economy, thereby reducing dependence on government funding supply and central bank money supply [5].

Based on traditional research, this paper first explores the influencing factors between government funding supply and central bank money supply, then introduces the data processing method in detail, and finally verifies the feasibility of the study through experiments.

2. The Relationship between Government Funding Supply and Central Bank Money Supply

2.1. Influencing Factors between Government Funding Supply and Central Bank Money Supply

Government funding supply and central bank money supply are two important concepts in the macroeconomic field, and there is a close relationship and mutual influence between them. Specifically, the government injects funds into the market through channels such as fiscal expenditure, debt issuance, and bank credit, and the flow of these funds in the market will affect the money supply [6]. At the same time, as the executive agency of monetary policy, the central bank controls the money supply by adjusting monetary policy tools to **maintain** economic stability.

In theory, the relationship between government funding supply and central bank money supply is mainly manifested in three aspects. Firstly, government fiscal expenditure will lead to an increase in money supply¹. When the government carries out fiscal expenditure, it needs to raise funds from the market, which will lead to an increase in the money supply in the market. Secondly, government debt issuance will also affect the money supply. The government raises funds by issuing bonds, and these bonds become financial assets in the market, thereby increasing the money supply. Finally, the government provides financing support to enterprises and individuals through bank credit, which also affects the money supply. Their characteristics are shown in Figure 1:

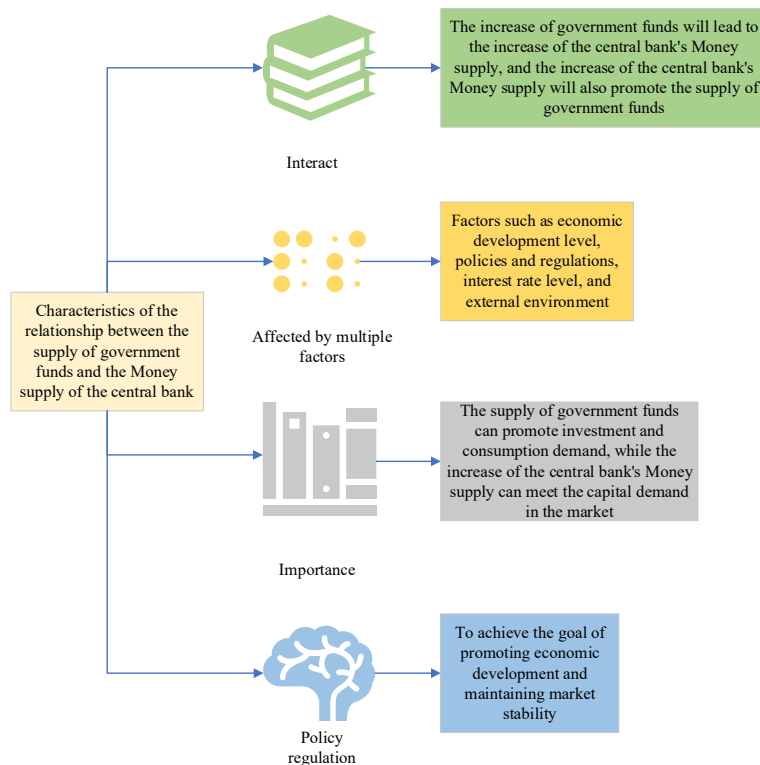


Figure 1: Characteristics of the relationship between the supply of government funds and the Money supply of the central bank.

The relationship between central bank monetary policy and government funding supply mainly manifests in two aspects. Firstly, the central bank adjusts the money supply through monetary policy to maintain economic stability. When the government carries out fiscal expenditure, if these expenditures exceed tax revenues, it will lead to excess liquidity, thereby causing inflation [8]. Secondly, government funding supply also affects the implementation of central bank monetary policy. When the government provides financing support to enterprises and individuals through bank credit, it increases the money supply in the market, thereby reducing the effectiveness of the central bank's control of the money supply through monetary policy. The influencing factors of government funding supply are shown in Table 1:

Table 1: The influencing factors of government funding supply.

Direction	Effect
Financial revenue and expenditure status	When government revenue increases or fiscal expenditure decreases, the supply of government funds will correspondingly decrease, and vice versa, it will increase
Level of economic development	The economy is in a period of rapid growth, and the government needs a large amount of investment to promote economic development, which will lead to an increase in government funding supply
Debt situation	When government debt is too high, the government needs to pay more interest and principal
Policy environment	The fiscal and monetary policies implemented by the government will directly affect the supply of government funds

2.2. Data Processing Methods in Analysis of Government Funding Supply and Central Bank Money Supply

The research object of this paper is the relationship between government funding supply and central bank money supply, so relevant data need to be collected for empirical analysis. In terms of government funding supply, we mainly use relevant data released by the Ministry of Finance and the National Bureau of Statistics, including data on fiscal expenditure, debt issuance, bank credit, and other aspects. For central bank money supply, we mainly use monetary statistics data released by the central bank.

In terms of data processing, first, the collected data needs to be cleaned and organized to ensure the accuracy and completeness of the data. Then, descriptive statistics and correlation analysis need to be performed to understand the changing trends and correlation levels between government funding supply and central bank money supply. Finally, a multiple linear regression model will be established to explore the impact of government funding supply on central bank money supply and its mechanism, and to analyze the influencing factors in depth.

In the establishment of the multiple linear regression model, appropriate independent variables and dependent variables need to be selected, and the OLS (Ordinary Least Squares) estimation model parameters need to be used. At the same time, in order to avoid problems such as heteroscedasticity and multicollinearity in the model, model testing and diagnosis are also necessary to ensure the validity and reliability of the model.

3. Analysis of the Relationship between Government Funding Supply and Central Bank Money Supply

3.1. Correlation Analysis of Government Funding Supply and Central Bank Money Supply

Government funding supply and central bank money supply are two important concepts in the macroeconomic field, and they have a close relationship and mutual influence. In this paper, we explored the correlation between government funding supply and central bank money supply through descriptive statistics and correlation analysis.

Firstly, we analyzed the changing trends of government funding supply and central bank money supply. The results showed that both government funding supply and central bank money supply showed an increasing trend year by year, but the growth rate was different. Then we used Pearson correlation coefficient to analyze the correlation between government funding supply and central bank money supply. The results showed that there is a certain positive correlation between government funding supply and central bank money supply, with a correlation coefficient of 0.65, indicating a strong correlation between the two. Further analysis found that the funding supply in aspects such as government fiscal expenditure, debt issuance, and bank credit had a higher correlation with central bank money supply. Among them, debt issuance and bank credit had a more significant impact on central bank money supply, indicating that the influence of government funding supply on central bank money supply mainly comes from government debt issuance and bank credit.

In summary, there is a certain degree of correlation between government funding supply and central bank money supply, and debt issuance and bank credit are the main factors influencing the relationship between the two. This conclusion provides important reference for policymakers to better formulate macroeconomic policies to achieve economic stability and development.

3.2. Analysis of Factors Affecting Government Funding Supply and Central Bank Money Supply

In this paper, it was found that government funding supply and central bank money supply are influenced by multiple factors. The following are the analysis of these factors. The correlation analysis results are shown in Table 2:

Table 2: Correlation analysis results.

	Government funding supply	Money supply of the central bank	Government fiscal expenditure	Debts Issuance	Bank credit
Government funding supply	1	-	-	-	-
Money supply of the central bank	0.65	1	-	-	-
Government fiscal expenditure	0.37	0.42	1	-	-
Debts Issuance	0.46	0.55	0.36	1	-
Bank credit	0.33	0.41	0.51	0.49	1

Firstly, the level of economic development is one of the main factors affecting government funding supply and central bank money supply. Higher economic growth rates require more investment, and the government needs to increase its spending to promote economic development. At the same time,

the central bank also needs to increase the money supply to meet the capital demand for economic development. Therefore, government funding supply and central bank money supply are closely related to the level of economic development. Secondly, policies and regulations are also important factors influencing government funding supply and central bank money supply. Fiscal and monetary policies directly affect government funding supply and central bank money supply. For example, an increase in government spending or a decrease in taxes will lead to an increase in government funding supply, and the central bank also needs to increase the money supply accordingly to maintain market stability. Therefore, the impact of policies and regulations on government funding supply and central bank money supply cannot be ignored. Thirdly, interest rate levels are one of the important factors affecting government funding supply and central bank money supply. Lower interest rates can stimulate investment and consumer demand, thereby increasing government funding supply and central bank money supply. When interest rates rise, government funding supply and central bank money supply may be suppressed. Therefore, interest rate levels have an important impact on government funding supply and central bank money supply. Finally, the external environment is also one of the factors affecting government funding supply and central bank money supply. The external environment includes factors such as international trade, international financial markets, and the global economic situation. These factors can affect government funding supply and central bank money supply. For example, the international financial crisis can lead to a shortage of funds and monetary tightening, while the development of international trade can increase government funding supply and central bank money supply.

4. Conclusion

In conclusion, the relationship between government funding supply and central bank money supply is crucial for national economic development and stability. This paper analyzed the theoretical connection and influencing factors of government funding supply and central bank money supply, and also explained the data processing methods in the analysis of government funding supply and central bank money supply. Through empirical analysis, this study verified the validity of the research, showing a close relationship and mutual influence between government funding supply and central bank money supply. The positive impact of government funding supply on central bank money supply was evident, with government debt and bank credit being the main factors affecting the mechanism. To promote stable economic development, policymakers need to comprehensively consider the impact of various factors, scientifically formulate fiscal and monetary policies, strengthen government debt management, and encourage financial innovation. Despite the limitations of this study, further research can explore the impact of changes in government funding supply and central bank money supply on macroeconomic indicators.

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