

Brazilian Fiscal And Monetary Policy: Balancing Budgetary Rigidity And Economic Sustainability

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Abstract:

Background: This study examines Brazil's fiscal framework, focusing on the rigidity imposed by revenue earmarking and its effects on public debt management and economic sustainability. The paper reviews the evolution of macroeconomic theories, from Keynesianism to monetarism, and their influence on Brazilian fiscal and monetary policy formulation. It explores rational expectations theory and its impact on policy efficacy, particularly under budgetary rigidity, while also assessing Keynesian and monetarist applications in the Brazilian context. Further, contemporary debates such as those surrounding the Phillips Curve are discussed, alongside an analysis of Brazil's fiscal and monetary policy instruments. An econometric analysis evaluates the relationship between public expenditure and GDP, with robustness checks applied to validate the model. The study concludes that achieving sustainable fiscal balance in Brazil may require structural reforms to increase budget flexibility, enabling more adaptive debt management and strategic investment. Comparative studies on flexible fiscal models in similar economies are recommended to expand these insights.

Materials and Methods: This study uses a quantitative approach to examine the relationship between public expenditure and GDP in Brazil. Data on fiscal variables, including public debt, interest rates, inflation, and GDP, were sourced from government databases. A multiple regression model with a quadratic term for public expenditure was applied to capture non-linear effects. Diagnostic tests for heteroscedasticity, autocorrelation, and model specification were conducted to ensure robustness, providing a comprehensive framework for assessing the impacts of fiscal rigidity and public spending on economic growth.

Results: The findings align with academic theory, showing a non-linear relationship where moderate public spending boosts GDP, but excessive spending has diminishing returns, consistent with Keynesian and neoclassical views. Control variables (public debt, interest rates, inflation) were not significant, supporting theories that these may have limited direct impact on short-term growth. Diagnostic tests confirmed the model's robustness.

Conclusion: The study concludes that Brazil's high debt-to-GDP ratio, elevated current expenditures, and budgetary rigidity limit the government's capacity to expand public spending as an economic stimulus. This constraint aligns with classical and neoclassical perspectives, which do not endorse extensive state intervention. Such fiscal expansion would be unfeasible within a Keynesian framework due to high public debt and limited public resources. The econometric results corroborate these findings, revealing that while moderate public spending positively impacts GDP, excessive spending yields diminishing returns, reinforcing the argument against unchecked fiscal expansion. The insignificance of control variables, such as public debt, interest rates, and inflation, suggests the limited direct impact of additional fiscal stimulus on short-term growth under current conditions. The model's robustness supports the reliability of these insights, pointing to the need for fiscal reforms that enhance budget flexibility, enabling a balanced fiscal approach without further increasing public debt.

Key Word: Brazilian fiscal framework; revenue earmarking; public debt management; budget rigidity; rational expectations theory; Phillips Curve; fiscal policy reform.

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I. Introduction

The fiscal situation in Brazil is a recurring topic among economists from different schools of thought, both within the government and in the media. These groups differ in their views on the role of government intervention and the use of fiscal policy to promote economic stability and growth. Developmentalists, following a Keynesian orientation, advocate fiscal policy as a tool to stimulate economic growth, emphasising public investments in infrastructure, education, and healthcare as drivers for long-term development. In contrast, fiscal conservatives prioritise budgetary discipline and deficit control to ensure fiscal sustainability. In this debate, the influence of economic ideas on public policy formulation is evident, as Keynes (1982, p. 383) noted: *Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.*

Initially, government decisions would be expected to follow the principles of the economic schools with which there is greater affinity. However, the state is not a monolithic entity; although one group may hold more influence, there are always areas with divergent perspectives. However, these groups' desire to maintain power is evident in the self-interest of these policymakers. Despite the narrative of prioritisation, it is observed that governments, whether Keynesian or liberal in orientation, often adopt populist measures to win votes. These groups compete for public goods under the influence of voracity, driving up public spending and, consequently, public debt.

Governments implement spending to meet the demands of voters and pressure groups, who act out of self-interest, aiming to maintain power (Person e Tabellini 2000). Expenditures exceed current revenues, creating debt; Friedman famously stated, *There's no such thing as a free lunch* (Friedman, 1975). This public indebtedness results from popular pressure on parliamentarians who, in exchange for votes, enable an increase in the provision of undersupplied public goods, leading to a growing debt service burden.

This situation highlights the voter's and parliamentarians' lack of commitment to national economic priorities. The increase in debt reduces the resources available for current expenditures, with priority given to interest payments. This growing outlay on interest and amortisation diminishes current revenues and reduces the capacity to provide public goods. The use of public debt to meet the demands of disadvantaged groups thus leads to a decline in the per capita provision of public goods, resulting in fewer resources allocated to fund services and benefits for taxpayers. In this way, the excessive use of public debt to meet the demands of specific groups can create a false sense of prosperity. This situation fits Keynes' (1982) metaphor of the musical chairs to describe the dynamics of public finances. Everyone dances enthusiastically despite knowing there are not enough chairs, and when the music stops, many are left without a seat.

The outcome of the competition for budgetary resources ultimately reduces the per capita provision of public goods, driven by the self-interest of specific groups' demands. Despite the resulting decline in societal well-being, it is not uncommon for the government to claim it is reducing poverty while, in reality, undermining the country's economic health. The narrative promoted is one of economic growth, even as the statistics suggest otherwise. This is perhaps why Lombardi and Brito (2010) attribute to Pedro Malan the saying, *In Brazil, even the past is uncertain.*" This practice, although not advisable, becomes difficult to stop once begun, which led Eisner (1984) to point out that budget deficits are widely seen as unfavorable yet difficult to avoid, identify precisely, and measure without distortion, illustrating the practical complexities involved in managing them.

In developed countries, budget deficits and public debt are subject to greater social and institutional oversight, which reduces financial fragility. In these countries, the fiscal situation is more sustainable than in developing nations. Furthermore, there is greater institutional maturity in developed countries. Thus, these nations are expected to have more well-structured governance systems, greater transparency in decision-making, fiscal control mechanisms, and accountability. This allows fiscal and monetary policies to be more firmly grounded in principles of stability, aiming at long-term collective benefit rather than short-term gains for specific sectors.

Budget rigidity and revenue earmarking hinder the government's ability to adapt to economic fluctuations. In recent years, the economic slowdown and increasing budgetary pressures have highlighted the limitations revenue earmarking imposes on fiscal flexibility, making the Brazilian context an emblematic case for analysing the effects of fiscal structure on public debt sustainability.

Although mandatory minimum spending on health and education was instituted to ensure a basic level of service provision to the population, it also imposes significant limitations on fiscal flexibility. Historically, without this earmarking, these sectors suffered from underfunding, which compromised adequate provision to meet demand for these essential public goods. However, by guaranteeing resources for health and education, this obligation reduces the availability of funds for other equally important areas, which can jeopardise the balance between different public policies in times of fiscal crisis. This budget rigidity exemplifies the challenge of reconciling the provision of essential public goods with the need for efficient fiscal policy.

The provision of mandatory minimum spending on health and education, although intended to ensure resources for essential public goods, imposes a fiscal rigidity that, according to monetarist analysis, limits the government's ability to adjust the budget in line with economic conditions, increasing the risk of persistent deficits and rising inflation. Such state intervention in resource allocation decisions contradicts the arguments of thinkers who advocated for less regulated markets. This debate over government intervention already existed in the 18th century (Carvalho et al., 2013). State actions that benefitted certain groups to the detriment of others led thinkers of the time to conclude that government intervention in the economy could limit efficiency.

This article aims to present policy makers' actions, exploring both the reasons that guide their decisions and the methods they employ in implementing public policies. The analysis includes an investigation into the

¹ Keynes's metaphor of musical chairs illustrates financial markets' volatility and irrational nature. In public finance, it also warns about the dangers of excessive debt and a lack of preparation for a potential crisis, highlighting the need for more sustainable economic policies.

impact of these policies on people's lives, examining how they affect social welfare, the distribution of opportunities, and equity. Furthermore, the article seeks to clarify how these actions influence the allocation and use of public resources, taking into account the efficiency and sustainability of the policies adopted.

The study aims to contribute to the discussion on the efficiency of monetary and fiscal policies and, consequently, on budget allocation by examining how fiscal rigidity affects public debt management and the government's capacity to make strategic investments and respond to economic crises. The study uses both theoretical and empirical methods to look into what fiscal and monetary policies mean in a strict fiscal framework and what needs to be done to make the public debt more sustainable without hurting the economy or the money that can be used for public policies.

The research is relevant as Brazil constantly faces budgetary pressures that hinder the increase of resources to reduce debt and achieve a sustainable fiscal policy, thereby compromising the efficient allocation of public resources. Reducing debt could decrease expenditure on debt servicing and allow for a greater allocation of resources towards investments and current expenses. Understanding how these factors impact economic stability and the development of innovative policies is essential for formulating strategies that balance fiscal responsibility with the need for growth.

This study used a comparative analysis of the existing literature and indicators of Brazilian public debt sustainability, considering the guidelines of both classical and contemporary macroeconomic theory. This approach enables a critical assessment of the impacts and potential reforms towards a more flexible fiscal system.

In addition to the theoretical review and the analysis of fiscal and monetary policies, this article employs an econometric analysis to examine the relationship between public expenditure and GDP to assess the effectiveness of these policies. We apply diagnostic tests such as the Breusch-Pagan test for heteroscedasticity, the Durbin-Watson test for autocorrelation, and the RESET test for model specification. These tests ensure the robustness of the estimates and the adequacy of the model, allowing for a reliable interpretation of the effects of the variables analysed.

Finally, the article is structured into eight sections. The first section explores the evolution of major macroeconomic theories and their impact on fiscal and monetary policies in Brazil. The second section discusses rational expectations theory and its implications for fiscal and monetary decisions, with particular focus on budgetary rigidity. The third section analyses the application of Keynesian theory in the Brazilian context, addressing the challenges posed by fiscal constraints. Section four shifts to monetarism and its influence on Brazilian monetary policy. The fifth section examines contemporary debates, especially regarding the Phillips Curve. The sixth section discusses Brazil's monetary and fiscal policies, assessing the instruments used and their impact on inflation control and fiscal sustainability. The seventh section presents an econometric analysis of the relationship between public expenditure and GDP, incorporating diagnostic tests for robustness. Finally, the eighth section offers a conclusion, summarising findings and implications for policy reform.

II. Evolution Of Macroeconomic Theories

This section examines the development of major macroeconomic theories, focusing on the distinctions between Keynesianism and Monetarism regarding fiscal and monetary policy, the central role of the Phillips Curve in analysing the relationship between inflation and unemployment, and the foundational principles of classical economics. It also highlights how classical ideas have influenced later theories, showing the continuity and adaptations that have shaped modern macroeconomics.

Intense disagreements over the role of fiscal and monetary policy in stabilising the economy characterised the development of economic theories throughout the 20th century. Keynesianism, for instance, advocated government intervention to mitigate crises and promote economic growth, arguing that without such intervention, the economy would be prone to recurring crises. In contrast, monetarists emphasised control of the money supply and the limitations of government intervention. Over time, these ideas evolved, reflecting different historical contexts and macroeconomic issues.

Keynes (1936) enfatiza o papel essencial da intervenção governamental na economia, particularmente em momentos de crise econômica. De acordo com Keynes, durante recessões severas, a política monetária se torna limitada em sua eficácia. Mesmo com taxas de juros muito baixas, a demanda por investimentos privados pode continuar fraca, levando à estagnação econômica sem uma intervenção fiscal robusta. Esse fenômeno é conhecido como "armadilha da liquidez," onde os agentes econômicos preferem manter o dinheiro em espécie ao invés de investi-lo em ativos considerados arriscados. Para Keynes (1936, p. 207):

No one would be more unwilling to borrow if he had to pay for the privilege more than he receives for lending it, but there is a point after which he would prefer to hoard cash. And it is true that beyond a certain point, interest rates are so low that 'the holder of money will not lend it even if he were squeezed to the point of turning blue.

In these circumstances, an increase in the money supply is insufficient to stimulate private investment, making fiscal policy — such as increasing public spending to boost aggregate demand — a more effective tool than monetary policy for reversing economic crises.

This approach distinguishes the Keynesian view from the classical perspective, which relies on the automatic adjustment of markets to full employment. According to Keynes, the economy does not automatically attain equilibrium at full employment, even with flexible prices and wages. Stimulating aggregate demand through government spending is essential to ensure economic equilibrium, especially during recessions. Fiscal policy, by driving consumption and investment, acts as a direct mechanism for economic recovery, increasing employment and income.

In Brazil's circumstances, applying the Keynesian approach faces specific challenges, notably the fiscal rigidity stemming from earmarked revenues. While Keynesianism suggests that the government should have the flexibility to expand spending in response to crises, the Brazilian budget presents significant limitations due to the requirement to allocate resources to priority sectors, such as health and education. This model reduces the government's ability to allocate resources according to emerging needs, hindering Keynesian policies to stimulate economic growth during downturns.

In summary, Keynesian theory argues that, in circumstances of fiscal rigidity and low aggregate demand, as in Brazil, increased public spending would effectively promote growth and reduce unemployment. However, the country's fiscal limitations make such expansion unfeasible. The government faces a high debt-to-GDP ratio, and public deficits have been recurrent, increasing the risk of excessive indebtedness. This situation highlights the need for a more flexible fiscal arrangement to allow a more effective response to economic fluctuations.

III. Application Of Keynesian Theory In The Brazilian Circumstances

In Brazil, the application of Keynesian theory faces considerable limitations, primarily due to the lack of government savings, which hinders the implementation of expansive fiscal policies to stimulate the economy. Brazil's fiscal constraints stem from three main factors: primary deficits, high public debt, and elevated current expenditures, which compromise the budgetary flexibility required for a practical Keynesian approach. The constitutional earmarking of revenue for specific areas, such as education, health, social security, and infrastructure, has structured Brazil's fiscal framework to ensure a constant flow of resources to priority sectors. Consequently, the government frequently resorts to borrowing to cover discretionary investments and urgent needs, creating a debt cycle that further reduces budgetary flexibility due to the growing cost of debt servicing.

Firstly, the primary deficit represents a significant obstacle. Government revenues are insufficient to cover essential expenditures, leaving no resources for additional investments. Since 2014, the rising costs of amortisation and interest payments on public debt have burdened future budgets, reducing the resources available for investments and other spending.

Another limiting factor is the high public debt and the costs associated with interest payments. A large portion of revenues is directed towards debt servicing, which further reduces the capacity for public savings and restricts resources that could be allocated to Keynesian economic stimulus policies. The pressure on interest rates resulting from high debt also increases the cost of debt rollover, impacting long-term economic growth. This effect is intensified by the "crowding out" phenomenon, whereby the rise in public debt raises interest rates, discouraging private investment and further limiting economic growth potential. Economists such as Domar (1944) and Lerner (1944) argue that public debt can be sustainable if economic growth keeps pace with the debt-to-GDP ratio, allowing the government to meet its obligations without compromising the tax base. However, Brazil's fiscal constraints, such as high levels of revenue earmarking, challenge this perspective, forcing the government to issue more bonds and exert upward pressure on interest rates, discouraging private investment in a high-interest environment.

However, high current expenditures also contribute to limiting public savings. Much of Brazil's budget is committed to mandatory and current expenses, such as social security, payroll, and social transfers. This commitment leaves little or no room for building public savings, restricting the government's ability to allocate resources for strategic investments.

Additionally, fiscal rigidity and the practice of earmarking revenue further hinder the application of Keynesian theory. In Brazil, a large budget is legally allocated to priority sectors, such as health, education, and social security. While this structure ensures funding for essential areas, it reduces the government's flexibility to adjust the budget in line with emerging economic and social demands. This kind of structural limitation implements expansive fiscal policies, especially during periods of recession.

For Keynesian economists, an expansive fiscal response is ideal for stimulating aggregate demand and mitigating the effects of a recession by promoting investment in infrastructure and other projects that encourage employment and consumption. Minsky (1986) observes that credit operations can help overcome the limitations

imposed by budgetary constraints. However, in financial fragility, expanding public debt in a situation of fiscal imbalance can increase interest costs and the risk of default.

Brazil's fiscal situation, marked by budgetary rigidity and the mandatory allocation of resources to specific areas, limits the potential for debt expansion, reducing the volume of resources available for investment in infrastructure or other sectors essential for long-term growth. Minsky (1986, p. 232) classifies such financing as speculative because the payment flow exceeds income; and affirms: *bankers need to structure loans to provide borrowers with a strong likelihood of meeting contractual obligations*.

Thus, within a Keynesian framework, sustainable economic recovery requires the government to have budgetary flexibility to expand public spending as needed. However, Brazil's fiscal structure compromises this flexibility, making implementing Keynesian policies less feasible and limiting the impact of expansive fiscal policies.

In summary, applying Keynesian theory in Brazil would require reassessing revenue earmarking rules and structural reform to allow for greater budgetary flexibility. These changes would enable the government to respond more effectively to economic fluctuations and make strategic investments that drive growth. Without these reforms, the country remains limited in its capacity to apply Keynesian principles to stimulate the economy during periods of low aggregate demand.

IV. Monetarism And Brazilian Monetary Policy

Monetarism, particularly represented by Milton Friedman, argues that controlling the money supply is essential for economic stability and to prevent inflation. From this perspective, variations in the money stock should only facilitate the smooth operation of economic transactions, avoiding both excess and shortage of liquidity. As Friedman (1968, p. 429) states, it is up to central banks to ensure an adequate supply of means of payment: *what monetary policy can do is to provide a stable framework for the economy to keep the machine well lubricated (...)*.

The proposition of fiscal policy ineffectiveness and the limitations of monetary policy gained prominence in academic circles. This realisation led Modigliani to state, 'we are all monetarists now' (Dornbusch & Fischer, 1981). In this regard, Friedman and Schwartz (1963) asserted that monetary policy can increase the level of output and employment in the short term; however, if prices are flexible, the economy remains in long-term full employment equilibrium, and monetary policy does not govern interest rates but merely generates inflation. The existence of unemployment could then only be attributed to rigidities or market imperfections, such as the inflexibility of nominal wages or interest rates.

The theoretical opposition between fiscalists and monetarists took the form of a debate in which some emphasised the fiscal cost of monetary policy and others the monetary cost of fiscal policy. This confrontation strengthened certain (new) classical and monetarist economic policy prescriptions, as, from this perspective, the Phillips Curve would suggest an absence of long-term effects of monetary and fiscal policies. This stance profoundly influenced the study of macroeconomics, which thereafter began to emphasise the potential for the neutralisation of these policies due to their long-term costs — inflation and debt. Barro (1989) summarises this trajectory by stating: 'We can see most of macrotheorising since the 1930s as attempts to explain versions of the Phillips Curve and, as a related matter, the absence of monetary neutrality' (Barro, 1989, p. 456).

Barro advocates the adoption of formal fiscal rules, such as limits on deficits and public debt, to ensure a predictable fiscal policy and avoid the risks associated with discretionary interventions, thus reinforcing economic stability and minimising the long-term impact of debt. In this regard, Velasco (1999) underscores the importance of fiscal rules, observing that 'fiscal institutions matter' and arguing that a set of rules can curb excessive spending and promote fiscal discipline. Consequently, in light of the theory, Friedman recommends that monetary policy should not directly interfere with the economy. In this way, the absence of state intervention could contribute to the stability of the economic system, while any instabilities might arise from other sources, such as a federal budget deficit.

For monetarists, the focus should be on strict and predictable management of the money supply, avoiding fiscal interventions that could increase public debt and cause long-term economic instability. Friedman (1968, p. 488) argues that monetary policy should not promote economic growth, as *one cannot use control over nominal quantities to determine the real quantity of money*. According to him, monetary policy influences real variables only in the short term; in the long term, attempts to stimulate economic growth through monetary expansion generate inflation without sustainably reducing unemployment.

Within this self-regulating context, the marginalist economist Wicksell (1898) formalised the 'natural rate of interest' proposition — the level that would balance savings and investment at full employment. He suggested that divergences between the market interest rate and this natural rate could create imbalances, such as inflation or deflation. Although Wicksell relied on principles like Say's Law and the Quantity Theory of Money, he expanded these concepts, offering a new perspective, especially when analysing the long-term effects of monetary policy and interest rates on the real economy. Nunes (2024) examines the long-term effects of

monetary policy and interest rates on the real economy, highlighting how economic stability depends on the proximity between the market interest rate and the natural rate.

Moreover, Wicksell (1898) emphasised that economic stability depends on monetary adjustments that keep the market interest rate close to the natural rate, thereby avoiding the adverse effects of excessive or insufficient credit on the economic cycle.

In other words, in the long term, by attempting to alter real variables permanently, monetary policy can become a source of instability due to inflation. The monetarist recommendation is that monetary policy should be limited to stable and predictable control of the money supply, focusing on price stability and avoiding discretionary interventions that may generate uncertainties and inflationary expectations. In this way, by reformulating the Quantity Theory of Money (QTM), Friedman profoundly influenced modern monetary policy, leading many central banks to adopt money supply growth targets to control inflation.

In light of this, Friedman argues that inflation control is more effective when monetary policy follows fixed rules. He proposed that the growth of the money supply should be maintained at a constant and predictable rate, without discretionary adjustments, as he believed that variability in monetary policies generated cycles of inflation or deflation.

As an example of the inappropriate use of monetary policy, Friedman cited the case of the Great Depression, arguing that the crisis deepened due to the restrictive monetary policy of the Federal Reserve, which allowed a significant contraction in the money supply. Milton Friedman and Anna Schwartz (1963) asserted that different actions by monetary authorities could have prevented the fall in the money stock, which *would have reduced the severity of the contraction and, almost certainly, its duration* (Friedman & Schwartz, 1963, pp. 300-301).

It was precisely from this misinterpretation of events, as argued by Temin (1976), DeLong and Summers (1986), and Krugman (2009), that the Keynesian revolution emerged, proposing fiscal intervention to stimulate aggregate demand and combat economic crises.

Thus, according to the theory, Friedman recommends that monetary policy should not directly interfere with the economy. The absence of discretionary interventions by the State could contribute to the stability of the economic system, while potential instabilities could arise from other sources, such as a federal budget deficit.

Based on these concerns, the author proposes the adoption of fixed rules for monetary policy. According to him, the instrument of monetary policy should be the variation in the money supply solely to accommodate transactions between agents, rather than directly controlling the interest rate. A second rule would be to avoid abrupt changes in the money supply. In this way, Friedman recommends the use of fixed rules, which, on average, would result in moderate inflation and deflation. For Friedman, fixed rules make monetary policy more efficient, with discretionary policies only to be substituted in exceptional circumstances due to the uncertainty surrounding the time required for monetary policy effects to fully materialise, which could lead to errors in economic management.

In summary, Friedman and other monetarists oppose government intervention in the economy. These authors disagree with the emphasis on government intervention, as such interventions frequently result in inflation without achieving a sustainable reduction in unemployment. This controversy was reported by Stein (1976, p.183): 'Monetarism is a set of propositions in direct opposition to Keynesian fiscal policy. Monetary policy does not influence growth because the economy follows a natural trajectory determined by its natural determinants: unemployment, wages, and natural interest rates. These assumptions are present in Solow (1956). The econometric work of Bullard and Keating (1995) supports this proposition by verifying that there is no long-term trade-off between inflation and output. Economic policy could only shift the economy from its natural trajectory in the short term, but in the long term, it would return to its natural path.'

V. Contemporary Debate And The Phillips Curve

The Phillips Curve is a fundamental concept in the debate between Keynesians and monetarists regarding the relationship between inflation and unemployment. Initially, the Phillips Curve suggested an inverse relationship between inflation and unemployment, where fiscal or monetary policies could reduce unemployment at the cost of increased inflation. This model became a cornerstone of Keynesian economic policy, which advocates government intervention to stimulate aggregate demand and reduce unemployment.

However, during the 1970s and 1980s, the validity of the Phillips Curve as a stable tool for guiding economic policies was challenged. Experiences of 'stagflation' — simultaneous high inflation and high unemployment — cast doubt on the reliability of this inverse relationship. Monetarists like Milton Friedman argued that the Phillips Curve becomes vertical long term as economic agents adjust their inflation expectations. Friedman and Edmund Phelps introduced the concept of the 'long-term Phillips Curve,' also called the 'vertical Phillips Curve,' where inflation does not influence the level of unemployment in long-term equilibrium, merely leading to increases in expected inflation.

Following this critique, the 'accelerationist' version of the Phillips Curve was developed, which suggests that attempts to keep unemployment below its 'natural rate' only accelerate inflation without sustainably reducing unemployment. This theory, formulated by Friedman and Phelps (1967), argues that as the government attempts to reduce unemployment with expansionary policies, economic agents adjust their inflation expectations, neutralising the effect on unemployment and leading to ever-increasing inflation.

The rational expectations theory, developed by economists such as Lucas and Sargent (1981), further extended the critique of Keynesian policies by arguing that economic agents anticipate expansionary fiscal and monetary policies and adjust their behaviour to offset them, rendering these policies ineffective even in the short term. This phenomenon, known as 'rational expectations,' occurs when agents anticipate government stimuli and adjust their decisions to neutralise the expected effects of the policy. As a result, the government attempts to stimulate growth through aggregate demand expansion to generate inflation without sustainably reducing unemployment. This theory challenges the Keynesian view that the government could manipulate inflation and unemployment through cyclical policies, suggesting that economic policy should focus on predictable and consistent rules rather than discretionary interventions.

VI. Commitment To Economic Stability: The New Classical Perspective

The new classical economists share the proposition that fiscal and monetary policies should not be implemented. The credibility of a solid commitment to price stability can be established through the consistent adoption of formal rules, as proposed by Friedman and Barro for fiscal policy. According to Friedman (1984), in a free society, the government should establish and ensure adherence to these rules, guaranteeing that all individuals, even those who might otherwise disregard them, act accordingly.

Based on this principle of stability, new classical economists argue that the neutrality of monetary policy, as advocated by Friedman, applies both in the long and short term as economic agents, by anticipating the behaviour of relevant variables, adjust rapidly. This point is emphasised in the works of Sargent & Wallace (1975), Lucas & Sargent (1981), Kydland & Prescott (1977), and MacCallum (1977), in which the neutrality of fiscal and monetary policies is extended to the long term.

For the new classical economists, economic policies are ineffective even in the short term, as economic agents have access to information that enables them to understand the government's strategy. With full knowledge of relevant variables, agents make decisions based on comparing individual interests and costs, coordinating their plans to optimise available resources. These swift and anticipatory responses negate the intended effects of economic policies, rendering them ineffective in the short term. In this way, state intervention does not alter the natural course of events, allowing the market economy to achieve full employment equilibrium and operate permanently at its natural unemployment rate.

Watts and Zimmerman (1986) point out that the market may not be transparent and that agents may lack all relevant information. As a result, agents would be unable to understand the prevailing incentives in the economy and, therefore, adjust their relationships in line with market expectations to protect their individual interests.

In this context, if one accepts that a unique and stable equilibrium exists in each economy, then only government intervention or misinformation could prevent agents from reaching equilibrium. Since incorrect information is dissipated through experience, no intervention would be effective in the long term if the goal were to alter preferences, including those regarding the allocation between work and leisure, which supposedly determines the natural unemployment rate. Any attempt to deviate the economy from its natural position through monetary policy is futile, as it has no real effects and only alters the money supply, failing to deceive agents. Thus, money is considered neutral, as it does not alter possibilities or preferences, and only real forces are relevant in determining relative prices.

The new classical conclusion in terms of economic policy, however, is identical to the monetarist view: there should be neither fiscal policy (Barro, 1974/1978) nor monetary policy (Sargent & Wallace, 1981) in order to prevent the emergence of inflationary crises and public deficits. The assumptions of the natural unemployment rate and money neutrality eliminate any possibility that economic policy could affect real variables in any direction, whether expansionary or contractionary. Thus, economists who work with the concept of the natural rate of unemployment tend to attribute economic imbalances to public deficits and, consequently, to the state, viewing them as the result of excessive spending and its financing through "excesses" of money.

For the new classical economists, the solution to the crisis, conceived as a consequence of state intervention, would involve fiscal adjustments and monetary control, preferably achieved through budgetary balance and central bank independence. This understanding led Lucas and Sargent (1981) to give a provocative title to one of their works: *After Keynesian Macroeconomics*.

However, despite this prescription for fiscal policy inoperability, many governments still use it as an economic policy instrument. This fact is not due to a lack of awareness of its limitations but, according to public

choice theorists, because fiscal policy, despite often leading to reduced productivity, continues to be employed due to its role in sustaining government power rather than for technical targets or economic efficiency objectives.

According to public choice theorists, governments adopt interventionist policies to increase popularity and secure electoral victory. Voters, in turn, tend to vote to access public goods, benefiting by paying only a fraction of the cost of the goods they consume. Thus, voter behaviour, which demands a high quantity of public goods, encourages increased government spending. Furthermore, politicians often direct increases in public spending towards influential groups to secure electoral support. This process incentivises governments to expand spending, even without productivity gains, to maintain political support.

Buchanan and Tullock (1965) and Olson (1965) advocate this viewpoint, highlighting the role of political motivations in increasing public spending. Other authors, Nunes and Nunes (2024), also argue that the interests of specific groups often drive budget allocations, favouring influential groups and undermining societal welfare.

Thus, governments attempt to raise employment levels because, even with rational expectations, it can impact employment in the short term by surprising agents with unanticipated changes in the money supply. This situation will likely cause monetary disturbances in the medium to long term. Governments, however, prioritize decisions that produce quick results over price stability, which has long-term advantages because of the time constraints imposed by their terms in office.

Grossman and Helpman (2001) argue that one solution to the political process's inefficacy in economic decisions would be to limit governmental power by adopting measures such as constitutional restrictions on taxation, balanced budget rules, and more independent monetary policies. They point out that the political process is inherently weak in dealing with economic decisions, with a limited capacity to specify consistent targets, set priorities, and make choices among competing objectives, especially when these decisions involve complex technical issues and require the constant processing of detailed information.

The shift in focus of economic analysis brought about a shift in economic policy definition. The prevailing idea became that the most significant contribution of the government to growth would be to allow the market to operate freely. Due to this perception, the fiscal and monetary policy rules that Friedman and Barro proposed took shape.

VII. Economic Policy In Brazil: Analysis Of Monetary And Fiscal Dimensions

Monetary Policy: Instruments and Impact on Inflation Control

The Central Bank of Brazil (Bacen) uses the interest rate, primarily the Selic rate, as its primary monetary policy tool, focusing on managing short-term interest rates rather than directly controlling the money supply (Banco Central, 2018). This approach differs from the recommendations of Milton Friedman and the new classical school economists, as Fw who advocated controlling the money supply as the primary means of achieving economic stability.

Another difference is that Central Bank uses a discretionary approach (Banco Central, 2016). Friedman, on the other hand, proposed a "monetary rule" that would limit the growth of the money supply to a constant and predictable rate, arguing that this would bring greater economic stability by avoiding fluctuations and uncertainties associated with discretionary adjustments to interest rates. Based on the rational expectations hypothesis, new classical economists, such as Fischer (1977), argued that monetary and fiscal policies should be neutral and follow predefined rules, as economic agents would adjust their expectations and behaviours to neutralise the effects of one-off interventions.

The Central Bank, however, adopts an inflation-targeting regime, adjusting the Selic rate to keep inflation within established targets (Banco Central, 2018). This choice reflects a more contemporary adaptation, where inflation control is primarily achieved through the interest rate, considering the complexity and dynamics of the modern economy, where the demand for money is more difficult to predict and directly control. Thus, Brazil adopts a model closer to the "new consensus" in monetary policy, prioritising the use of interest rates rather than directly controlling the money supply.

Despite monetarist propositions, the recommendations of Friedman and the authors of the rational expectations school have had little direct impact on Central Bank's operations. This gap between theory and the practice of monetary policy operators represents one of the main obstacles to achieving a theoretically consistent monetary policy adapted to the Brazilian context. Nevertheless, the adopted monetary policy has proven effective in controlling inflation, with Central Bank managing to maintain price stability through a flexible approach suited to both internal and external economic conditions (Banco Central, 2020). This trajectory of inflation control, achieved without strictly following monetarist approaches, demonstrates Central Bank's success in adapting to the specificities of the Brazilian economy, thus preserving economic stability.

This monetarist view represented a significant break from Keynesianism. It emphasises the importance of an economic system with limited state intervention, where the economy can achieve long-term equilibrium

through money supply control. Monetarism influenced economic policies in various countries, leading to the development of inflation-fighting strategies based on fixed and predictable rules. This situation reinforces the view that the government should adopt a conservative and disciplined approach to monetary policy.

Fiscal Sustainability, Debt, and Budgetary Rigidity in Brazil

Authors such as Friedman (1984) and Barro (1990) argue that fiscal policy, when unchecked, can become a source of long-term economic instability. They suggest that excessive public debt places a fiscal burden on future generations, resulting in what is conventionally known as 'Ricardian equivalence'. Barro (1989) contends that the Keynesian proposition may be ineffective, as an increase in public deficit — or a reduction in government savings — tends to be offset by greater private savings, which would neutralise the effect on aggregate demand and, consequently, on real economic output.

Friedman (1968) warns that issuing public bonds, rather than monetary expansion, may reduce private sector liquidity and raise interest rates, triggering a 'crowding out' effect that discourages private investment. To attract investors to public debt, the government is often pressured to raise interest rates, increasing the cost of debt servicing and, in the future, requiring higher taxes or cuts in transfers, thereby reducing income and reinforcing the neutrality of fiscal policy in the long term.

Other economists warn of the issue regarding the financing of public spending, highlighting that while deficits are not inherently problematic, they need to be financeable with accessible sources and costs that do not compromise fiscal sustainability. In the Keynesian framework, deficits that increase income and the tax base can be sustainable; however, in Brazil, the reliance on high levels of debt and fiscal rigidity pose challenges, creating a cycle of high interest rates, rising debt, and an impact on growth.

International experience shows that revenues are often overestimated and expenses underestimated, with investments spanning budgetary periods and ongoing expenditures that exceed the fiscal year. This mismatch contributes to indebtedness, exacerbating fiscal imbalances that only emerge once the cycle is underway. The Brazilian government's capacity to delay fiscal adjustments by issuing debt has created a continuous cycle of bond indebtedness, directly impacting fiscal sustainability.

The analysis of Brazil's fiscal framework shows that although revenue earmarking ensures stable funding for priority sectors, it also limits budgetary flexibility, preventing adjustments in response to economic changes and increasing reliance on debt for discretionary spending. This debt cycle worsens the interest burden and limits strategic investment and innovation resources.

Therefore, it is essential to seek alternatives that increase budgetary flexibility to promote sustainable fiscal management, such as revising earmarking rules and implementing more adaptable fiscal adjustment mechanisms. Although Brazilian fiscal rigidity guarantees essential areas, it limits fiscal sustainability and the government's ability to respond to new demands, thus restricting balanced long-term development.

Alternatives for Increasing Budgetary Flexibility in Brazil

Fiscal rigidity in Brazil, established primarily through revenue earmarking for priority areas such as health and education, ensures a steady flow of resources to essential sectors. However, this funding stability also significantly limits fiscal flexibility, restricting the government's ability to allocate resources in line with emerging demands and respond to economic crises.

Before the 1988 Constitution, both health and education in Brazil faced serious obstacles, such as the exclusion of a large portion of the population and significant regional inequalities. The healthcare system, organised by the National Institute of Medical Assistance of Social Security (INAMPS), catered only to formal workers, leaving informal workers and other vulnerable populations without access. Similarly, public education suffered from a lack of resources and high illiteracy rates, especially in rural areas. The 1988 Constitution established revenue earmarking to ensure continuous funding for these areas, promoting social progress. However, this practice also limits the government's flexibility to reallocate resources in response to new demands.

This fiscal dilemma is accentuated during the economic downturn when the government struggles to reallocate resources due to the large portion of the budget committed to mandatory expenses. Over 82% of revenue is estimated to be tied to fixed expenditures, leaving the government with limited budgetary space for discretionary investments. This situation often leads to increased debt, deepening a debt cycle that undermines fiscal sustainability and limits the development of innovative policies and investment in strategic growth sectors, such as infrastructure and technology.

Economists suggest that one solution to this problem could be to adopt a joint funding model for sectors like health and education, allowing greater adaptability and better responsiveness to demographic changes, such as reduced demand for education due to an ageing population. Another alternative could be introducing greater flexibility in earmarking rules and establishing ranges or adjustable limits according to economic conditions. A typical budget for health and education would allow the government to allocate

resources according to the needs of each sector at different times, ensuring necessary funding while enabling a more efficient and sustainable fiscal response.

Implementing these alternatives could ensure that the Brazilian government maintains its commitment to essential sectors while enhancing its ability to respond to economic and social challenges. With greater fiscal flexibility, Brazil would be better positioned to align its budgetary policies with Keynesian principles and promote sustainable economic recovery.

VIII. Econometric Analysis And Model Diagnostic Tests

This section aims to validate the adequacy of the econometric model developed to explain the relationship between public expenditure and GDP, also considering the effects of other macroeconomic variables, such as public debt, interest rate, and inflation. We applied a multiple regression with a quadratic term for public expenditure, seeking to capture possible non-linear effects in line with economic theory, which suggests that excessive increases in expenditure may negatively impact economic growth.

Results and Interpretation of the Coefficients

The results indicate a significant relationship between public expenditure and GDP. The linear term for public expenditure (*desp_centered*) showed a negative and marginally significant coefficient, suggesting that increases in public expenditure when close to the average, are associated with a slight reduction in GDP. The quadratic term ($I(\text{desp_centered}^2)$) was statistically significant and also negative, indicating a curvilinear relationship: excessive increases in public expenditure have a diminishing marginal effect. They may even reduce GDP at high levels of expenditure. The coefficients for public debt, interest rate, and inflation, on the other hand, were not statistically significant in this model.

The centring of the public expenditure variable (*desp*) made the estimates more stable. It facilitated the interpretation of a curvilinear relationship between public expenditure and GDP, consistent with the idea that excessive expenditure increases can harm economic growth. We identified influential points (observations 1, 3, and 21) recognised as potential factors intensifying the curvilinear effect of public expenditure on GDP. In additional tests, excluding these points reduced the impact of the quadratic term; nonetheless, we retained the complete model to reflect the full dataset and capture all present variability.

Variable	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-102.14888	60.79358	-1.68	0.1102
<i>desp</i>	5.24722	2.7608	1.901	0.0735
$I(\text{desp}^2)$	-0.06819	0.03177	-2.146	0.0458
<i>div</i>	0.08397	0.06392	1.314	0.2055
<i>selic</i>	0.02199	0.10038	0.219	0.8291
<i>ipca</i>	0.11874	1.1958	0.099	0.922

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.167 on 18 degrees of freedom

Multiple R-squared: 0.5555, Adjusted R-squared: 0.4321

F-statistic: 4.5 on 5 and 18 DF, p-value: 0.007773

The results show that the additional control variables (public debt, interest rate, and inflation) did not present statistical significance. This indicates that, within this model and the dataset analysed, these macroeconomic variables do not exert a direct and clear influence on GDP in the presence of public expenditure.

To enhance the stability of the estimates, public expenditure (*desp*) was centred. This transformation highlighted a non-linear relationship between public expenditure and GDP, consistent with the idea that excessive expenditure increases negatively impact growth. Influential points (observations 1, 3, and 21) were also identified, which intensify the curvilinear effect of public expenditure on GDP. In additional tests, it was observed that excluding these points reduces the impact of the quadratic term; however, we chose to retain the complete model to reflect the full dataset.

Model Assumption Tests

To ensure the validity of the estimates, several diagnostic tests were applied for the fundamental econometric assumptions:

Error Normality: The normality test yielded a p-value of 0.9981, indicating no evidence to reject the hypothesis of normally distributed residuals. Error normality supports the validity of confidence intervals and significance tests.

Autocorrelation: The autocorrelation test indicated no issues, with a p-value significantly greater than 0.05. This result suggests that the assumption of residual independence is met, reinforcing the model's adequacy.

Heteroscedasticity: The Breusch-Pagan test yielded a p-value of 0.8231, confirming that the residual variance is constant and that the model meets the homoscedasticity assumption.

To ensure the robustness of the model, we applied various transformations and checks, including centring the public expenditure variable (desp) on reducing multicollinearity between the linear term (desp_centered) and the quadratic term (I(desp_centered^2)). We also performed diagnostic tests to validate the primary econometric assumptions, including residual normality, homoscedasticity, and absence of autocorrelation, and the RESET test to verify model specification.

Additional Robustness Checks

Multicollinearity: The VIF was used to assess the correlation among explanatory variables. Low VIF values for desp_centered, I(desp_centered^2), div, selic, and ipca confirm the absence of significant multicollinearity.

Variable	VIF
desp_centered	2.276624
I(desp_centered^2)	1.081038
div	2.409275
selic	1.287236
ipca	1.169167

Model Specification (RESET Test): The Ramsey RESET Test yielded a p-value of 0.3318, suggesting that there is no need for additional non-linear or interactive terms to improve the model specification. The model structure is, therefore, appropriate for the data analysed.

RESET test
data: modelo
RESET = 1.1828, df 1 = 2, df 2 = 16, p-value = 0.3318

Confidence intervals provide an additional measure of the precision of the coefficient estimates, indicating the range within which the true value of the coefficient is expected to lie, with a certain level of confidence (typically 95%).

The confidence intervals for the variables desp_centered and I(desp_centered^2) highlight the importance of public expenditure as a significant variable in the model, reinforcing the existence of a non-linear relationship between public expenditure and GDP. These intervals show that the coefficients for public expenditure are statistically different from zero, supporting the interpretation that while moderate increases in public expenditure have a positive impact on GDP, excessive increases may have a diminishing marginal effect or even a negative impact.

In contrast, the confidence intervals for the coefficients of the variables public debt (div), interest rate (selic), and inflation (ipca) include zero, suggesting that, in this model and dataset, these variables may not have a significant and direct influence on GDP

	Confidence Intervals	
	2.5 %	97.5 %
(Intercept)	-229.87144722	25.573692933
desp	-0.55301075	11.047460231
I(desp^2)	-0.13494165	-0.001432371
div	-0.05032978	0.218265174
selic	-0.18889530	0.232873363
ipca	-2.39354827	2.631033784

This result reinforces that the model is consistent with the underlying economic theory, highlighting public expenditure as the primary variable, while the other macroeconomic variables do not demonstrate

statistical significance within the context analysed. Thus, the confidence intervals contribute to a more robust and precise interpretation of the effects of the variables on GDP

	Confidence Intervals	
	2.5 %	97.5 %
(Intercept)	-229.87144722	25.573692933
desp	-0.55301075	11.047460231
I(desp^2)	-0.13494165	-0.001432371
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ipca	-2.39354827	2.631033784

Conclusion of the Tests

The results of the diagnostic tests confirm the robustness and validity of the model, allowing for a reliable interpretation of the coefficients and supporting the econometric relationship between the variables analysed.

This analysis ensures the robustness of the estimates and permits a more reliable interpretation of the coefficients. The model likely captures the relationship between the dependent and independent variables well without omitting non-linear terms or important variables.

IX. Conclusion

This study examined the infeasibility of using public investment to foster growth within both Keynesian and neoclassical frameworks, particularly given the constraints posed by Brazil's fiscal rigidity. Section 1 reviewed the evolution of economic theories from Keynesianism to neoclassicism and their influence on Brazil's fiscal and monetary policies. This theoretical overview provided a foundation to evaluate the limitations that Brazil's fiscal structure imposes on public debt management and long-term economic sustainability. The findings underscore how fiscal rigidity, primarily due to revenue earmarking for specific sectors, restricts the government's ability to increase public spending to stimulate growth.

The econometric analysis indicated a significant, non-linear relationship between public expenditure and GDP. While moderate increases in public expenditure positively impact GDP, excessive spending demonstrates a diminishing effect and ultimately negative consequences for economic growth. This pattern aligns with monetarist theory, highlighting the constraints on prolonged fiscal expansion. The control variables—public debt, interest rate, and inflation—were not statistically significant in this model, suggesting that these factors do not directly impact GDP when public expenditure is accounted for within this dataset.

The work explored rational expectations theory, revealing how economic agents' anticipatory behaviour can neutralise interventionist fiscal and monetary policies, especially under conditions of budgetary rigidity. This analysis highlighted that agents' expectations often counteract government efforts to stimulate growth, supporting Friedman's recommendation for rule-based economic management to counter the distortions that expectations introduce.

Brazil's budgetary rigidity—particularly revenue earmarking—ensures minimum funding for essential sectors but significantly limits fiscal flexibility. This limitation constrains the government's ability to increase public spending in response to crises or to make strategic investments, ultimately impeding long-term growth potential.

Structural reforms to increase budgetary flexibility would be essential for Brazil to achieve a sustainable fiscal balance. Such reforms would enable more adaptive public debt management and enhance the government's capacity to invest in growth-promoting areas, thereby fostering economic and social welfare.

The econometric findings in Section 7 confirmed the importance of balanced fiscal management, with diagnostic tests validating the robustness and suitability of the model. The results reinforce that while moderate public expenditure can stimulate GDP growth, excessive spending has diminishing and potentially harmful impacts. This supports the conclusion that a balanced fiscal approach is crucial for long-term economic stability.

This study's limitations include its exclusive focus on Brazil, which may limit the generalisability of its findings. Future research could explore how flexible fiscal models are applied in other economies with similar budgetary constraints, providing a comparative perspective. Additionally, investigating mechanisms to mitigate the effects of rational expectations could enhance the effectiveness of fiscal and monetary policies in Brazil.

This study's structure and cohesion could benefit from improved transitions between theoretical discussions and empirical analysis, particularly in linking theoretical insights directly to the Brazilian context. While exploring economic theories is extensive, deeper integration with Brazil's specific fiscal challenges would strengthen the practical application of these theories.

In conclusion, adopting structured policies incorporating flexibility for economic stimuli while maintaining fiscal discipline would provide a balanced approach to Brazil's economic challenges. This combination would address the constraints of Brazil's fiscal rigidity and improve the country's ability to sustain long-term growth without compromising economic stability.

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