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The Impact of Disguised Unemployment over Fiscal Multipliers in Brazil (2012-2024)

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The Impact of Disguised Unemployment over Fiscal Multipliers in Brazil (2012-2024)[*]

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Abstract: This paper investigates the relationship between the fiscal multiplier and disguised unemployment in Brazil, focusing on the effectiveness of fiscal policies in scenarios of underutilization of the workforce. Based on a review of pre-existing literature for calculating disguised unemployment in Brazil and the application of a vector autoregressive (VAR) model, the impacts of fiscal shocks on GDP and the rates of open and disguised unemployment were analyzed. Data suggests the existence of disguised unemployment in Brazil, especially in the traditional services sector. In addition, the results indicate that investment and other expenditures shocks have the highest positive fiscal multipliers, while payroll expenditures have a negative impact. Finally, the analysis also highlights that fiscal policies aimed at increasing income transfers could be a viable way of reducing disguised unemployment.

Keywords: Fiscal multiplier; Disguised unemployment; Fiscal policy; Labor market

Jel Code: E24, E26, H3, J01, J64.

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1- Introduction

The inherent complexity of economic relations and the need to evaluate effective public policies demand a thorough understanding of fiscal instruments, their multiplier effects and the nuances associated with the labor market. Among the crucial elements in this context is the analysis of the *fiscal multiplier*, a measure that quantifies the impact of shocks to public spending on aggregate demand. In this context, it is essential to note that the fiscal multiplier will be affected by a series of macroeconomic factors and conditions, which will dictate the size of the multiplier effect (Hall, 2009).

Among these factors, the result of the fiscal multiplier will vary, notably, according to the type of expenditure analyzed, with some categories of government expenditure having a greater capacity to stimulate the economy than others (Resende and Pires, 2021). The current article follows this line of thought, but with a crucial addition: measuring the impact of these expenditure shocks not only on the output of the fiscal multiplier, taking into consideration the existence of disguised unemployment, as well as evaluating the impact of fiscal multiplier over the disguised rate of unemployment.

This addition is a novel contribution to the literature of fiscal multipliers due to the recognition that the size of fiscal multipliers changes according to the degree of supply constraints in the economy (De long and Summers, 2012, p. 234). If a greater idleness of capacity utilization is compatible with higher values for the fiscal multipliers, than estimates of such multipliers that are based on narrow measures of unemployment rates can result in underestimation of the value of fiscal multiplier and hence biased perceptions about the effectiveness of fiscal policy.

The phenomenon of disguised unemployment is a scarcely explored but interesting concept about the workings of the labor market, with profound implications for economic development. While traditional unemployment rates only capture a portion of the unemployed people, disguised unemployment also includes those who, due to the dynamics of the labor market, work in extremely unproductive or low-quality employment situations.

In the Brazilian context, the use of disguised unemployment as a proxy for economic performance is justified by the need for a more comprehensive and representative measure of the labor market. It is assumed that traditional indicators may underestimate the true extent of unemployment and therefore compromise the formulation of appropriate public policies. By incorporating disguised unemployment as an indicator of the situation of the labor market, a more

comprehensive view of the country's labor reality is sought, allowing for a more accurate analysis of the economic cycle and, consequently, providing a truer perception of the impact of fiscal policies.

This article is organized into six sections, including this introduction. In section 2 we present the concept of disguised unemployment. Section 3 makes a brief review of the literature on fiscal multipliers. Section 4 presents a methodology to calculate the amount of disguised unemployment and applies this methodology for the Brazilian case in the period between the first quarter of 2012 to the first quarter of 2024. Although it would be desirable for the reliability of econometric tests to have a longer sample for the variable disguised unemployment, data availability restricted our analysis to begin in the first quarter of 2012. Section 5 by estimates a VAR model based in the methodology developed by Resende and Pires (2021) to calculate the fiscal multipliers for different types of government expenditures and their impact over open and true unemployment rate. The econometric tests allowed us to conclude that shocks in public investment had greater effect over output than other types of government expenditures; but transfers seem to be more effective in reducing true unemployment due its stronger effect over disguised unemployment. Section 6 presents the final remarks.

2- The Concept of Disguised Unemployment

The origin of the term *disguised unemployment* can be attributed to Joan Robinson (1936). Robinson explores how disguised unemployment manifests itself in different economic contexts, especially in economies without a regular system of unemployment benefits. In these scenarios, individuals affected by the scarcity of formal employment opportunities turn to less productive activities, keeping themselves busy, but without contributing significantly to economic production. This phenomenon, according to Robinson, is particularly prevalent during periods of recession, when effective demand is reduced and skilled workers are forced into temporary occupations in which "their productivity is lower than that of the occupations they left" (Appud Eatwell and Milgate, 2011, p. 176). In other words, Robinson imposes a strict relationship between a cyclical fall in effective demand and the fall of productivity.

A simple two-sector model illustrates the logic behind the argument: in one sector, monetary gains are fixed; in the other, where self-employment is prevalent, incomes are flexible. When there is a competitive full employment equilibrium, both sectors have the same marginal productivity of labor. However, workers can lose their jobs in the inflexible payment sector, but

they can still move to the flexible income sector if aggregate demand falls below the full employment level. Therefore, as more workers are accommodated to distribute a lower workload, the amount of income earned per person in this sector will decrease, with productivity differentials increasing without a discernible increase in unemployment.

In this sense, a situation of disguised unemployment differs from one of low general labor productivity, since an increase in effective demand will force workers back into the sector of rigid wages and high productivity, eliminating disguised unemployment. That said, an increase in effective demand will be an adequate palliative if workers are still able to cope with the demands of the inflexible sector and are well fed and healthy (Streeten, 1989).

This analysis offers, for the first time in the academic sphere, a critical look at the limitations of conventional employment statistics, which often fail to capture the real extent of unemployment and underemployment in the economy. Nevertheless, the approach taken by Robinson to disguised unemployment focuses mainly on the transition of workers to subsistence occupations, which would later be adapted to the context of countries with large surplus agrarian populations.

Development economists such as Lewis and Rosenstein-Rodan expanded the concept to this new perspective, applying disguised agrarian unemployment as a fundamental part of development theory in underdeveloped countries. Lewis, in his famous 1954 study "Economic development with unlimited supplies of labor", demonstrates how in many developing economies there is a surplus of labor, especially in the agricultural sector. This surplus, or disguised unemployment, is characterized by workers whose marginal contribution to production is zero or extremely low. Consequently, Lewis' two-sector model proposes that this surplus labor can be transferred from the traditional (agricultural) sector to the modern (industrial) sector without loss of agricultural production, facilitating industrial growth while maintaining agricultural productivity.

Other developmentalists have also highlighted the importance of disguised unemployment. Rosenstein-Rodan, for example, used the concept in several of his studies focused on developing countries. In Rosenstein-Rodan (1943), the challenges of industrialization in Eastern and Southeastern Europe and the need to industrialize these regions are discussed, highlighting the existence of an excess agrarian population and the presence of a disguised unemployment rate of approximately 25%. By exploring different strategies for industrialization, the importance of international cooperation and investment in facilitating this process is emphasized.

As new perspectives are presented on the subject, it is necessary to make an essential differentiation to understand the disguised unemployment literature in its entirety. In general, there is no literary consensus on the interpretation of disguised unemployment. Wellisz (1968) points out that there are three divergent versions of the disguised unemployment hypothesis: the "Keynesian", the "structuralist" and the "Malthusian", and that the premises and arguments behind one version cannot necessarily be applied to the others. For the purposes of this article, one of the topics to be addressed will be the differentiation between the Keynesian and structuralist versions of disguised unemployment.

The "Keynesian" variant, inspired by the theories of John Maynard Keynes, focuses on the reduction in effective demand and its consequences on the labor market. This form of disguised unemployment is particularly visible in periods of economic recession, where skilled workers are forced to accept jobs with lower productivity and pay than their qualifications would allow in a more robust economy. In other words, the concept initially proposed by Robinson (1936) would fit in with the Keynesian disguised unemployment hypothesis.

In turn, the structural definition (which has already been covered in the studies by Lewis and Rosenstein-Rodan) deals with unemployment resulting from the inefficient allocation of human resources between agricultural and non-agricultural sectors. In this context, workers in low-productivity sectors, such as agriculture, have a marginal productivity close to zero, suggesting that their removal would not affect overall production. The implication of this analysis is that transferring labor from the agricultural sector to the industrial sector could potentially increase overall economic efficiency, if the industrial sector can absorb and effectively use this surplus labor.

However, the segmentation proposed by Wellisz is not without its critics and challenges, especially regarding the simplification of the hypothesis by separating it into three different versions. Lewis (1954) deepens his definition of disguised unemployment beyond mere structuralism, indicating that different sectors of the economy will logically have different types of disguised unemployment, with the structuralist version mentioned above being relevant to the case of the subsistence agricultural sector. This does not prevent, for example, the Keynesian variant from occurring in commercial agriculture, where the seasonality of demand can induce redundant work at times of low demand. Equally, although this theoretical separation is necessary to clarify the concepts used in the literature, the different versions of the disguised unemployment hypothesis still converge on various points regarding its solution.

Now that the theoretical foundations of disguised unemployment have been clarified, it is possible to focus more on empirical studies of the phenomenon. Based on the Keynesian variant, Eatwell and Milgate (2011) propose the following interpretation: a country's economy can be divided into two sectors, of which the modern sector will have its level of employment determined by aggregate demand and the employment of the traditional sector will depend on the available labor supply. Despite this, it is essential to realize that the potential productivity of labor on both sides of this dual economy would be equal, with the missing variable being effective demand. Therefore, if there were an increase in effective demand, disguised unemployment (which is represented by jobs with low or no marginal productivity) in the traditional sector would theoretically disappear.

By combining this hypothesis with an analysis of the levels of benefits for unemployed workers, the authors carry out a study of productivity in the G7 countries to ascertain the "true" level of unemployment in each country, which would be equivalent to the combination of the open unemployment rate and the disguised unemployment rate. Eatwell and Milgate conclude that, in all cases, the rate of growth in effective demand was too low in relation to the increase in productivity in the modern sector, leading to increases in the rate of disguised unemployment during the period studied.

In addition, the authors bring up the premise of the homogeneity of the workforce, which appears to be more robust when considering medium or long-term situations than in the short term. This is the case because, in the short term, workers from the traditional sector may find it difficult to establish themselves in the modern sector due to their lack of technical skills, partially suppressing a possible expansion in aggregate demand. However, in the longer term, when demand induces companies to invest in workforce training, this problem is minimized.

Following the methodology proposed by Eatwell and Milgate, which will be discussed in greater detail later, this article intends to adopt an approach based on the analysis of productivity in various sectors of the Brazilian economy to identify the magnitude of disguised unemployment in Brazil.

Moreover, it can be said that the empirical literature on disguised unemployment, applied to the Brazilian case, is exceptionally limited. Among the possible examples to be given is the innovative study by Liboreiro (2023) which, based on the application of a non-linear input-output model, estimates disguised unemployment in middle-income countries by considering disguised unemployment as a reflection of the change in the relative wage structure of a sector from the

perspective of a dual economy (modern and traditional sectors). The study shows that large wage differences between sectors in less developed countries can be explained by the hypothesis disguised unemployment, in which we observe a considerable correlation between the behavior of the disguised unemployment rate and the common unemployment rate.

An important point to clarify is that the concept of disguised unemployment does not necessarily imply informal employment, and vice versa. As Liboreiro (2023) argues, informal employment refers to all the economic activities of workers that are not covered by formal agreements. In contrast, *a worker can be considered in a state of disguised unemployment when his/her marginal product is lower than the marginal product of another worker with similar skills. In this way*, it is possible for a worker to be in a state of disguised unemployment even when their economic activities are formalized (for example, disguised unemployment subsidized by the state). In addition, it can happen that the marginal product of a worker in the informal sector is comparable to that of another worker with similar skills in the formal sector (for example, working "on the side" to evade taxes).

That said, there is still a strong connection between informal work and the existence of disguised unemployment, but one that will form from the origin of the informal labor market, as seen in Günther and Launov (2012) or Maloney (2004). It is precisely in this second segment that we see the existence of disguised unemployment and, consequently, what will be most relevant to the study of the Brazilian case.

3- Fiscal Multiplier: Review of the literature.

The fiscal multiplier is a commonly used measure in the evaluation of fiscal policies due to its ability to measure the impact of fiscal policies on an economy's output (GDP). Specifically, it quantifies the change in GDP resulting from exogenous changes in government spending (G) or taxation (T), indicating by how much the output increases for each additional unit of public spending or tax reduction in each period *t*.

The debate around the fiscal multiplier can be justified given the importance of understanding the real behavior of this value:

> Better estimation and use of multipliers can play a key role in ensuring macroeconomic forecast accuracy. Many countries experienced a dramatic turnaround in their fiscal position during the crisis, shifting from stimulus to consolidation. In this context of large-scale fiscal actions, GDP growth may be primarily driven by fiscal policy. Thus, it is essential to measure accurately the relationship between these two variables in order to plan and forecast the effect of policy actions (BATINI ET AL., 2014).

Depending on the timeframe observed and the methodology used, Spilimbergo et al. (2009) denote[1] the existence of different types of multipliers, later compiled by Oliveira (2018):

Impact multiplier:

$$\frac{\Delta Y_t}{\Delta G_t}$$

The impact multiplier shows the response of output in *t* to a change in the fiscal instrument resulting from an exogenous shock in the same period *t*. It is particularly useful for understanding the immediate effects of a fiscal impulse on GDP. This multiplier is often calculated using expenditure as a percentage of GDP in the most recent year, similarly to marginal multipliers (Resende and Pires, 2021)[2].

Horizon multiplier:

$$\frac{\Delta Y_{(t+n)}}{\Delta G_t}$$

The horizon multiplier shows the response of output at $t+n$ to a change in the fiscal instrument resulting from an exogenous shock at *t*. Given that this multiplier is calculated with the average expenditure as a percentage of GDP over the historical series, it can capture longer and more stable trends (Resende and Pires, 2021) in the medium term.

[1] Despite the use of ΔG in the equations, it can also be replaced by the variation in taxation (-ΔT).

[2] Resende and Pires (2021) emphasize the importance of defining which period the respective expenditure in relation to GDP refers to, by transforming the elasticity found into an impulse response function in a fiscal multiplier: if the reference is the average of the entire sample, we have average multipliers, if it is only the last observation, we have marginal multipliers.

Peak multiplier:

$$max \frac{\Delta Y_{(t+n)}}{\Delta G_t}$$

The peak multiplier indicates the largest response of output (GDP) to a change in the fiscal instrument resulting from an exogenous shock in *t*. This multiplier is mainly used to calculate the maximum potential impact of a given fiscal policy.

Cumulative multiplier:

$$\frac{\Sigma_{i=0}^{n} \Delta Y_{(t+i)}}{\Sigma_{i=0}^{n} \Delta G_{(t+i)}}$$

The cumulative multiplier shows the cumulative response of output up to instant *n* to a cumulative change in the fiscal instrument resulting from an exogenous shock in *t*. Like the horizon multiplier, the cumulative multiplier is calculated using the average expenditure as a percentage of GDP over the historical series to capture longer trends, however, it has a greater capacity to capture persistence of the fiscal shock (Busato and Martins, 2022).

Cumulative multiplier at present value:

$$\frac{\Sigma_{i=0}^{n} R^{-i} \Delta Y_{(t+i)}}{\Sigma_{i=0}^{n} R^{-i} \Delta G_{(t+i)}}$$

Complementing the work of Spilimbergo et al., Mountford and Uhlig (2009) and Leeper et al. (2010) expanded the notion of the cumulative multiplier, bringing it to present value. The aim of this representation is to incorporate the dynamics of fiscal disturbances more accurately than, for example, in impact multipliers, in addition to discounting future macroeconomic effects. To this end, the steady-state gross interest rate (R) is used to bring the cumulative response to present value.

Each fiscal multiplier must be applied in different situations depending on what is being assessed in the study, and each of them has a myriad of viable empirical methodologies for calculating them. Among the most widely used are dynamic stochastic general equilibrium models

(DSGE), vector autoregressive models (VAR) and their variations (Ramey, 2011; Ramey, 2019). As a result, there is not only a wide variety of studies on the outcome of the fiscal multiplier, but also an extensive range of results.

For the purposes of this literature review, the focus will be on studies based on the VAR model and its evolution. First, the methodological progress of international studies will be addressed, and then its impact on the study of the fiscal multiplier in Brazil will be understood.

Although there was a noticeable scarcity of literature before the 2008 crisis[3], a pioneer study in the analysis of the multiplier is that of Blanchard and Perotti (2002). The authors empirically characterize the effects of changes in government spending and taxes on production using structural vector autoregressive (SVAR) models with identification restrictions. In short, the study observes approximate peak multipliers between 0.9 and 1.3 for public spending and between -0.8 and -1.3 for taxes.

Certainly, the most controversial restriction of the model is that any government spending not predicted by other variables could be considered an exogenous shock, the validity of which has been questioned several times in subsequent studies (Ramey, 2011). Therefore, other techniques were created to get around the problem of identification. In the case of Mountford and Uhlig (2009), in addition to introducing the concept of the cumulative multiplier at present value, the authors use a sign restriction to limit impulse response correlations. The cumulative multipliers (5-year period) at present value are -2.07 for spending and -4.55 for taxes.

As mentioned, the 2008 financial crisis renewed interest in fiscal multipliers, as global economies began to implement fiscal policy as a central instrument to combat recession. It is from this context that Hall (2009) brings an extensive debate on the factors that can impact the size of the multiplier. These factors include: (i) the shape of the consumption function; (ii) the dynamics of the labor market; (iii) the persistence of public spending; (iv) the composition of fiscal policy. (Pires, 2017).

Monacelli et al. (2010) explore how fiscal policy affects the labor market in the United States, finding that an increase of 1% of GDP in public spending can raise output by about 1.2% after one year and reduce unemployment by 0.6% at the peak. This increase in GDP is equivalent to the creation of almost 1.3 million new jobs, increasing total hours worked and the probability of

[3] As a possible justification for the lack of interest in the short-term effects of changes in government spending or taxation before the 2008 crisis, Ramey (2019) points to the existence of a prior consensus that the *lags* in the implementation of fiscal policies would be too long to be effective in combating recessions.

finding a job, while decreasing the separation rate.

The authors estimate a VAR model to identify shocks in government spending based on the method proposed by Blanchard and Perotti (2002), using a Cholesky decomposition with government spending as the first variable. Addressing critics of the identification method, the study presents itself as merely an analysis of the "fundamentals of the effects of fiscal policy in a model with search and matching frictions, with increasing levels of complexity" (Monacelli et. al., 2010).

Another methodological innovation comes from Auerbach and Gorodnichenko (2012), who explore how output responses to fiscal policies vary over the economic cycle, using a new VAR model with smooth transitions (STVAR). Unlike the traditional approach of Blanchard and Perotti (2002), which assumes constant multipliers, they found that the multipliers of public spending change significantly between recessions (1 to 1.5) and expansions (0 to 0.5). Furthermore, by breaking down the types of spending, they found that public investments have multipliers of over 2 in recessions, much higher than other multipliers. These findings emphasize that fiscal multipliers are more robust in periods of low economic activity, providing a solid basis for expansionary fiscal policies in times of recession.

From these studies, the international debate on the fiscal multiplier is characterized by a detailed analysis of how different conjunctural factors, such as the phase of the business cycle (recession or expansion), the type of spending (consumption or investment), and the institutional and structural conditions of each country, influence the magnitude of the fiscal multipliers.

For Brazilian studies, we will rely heavily on the extensive review of empirical literature carried out by Busato and Martins (2022), who compiled the main studies on spending multipliers to find, among a wide range of research, points of convergence on the behavior of multipliers. To make things easier, the authors divided these studies into two large groups: the first for aggregate multipliers; and the second for multipliers by the phase of business cycle and spending category, a separation that will also be used below.

The empirical literature on aggregate fiscal multipliers in Brazil reveals mixed results. Peres and Ellery Jr. (2009) identified modest output responses to fiscal shocks, with a peak spending multiplier of 0.39 and a tax multiplier of -0.2, suggesting limited policy effectiveness. Mendonça, Medrano, and Sachsida (2009) found government spending to be pro-cyclical, with expansionary shocks linked to higher prices, interest rates, and potential GDP contraction due to the *crowding-out effect*. Cavalcanti and Silva (2010) highlighted the role of public debt, showing that high debt levels reduce the impact of spending shocks, emphasizing fiscal sustainability's

importance.

Although the results found in some of these studies indicate an intriguing "non-Keynesian" behavior of the multiplier, Busato and Martins (2022) believe that the methodology used to estimate aggregate multipliers in Brazil leaves something to be desired:

> As a preliminary conclusion, it can be stated that the empirical literature on estimating aggregate fiscal multipliers for Brazil is still relatively scarce and controversial. The results are largely dependent on the hypotheses adopted in the models, the existence of structural breaks in the series and, in addition, it is known that the aggregate result is affected by the composition of public spending, as will be seen in the next section, since the multiplier effects vary according to the type of spending. (BUSATO; MARTINS, 2022).

In fact, Brazilian literature began to use new tools from international literature to achieve increasingly well-founded conclusions. As a result, the focus has shifted to studies of this "second group": multipliers along the phases of business cycles and by spending category.

Pires (2014) used a non-linear model (Markov-Switching) to estimate fiscal multipliers dependent on the economic cycle, analyzing the period from the second quarter of 1996 to the fourth quarter of 2012. In addition, the author disaggregates public investment, the net tax burden and government consumption. The results show that the impact of government consumption on GDP is not significant, regardless of the phase of the economic cycle. In contrast, public investment had multipliers of between 1.4 and 1.7 and the net tax burden had multipliers of between -0.3 and -0.2, which are robust in periods of low volatility[4].

Another study that stands out is that of Orair, Siqueira and Gobetti (2016), who used a gradual transition vector autoregressive (STVAR) model to differentiate periods of expansion and recession, analyzing data from January 2002 to April 2016. The authors found an accumulated multiplier for total expenditure of 1.78, with the multipliers being significantly higher in periods of recession (2.2) when compared to periods of expansion (0.15). When separating by spending category, investment spending and social benefits had more significant and persistent impacts than payrolls and other spending.

Contrarily, Holland, Marçal and Prince (2020) concluded that there is no significant difference in multipliers between periods of high and low growth in the period from 1997 to 2018 by using a threshold vector autoregressive (TVAR) model for estimation. In addition, the authors

[4] Pires (2014) points to two potential explanations for the relevance of the results under low volatility: that Brazilian policy was pro-cyclical for most of the period analyzed, or that "in the presence of volatile regimes, the relationship between fiscal policy and growth may be more complex".

derive that government spending is inefficient, with a fiscal multiplier close to zero using Cholesky approaches and sign restrictions with three variables, a result that contrasts with the values found in advanced economies or other emerging countries.

Paulino (2021) used quarterly data from Brazil, applying both VAR and tvVAR, for the period from the first quarter of 1997 to the fourth quarter of 2019. He found positive impact multipliers for total primary expenditure, payroll expenditure and other primary expenditure, with payroll expenditure and other expenditures having significantly higher impact multipliers.

Finally, the work of Resende and Pires (2021) stands out. By incorporating the heterogeneity of multiplier effects by expenditure category, the authors manage to find a new indicator of *fiscal multiplier impulse*. To this end, the authors use a VAR model with data from the first quarter of 1997 to the fourth quarter of 2018, separating spending into income transfers, payroll expenditure, public investment and other expenditures. The results show impact multipliers of 0.72 for income transfers, 0.82 for payroll, 2.37 for public investments and 0.0 for other expenses, with cumulative horizon multipliers of 4.35 and 3.40 for transfers and public investments, respectively.

As Busato and Martins (2022) point out, when evaluating the various studies mentioned, even though there are many controversies in the empirical literature about fiscal multipliers in Brazil, some consensus can be reached. Firstly, the literature that breaks down spending by category suggests that public investment and social spending have higher impact multipliers and greater persistence over time. Secondly, a significant part of the research carried out in Brazil points to positive effects of aggregate public spending on output, with the values of the multipliers varying according to the methodology used and the period analyzed. However, the Brazilian empirical literature on multipliers and economic cycles has not yet reached a clear consensus, making it necessary to accumulate more empirical evidence to properly validate the variation of multipliers over the economic cycle.

4- Measuring Disguised Unemployment: Methodology and Brazilian Case.

This article aims to calculate the fiscal multiplier taking as a stand for the situation of the labor market not only the official unemployment rate but also the disguised unemployment and assess the impact of a fiscal shock on the official and disguised unemployment rates in Brazil. To do this, the disguised unemployment rate will be estimated using the methodology of Eatwell and Milgate (2011), which will be adapted to reflect the particularities of the Brazilian case.

The authors define disguised unemployment as "employment in very low productivity sectors", a characterization that will also be applied in this study. To classify a traditional sector as unproductive, the sector's per worker productivity must be less than 80% of that found in the country's manufacturing sector. This value was defined based on the evaluation of productivity in Germany, a country which, in principle, should have low levels disguised unemployment[5].

Using data extracted from the OECD National Accounts, between 1979 and 1991, for the Agriculture, Manufacturing, Construction, Private Sector Services and Private Sector Non-Financial Services sectors, the authors calculated the relative value of production per worker compared to the worker productivity in Manufacturing sector:

Table 1: Value of output per head relative to manufacturing, 1979

	Agriculture	Manufacturing	Construction	Services	Services (X)
Canada*	78	100	125	73	52
France	52	100	75	110	86
Germany	43	100	83	113	89
Italy	42	100	89	120	91
Japan	26	100	77	89	68
UK	83	100	99	114	84
USA	86	100	81	97	76

Source: Eatwell and Milgate (2011, p.183).

To calculate the *true unemployment rate*, which considers both official unemployment and disguised unemployment, Eatwell and Milgate (2011) calculate the number of jobs that each unproductive sector would need to lose to achieve per capita productivity equivalent to 80% of productivity in the manufacturing sector. Comparing this figure with the total number of people employed in the country gives the true unemployment rate:

[5] The authors chose Germany as the reference country in the study because of the low dispersion of productivity between economic sectors, a characteristic which, according to them, is influenced by the broad unemployment protection offered by the country.

Table 2: True unemployment rates

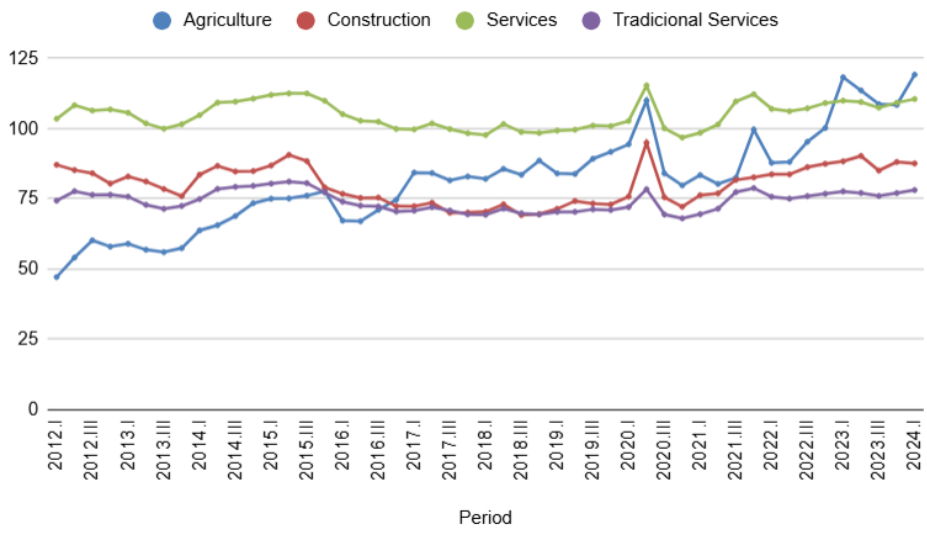
	1979			1990		
	Published	"True"'	(B–A)/B	Published	"True"	(B–A)/B
including sectors with falling employment						
Canada*	7.4	24.0	0.69	7.5	29.0	0.74
France	6.0	9.5	0.37	8.9	11.9	0.26
Germany	2.9	5.1	0.43	4.9	5.5	0.11
Italy	7.8	14.5	0.46	11.1	16.5	0.33
Japan	2.1	18.3	0.88	2.1	18.7	0.89
UK	4.5	4.5	0.00	5.9	11.6	0.49
USA	5.8	7.1	0.19	5.5	12.1	0.55

Source: Own elaboration based on Eatwell and Milgate (2011, p.188).

We can apply this same exercise to Brazil. To obtain productivity data per worker, we used the same methodology as the productivity indicator per worker, available as a quarterly series from the Regis Bonelli Productivity Observatory at FGV IBRE. The indicator is subdivided into the 12 main sectors of the Brazilian economy, with data on Value Added taken from the Quarterly National Accounts and the employed population by sector from the Continuous National Household Sample Survey (PNAD).

For the purposes of this study, the following sectors will be analyzed: Agriculture, Manufacturing, Construction, Services and Traditional Services. Unlike the Services sector, which covers all service activities in the country, the Traditional Services sector disregards subsectors related to financial, insurance, real estate and information activities. This differentiation is made to minimize the distortions caused by the high productivity of these sectors and to achieve a more accurate calculation of the disguised unemployment rate.

Figure 1: Value-Added per employee relative to Manufacturing Industry by sector (seasonally adjusted)



Source: Author´s Own elaboration.

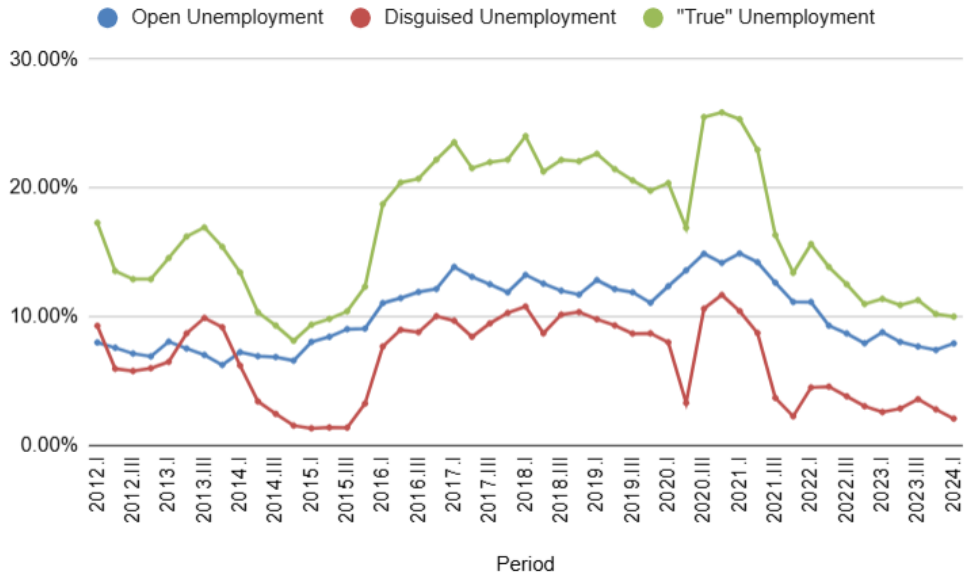
With the relative per capita output of each sector, we can find the number of workers in disguised unemployment and the disguised unemployment rate, shown in Table 3 and figure 2, applying the same methodology as Eatwell and Milgate.

Table 3: Number of workers in disguised unemployment by sector

Period	Agriculture	Construction	Traditional Services
2012.I	4.166.087	0	3.400.576
2012.II	3.370.196	0	1.412.589
2012.III	2.531.810	0	2.192.283
2012.IV	2.776.772	0	2.191.452
2013.I	2.585.124	0	2.603.140
2013.II	2.925.706	0	4.425.497
2013.III	3.028.980	154.045	5.385.413
2013.IV	2.874.215	420.833	4.782.462
2014.I	1.929.563	0	3.224.666
2014.II	1.728.344	0	945.953
2014.III	1.312.010	0	482.227
2014.IV	756.730	0	244.890
2015.I	578.586	0	0
2015.II	569.703	0	0
2015.III	451.186	0	0
2015.IV	259.516	93.341	1.807.229
2016.I	1.485.417	309.281	3.929.151
2016.II	1.494.893	441.188	4.863.725
2016.III	987.923	413.332	5.051.688
2016.IV	582.743	685.302	6.269.817
2017.I	0	664.602	5.958.081
2017.II	0	546.949	5.282.529
2017.III	0	870.835	6.144.104
2017.IV	0	879.102	7.138.839
2018.I	0	804.691	7.162.252
2018.II	0	583.188	5.728.870
2018.III	0	934.066	6.985.050
2018.IV	0	912.968	7.321.918
2019.I	0	719.606	6.607.690
2019.II	0	490.507	6.705.445
2019.III	0	586.433	6.123.911
2019.IV	0	614.777	6.382.184
2020.I	0	344.776	5.484.364
2020.II	0	0	975.863
2020.III	0	334.394	6.356.128
2020.IV	24.131	621.385	7.505.978
2021.I	0	298.008	6.514.397
2021.II	0	256.458	5.437.012
2021.III	0	0	1.730.670
2021.IV	0	0	829.090
2022.I	0	0	2.956.940
2022.II	0	0	3.546.524
2022.III	0	0	2.963.312
2022.IV	0	0	2.345.569
2023.I	0	0	1.706.617
2023.II	0	0	2.139.160
2023.III	0	0	2.944.878
2023.IV	0	0	2.227.570
2024.I	0	0	1.404.897

Source: Author´s Own elaboration.

Figure 2: open, disguised and true unemployment rates



Source: Own elaboration.

Figure 1 shows a considerable increase in per worker productivity in the agricultural sector over the period observed. This growth is largely attributable to the continuous technological advances in the sector. According to Vieira Filho, Gasques and Ronsom (2020), for a 100% increase in production between 1995 and 2017, the contribution of technology went from 50.6% to 60.6%, while the share of the labor factor fell from 31.3% to 19.5%. This analysis is in line with the sample data, which indicates that the sector's real added value more than doubled between 2012 and 2024, while the employed population fell by more than 20%.

Table 3 also highlights this structural change, showing that, from 2017 onwards, disguised unemployment in the agriculture sector practically disappeared. In contrast, the Construction sector faced a long period of disguised unemployment between 2015.IV and 2021.II, highlighting the difficulty of the sector's recovery and the loss of formal jobs during this interval.

Furthermore, it is clear that Services sector needs to be broken down into different subsectors, as the highly productive segments mask the productivity deficiencies of the low-efficiency sectors that employ a large number of workers. As shown in Table 3, most of the workforce in a situation of disguised unemployment is concentrated in Traditional Services, revealing the predominance of low-productivity activities within this subsector.

Figure 2 gives an overview of disguised unemployment over the last decade. At the

beginning of 2015, this type of unemployment was practically non-existent, but the subsequent economic crisis resulted in a much sharper increase in disguised unemployment than in open unemployment, indicating a significant loss of productive capacity, especially in the Traditional Services sector.

During the COVID-19 pandemic, in the first quarter of 2020, there was a drop in disguised unemployment due to the immediate elimination of low-productive jobs. However, this scenario was followed by a sharp increase in the indicator, driven by the supply and demand crisis and the consequent loss of factor productivity.

Interestingly, in the first quarter of 2024, real unemployment (i.e. open unemployment) reached its lowest level since the second quarter of 2015. This result can be interpreted as a sign of economic recovery, although the quality of the recovery, as far as the creation of high-productivity jobs is concerned, remains an open question.

5- Fiscal Multiplier and Disguised Unemployment in Brazil (2012-2024).

Once the true unemployment figure has been estimated in the last section, the analysis will proceed to assess the impact of fiscal shocks on the labor market and GDP, by estimating a VAR model. The methodology adopted will be based on the study by Resende and Pires (2021), with the breakdown of the Central Government primary expenditure, published by the National Treasury Secretariat, into four categories. This approach will allow for a more detailed understanding of the heterogeneous effects that different types of public spending can have on the economic variables analyzed.

> Expenditure was broken down into four groups: a) income transfers to families; b) payroll expenditure; c) investments and d) other expenditures. Fiscal multipliers were estimated based on these expenditure groups, to gauge how changes in the composition of expenditure reflect changes in the estimated fiscal impulse. As far as the breakdown of expenditure is concerned, the transfers series was constructed by adding together social security benefits, continuing benefits under the Organic Law on Social Assistance (LOAS), unemployment benefits and the Bolsa Familia program. The payroll series is made up of the federal government's personnel expenses and charges. The investment series was extracted from the *Siga Brasil porta*l, using the Group of Nature of Expenditure four (GND4) filter, with amounts paid and unpaid amounts paid. Finally, the series of other expenditures was formed by the residual in relation to total expenditure (RESENDE; PIRES, 2021).

Thus, the model specification adopted includes the following series[6]: income transfers to households, payroll expenditure, other expenses, investments, real gross domestic product and the open and *true* unemployment rates. The analysis covers the period between the first quarter of 2012 and the first quarter of 2024, due to the limitations related to calculating the disguised unemployment rate.

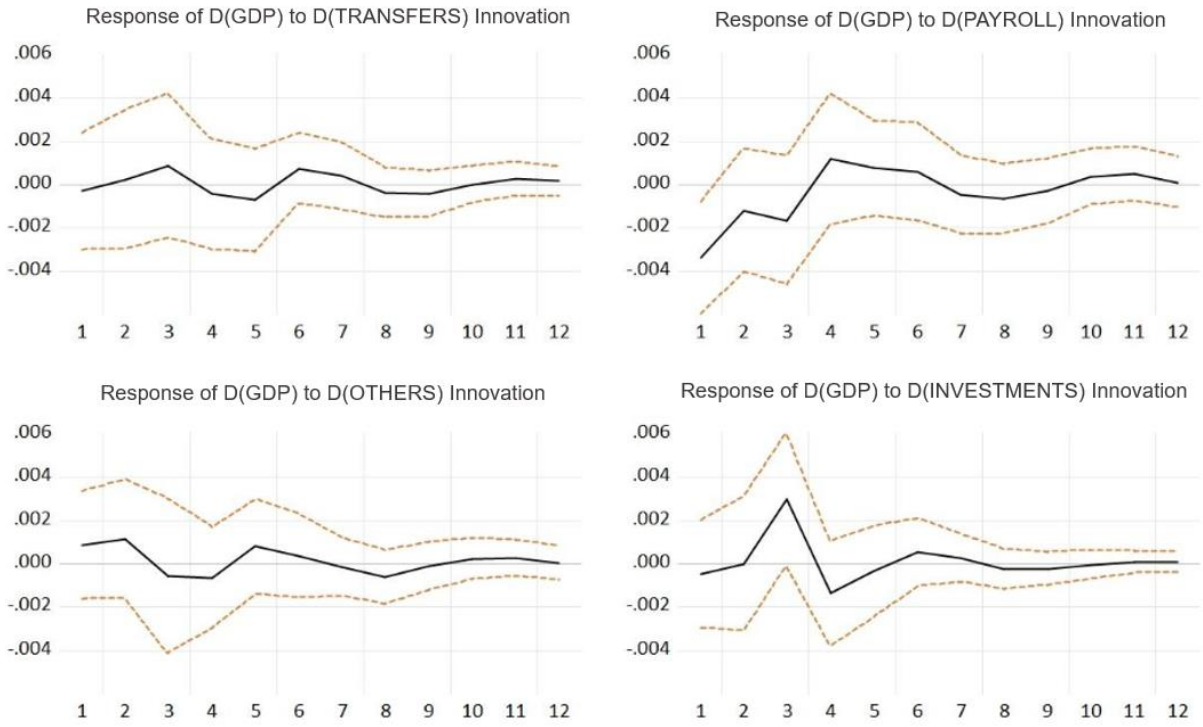
It was decided to include two lags in the model, based on a balance between various factors, such as the Akaike (AIC) and Schwarz (BIC) information criteria, the behavior of the structural residuals and the stability of the VAR model. The Augmented Dickey-Fuller (ADF) test verified that the series used are stationary in first difference. Furthermore, the VAR was found to be stable, with no unit roots.

To identify the VAR model, we will adopt the hypothesis proposed by Blanchard and Perotti (2002), which assumes that, due to delays in decision-making and policy implementation, government spending cannot react to output or other shocks within the same quarter. Thus, by using quarterly data, government spending is treated as exogenous and predetermined. This assumption allows expenditure shocks to be identified by means of a Cholesky decomposition, following the respective order in which the series were previously presented.

The following figures show the impulse response functions of gross domestic product and unemployment rates to fiscal shocks in each expenditure category, at the magnitude of one standard deviation, over a period of 12 quarters. In Figures 3, 4 and 5, the function indicates the response value per period, while Figures 6, 7 and 8 show the accumulated result over the period.

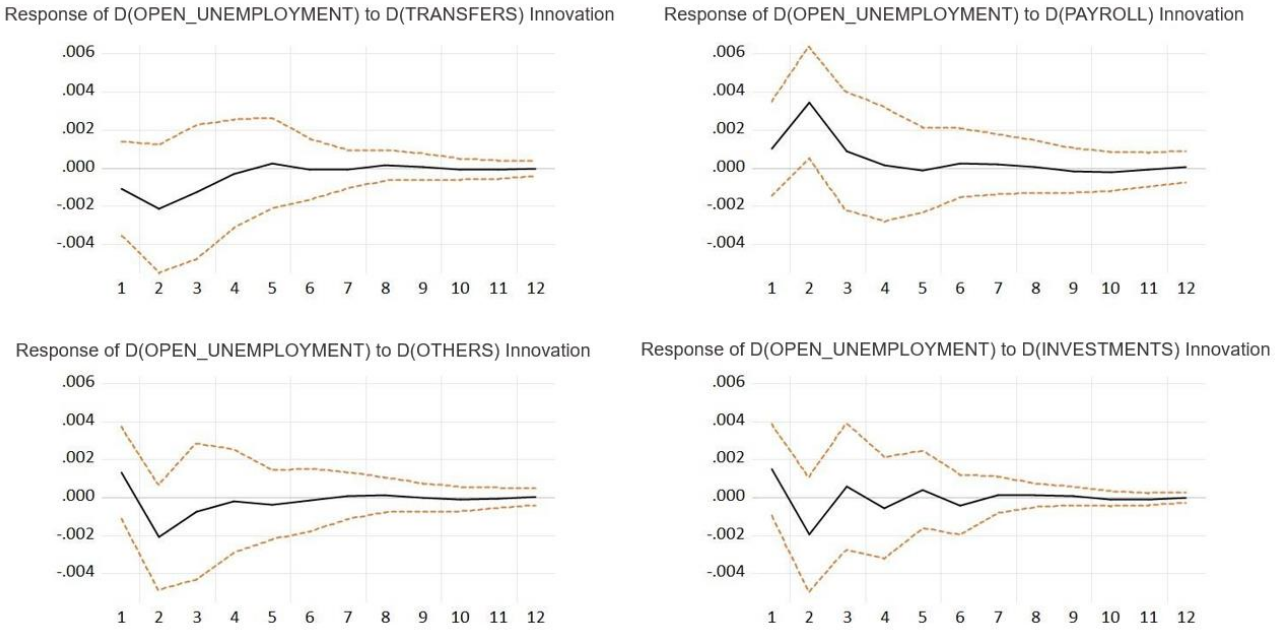
[6] As in Resende and Pires (2021), the GDP and expenditure series were quarterly, logarithmized and deseasonalized using the X-13-ARIMA method. The GDP series was chained to 1995 prices, while expenditure was deflated by the IPCA (base index in March 2024).

Figure 3: GDP impulse response functions by period



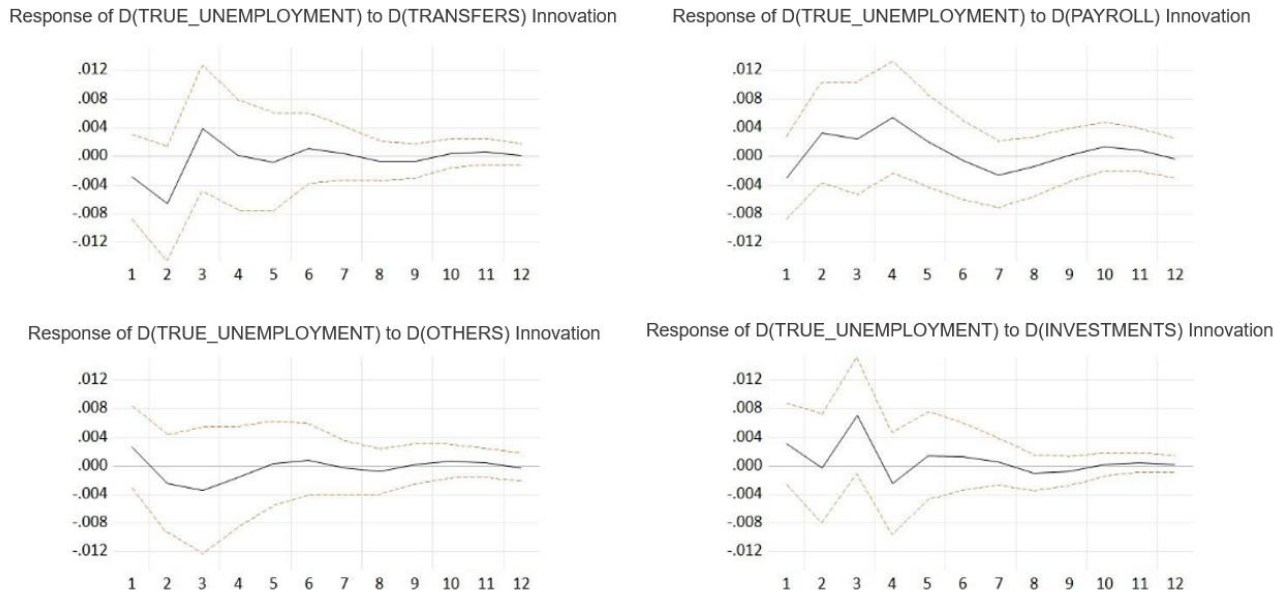
Source: Author´s Own elaboration.

Figure 4: Impulse response functions of open unemployment rate by period



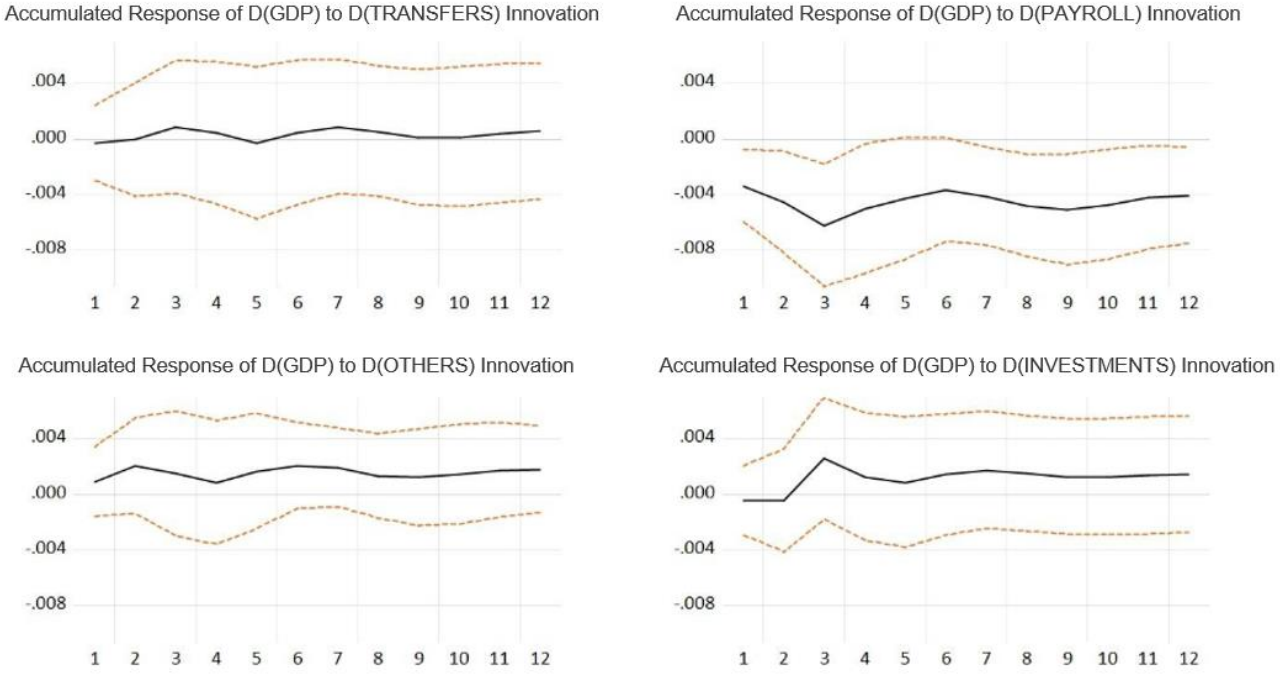
Source: Author´s Own elaboration.

Figure 5: Impulse response functions of *true* unemployment rate by period



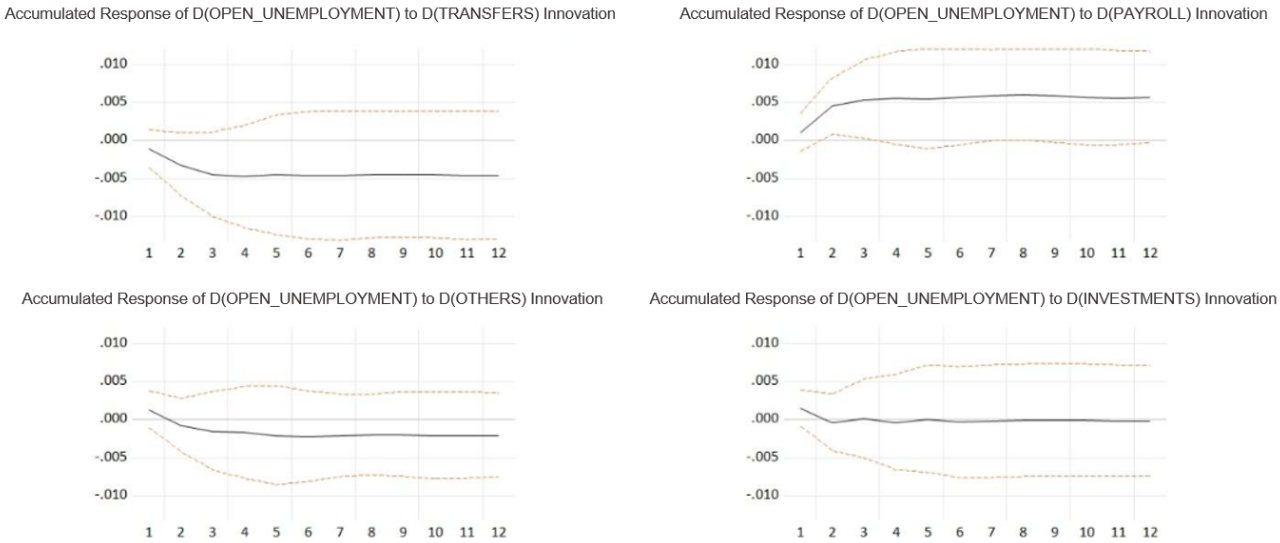
Source: Author´s Own elaboration

Figure 6: Cumulative impulse response functions of GDP



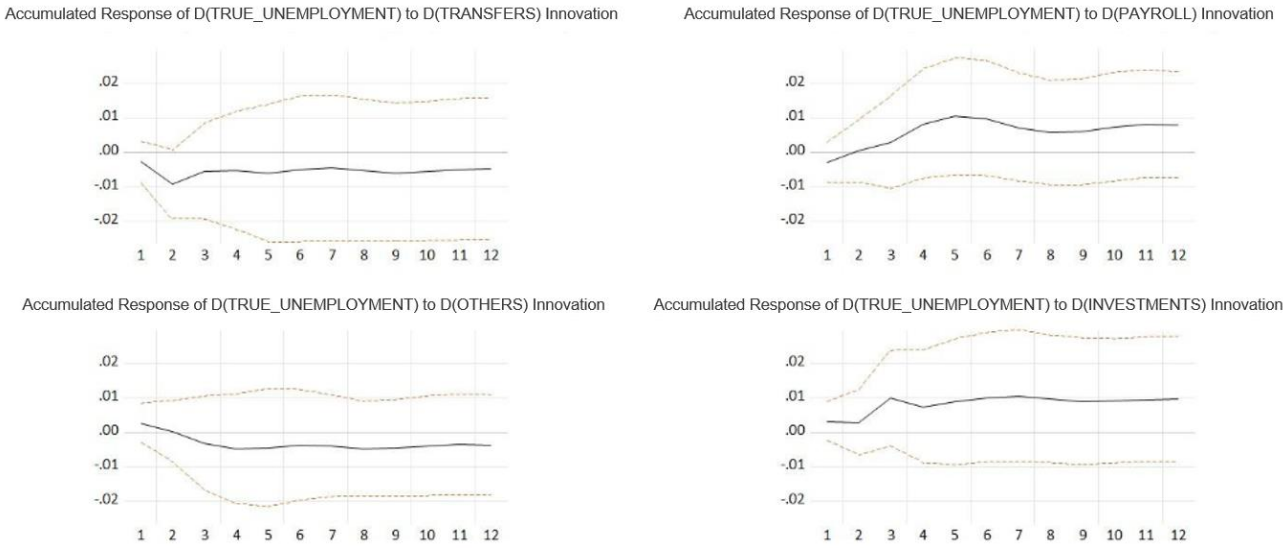
Source: Author´s Own elaboration

Figure 7: Cumulative impulse response functions of the open unemployment rate



Source: Author´s Own elaboration

Figure 8: Cumulative impulse response functions of the "true" unemployment rate



Source: Author´s Own elaboration

The results for GDP, obtained from the impulse-response functions, indicate that shocks to investments and other expenditures generated a positive effect on output, while the shock to transfers showed a null cumulative response. On the other hand, the shock to the payroll had a considerable negative impact on GDP. However, when considering the confidence interval applied in the analysis, it was observed that none of the effects found were statistically significant, which suggests caution in interpreting the results.

Regarding the unemployment rates, it was observed that the shocks to other expenditures showed fairly similar results for both rates, while the shocks to transfers and payrolls affected the open unemployment rate more intensely than the *true* rate. The most intriguing result, however, concerns the shock to investments: while the impact on the open unemployment rate was nil, the *true* rate registered a considerable increase, suggesting a disparity in the effects on different types of unemployment.

From the functions, it is possible to calculate the value of the fiscal multipliers. As the expenditure and GDP series have been logarithmized, the impulse-response functions provide the elasticity of GDP in relation to the respective shock in expenditure. Following the notation proposed by Resende and Pires (2021), this elasticity can be used to calculate the fiscal multiplier[7]. Table 4 shows the value found by the VAR for the multipliers of: impact; peak; horizon with 4, 8

[7] The fiscal multipliers were calculated using the average expenditure as a percentage of GDP during the analyzed period.

and 12 quarters; and cumulative with 4, 8 and 12 quarters. Similarly, Tables 5 and 6 show the estimated responses for unemployment rates, expressed in absolute changes in the respective indicators.

Table 4: Fiscal multipliers by expenditure category

Multiplier	Transfers	Payroll	Other Expenses	Investment
Impact	-0.15	-1.75	0.46	0.24
Peak	0.46	-1.75	0.60	1.55
Horizon 4	-0.22	0.61	-0.33	-0.70
Horizon 8	0.21	-0.33	-0.31	0.12
Horizon 12	0.09	0.06	0.02	0.05
Cumulative 4	0.21	-2.60	0.45	0.63
Cumulative 8	0.27	-2.47	0.69	0.78
Cumulative 12	0.29	-2.11	0.92	0.76

Source: Author´s own elaboration.

Table 5: Responses of the open unemployment rate to expenditure shocks

Response	Transfers	Payroll	Other Expenses	Investments
Impact	-0.11%	0.10%	0.13%	0.15%
Peak	-0.21%	0.35%	-0.21%	-0.19%
Horizon (4)	-0.03%	0.02%	-0.02%	-0.05%
Horizon (8)	0.02%	0.01%	0.01%	0.01%
Horizon (12)	0.00%	0.01%	0.00%	0.00%
Cumulative (4)	-0.47%	0.56%	-0.17%	-0.04%
Cumulative (8)	-0.45%	0.60%	-0.20%	-0.01%
Cumulative (12)	-0.46%	0.57%	-0.20%	-0.02%

Source: Own elaboration.

Table 6: Responses of the *true* unemployment rate to expenditure shocks

Response	Transfers	Payroll	Other Expenses	Investments
Impact	-0.28%	-0.30%	0.27%	0.31%
Peak	-0.66%	0.54%	-0.35%	0.70%
Horizon (4)	0.01%	0.54%	-0.16%	-0.25%
Horizon (8)	-0.07%	-0.14%	-0.08%	-0.10%
Horizon (12)	0.02%	-0.03%	-0.03%	0.02%
Cumulative (4)	-0.54%	0.82%	-0.49%	0.74%
Cumulative (8)	-0.54%	0.57%	-0.48%	0.96%
Cumulative (12)	-0.49%	0.79%	-0.38%	0.97%

Source: Own elaboration.

Based on the estimated values, we can see that a shock to transfers has a negative impact multiplier, with a value of -0.15, indicating a contraction in GDP in the short term. However, over time, the effects became positive, with the peak multiplier reaching 0.46 and the cumulative values growing from 0.21 in 4 quarters to 0.29 in 12 quarters. Despite this, by observing the behavior of the impulse response function, which oscillates close to zero, it can be concluded that the shock in transfers does not have a significant effect as a fiscal multiplier.

For payroll shocks, the initial impact was substantially negative, with a multiplier of -1.75. This adverse effect persists, as evidenced by the horizon multiplier of -0.33 over 4 quarters. There has been a slight recovery, but the overall effect remains negative, with a cumulative multiplier of -2.11 at the end of the period. These results suggest that increases in payroll expenditure have a significantly negative impact on GDP, even in the medium term.

In the case of other expenditures, the multipliers showed an initial positive impact of 0.46, with a slight increase at the peak, reaching 0.6. As in the case of transfers, there was a certain oscillation in the horizon multiplier with values falling to -0.33 in 4 quarters and -0.31 in 8 quarters. However, the cumulative multiplier recovered over time, reaching 0.92 at the end of 12 quarters, suggesting that these expenses may have a more positive impact in the long term.

The shocks to investments showed an initial impact of 0.24, but the positive effect was more evident at the peak, where the multiplier reached 1.55. However, the horizon multipliers showed a sharp drop in the short term, with values of -0.7 over 4 quarters. In the long term, the cumulative effect of investments on GDP stabilized, with the cumulative multiplier reaching 0.76 over 12 quarters. This result is unusual, given that previous studies, such as Resende and Pires (2021), suggest that the fiscal multiplier for investments generally tends to be higher than that for other types of expenditure.

The results support the hypothesis that different types of expenditure have different effects on GDP. The response from transfers, for example, indicated that this type of expenditure does not have a statistically significant impact on economic growth. On the other hand, payroll expenditure revealed a substantially negative effect, not only in the short term, but also persisting in the medium and long term, showing that increases in payrolls can continuously harm economic performance.

Categories such as other expenses and investments showed more promising results. Although other expenditures showed some volatility initially, the accumulated impact proved to be positive at the end of the period analyzed, suggesting that these expenditures can contribute to economic growth. In the case of investments, the response showed a significant positive impact in the short term, standing out as the category of expenditure with the greatest potential for immediate stimuli. In this way, *the result reinforces the role of investments as a key element in public policies for short and long-term economic growth.*

Analysis of the responses of the open unemployment rate to expenditure shocks, as shown in Table 5, reveals that the initial impact of the shocks to transfers of -0.11% and payrolls of 0.10% are relatively modest, while the shocks to other expenditure (0.13%) and investments (0.15%) have a slightly more significant effect. However, over time, the effects tend to disappear, with the cumulative multipliers over 12 quarters showing a change of -0.46% for transfers and 0.57% for payroll, while other expenses (-0.20%) and investments (-0.02%) maintain negative or insignificant impacts. This suggests that, in the long term, the effect of fiscal shocks on open unemployment is limited and varies according to the type of expenditure, being more significant in the first two categories.

For the *true* unemployment rate, the results, as shown in Table 6, are different in terms of magnitude. The initial impact of the shock on transfers (-0.28%) and payrolls (-0.30%) is **higher** compared to open unemployment, as is the positive effect of other expenditures (0.27%) and investments (0.31%). Then, at the peak, the effect of the shocks from transfers (-0.66%) and

investments (0.70%) intensifies, standing out as more significant compared to open unemployment.

The cumulative effect over 12 quarters reveals a clear distinction between the expenditure groups. On the one hand, transfers and other spending result in a drop in the *true unemployment* rate of -0.49% and -0.38%, respectively. On the other hand, payroll (0.79%) and investments (0.97%) contribute to an increase in the rate, highlighting the divergence in the impact of these categories on the labor market in the long term.

The results indicate that the true unemployment rate is more sensitive to fiscal shocks than the open unemployment rate, reflecting more clearly the variations caused by different types of government spending. While shocks to transfers and other spending tend to reduce both unemployment rates, these effects are more pronounced at the *true* rate, suggesting that it responds more directly to these stimuli. On the other hand, *shocks to payrolls and investments cause a significant long-term increase only in the disguised unemployment rate*[8], highlighting the divergence in the impact of these expenditure categories on the labor market. Therefore, to promote reductions in unemployment, both open and disguised, transfers appear to be the best option among the expenditure categories analyzed.

6- Final Remarks.

This article set out to calculate the disguised unemployment rate in Brazil, as well as to assess the impact of public spending shocks on aggregate demand and on the open and *true* unemployment rates. Measuring disguised unemployment is crucial because it reveals the underutilization of the workforce in low-productivity sectors, which can negatively affect economic growth. By capturing this phenomenon, it is possible to have a more complete picture of the situation of the labor market, complementing traditional unemployment statistics and allowing fiscal policies to be designed more effectively.

The confirmation of the presence of disguised unemployment in Brazil revealed heterogeneous behavior between sectors of the economy. Sectors such as agriculture and construction showed significant variations in the level of disguised unemployment over time, with the former experiencing a sharp drop, while the latter suffered the persistence of the phenomenon,

[8] This strange effect – an increase in government investment raising disguised unemployment – may be due to the fact that such investments increase the labour demand in construction sector which had a considerably lower labour productivity than manufacturing sector, thereby increasing disguised unemployment, although official unemployment rate is being reduced

especially after economic crises. The traditional services sector, meanwhile, was identified as one of the main sources of disguised unemployment, suggesting the need for public policies aimed at increasing the productivity of this sector and improving the allocation of labor.

Some additional comments could be made about the use of the term *disguised unemployment*. According to the methodology adopted by Eatwell and Milgate, it could be argued that the indicator is nothing more than a measure of economic idleness, which reflects the underutilization of the workforce in low-productivity activities. In contrast to open unemployment, which only considers people outside the labor market looking for work, disguised unemployment captures inefficiency in the use of labor. For this reason, it can be a more useful metric for assessing economic performance, as it considers the effective productivity of workers.

As for the VAR methodology applied, Mertens and Ravn (2009) show that, for a wide range of models, identification by Cholesky decomposition can provide almost correct impulse responses. That said, there is room for further methodological tests. Firstly, almost all the results found can be interpreted as statistically insignificant, considering the confidence interval used in the impulse response functions. This problem can be solved by using a larger sample space, if there are no obstacles to collecting observations. In addition, other identifications and structural models, such as SVAR, may be more effective in capturing the contemporary relationships between variables, thus avoiding erroneous economic conclusions.

The econometric results indicate that the magnitude of the fiscal multiplier in Brazil, as well as the impact on unemployment rates, varies considerably according to the type of government expenditure, with the *overall impact on true unemployment being greater than that observed for open unemployment*. These findings corroborate the hypothesis that public investments can be a source of economic growth, while income transfers stand out as an alternative for fighting unemployment.

Overall, this article contributes to the literature by demonstrating that in economies with *structural heterogeneity*[9] as is the case of Brazil, where the labor market is characterized by high informality and underutilization of the workforce, disguised unemployment should be considered an important variable in the formulation of public policies. The use of measures that consider the reallocation of labor between traditional and modern sectors can provide a new perspective for formulating more effective fiscal policies aimed at both economic growth and improving working conditions in the country.

7- References

AUERBACH, Alan; GORODNICHENKO, Yuriy. **Measuring the output responses to fiscal policy.** American Economic Journal: Economic Policy, v. 4, n. 2, p. 1-27, 2012.

BATINI, Nicoletta et al. **Fiscal Multipliers: Size, Determinants, and Use in Macroeconomic Projections.** IMF Technical Notes and Manuals, Fiscal Affairs Department, 2014.

BLANCHARD, Olivier; PEROTTI, Robert. **An empirical characterization of the dynamic effects of changes in government spending and taxes on output.** Quarterly Journal of Economics, v. 117, n. 4, p. 1329-1368, 2002.

CAVALCANTI, Marco AFH; SILVA, Napoleão LC. **Public debt, fiscal policy and level of activity: A VAR approach for Brazil in the period 1995-2008.** Economia Aplicada, v. 14, n. 4, p. 391-418, 2010.

DELONG, J., SUMMERS, L. **Fiscal Policy in a Depressed Economy**. Brookings Papers on Economic Activity, Spring 2012.

EATWELL, John; MILGATE, Murray. **The fall and rise of Keynesian economics**. Oxford University Press, 2011.

GÜNTHER, Isabel; LAUNOV, Andrey. **Informal employment in developing countries: Opportunity or last resort**? Journal of Development Economics, v. 97, n. 1, p. 88-98, 2012.

HALL, Robert. **By how much does GDP rise if the government buys more output**? National Bureau of Economic Research, 2009.

HOLLAND, Marcio; MARÇAL, Emerson; DE PRINCE, Diogo. **Is fiscal policy effective in Brazil? An empirical analysis.** Quarterly Review of Economics and Finance, v. 75, p. 40-52, 2020.

[9] Structural heterogeneity (SH) in economics is the existence of multiple productive sectors with different levels of productivity within a peripheral economy. It's a key concept of the Structuralist Theory of Development.

LEWIS, William Arthur. **Economic development with unlimited supplies of labor.** The Manchester School of Economic and Social Studies, v.22(2): p. 139-191. 1954.

LIBOREIRO, Pablo R. **Estimating disguised unemployment in major middle-income countries by means of non-linear input-output analysis, 2000-2014**. Economic Systems Research, v. 35, n. 4, p. 634-657, 2023.

MALONEY, William F. **Informality revisited.** World development, v. 32, n. 7, p. 1159-1178, 2004.

BUSATO, Maria Isabel; MARTINS, Norberto Montani. **Fiscal multipliers in Brazil: between consensus and dissent**. 2022. Doctoral thesis. Federal University of Rio de Janeiro.

MENDONÇA, Mário Jorge; MEDRANO, Luis Alberto; SACHISDA, Adolfo. **Evaluating the Effects of Fiscal Policy in Brazil: Results of an Agnostic Identification Procedure.** Text for Discussion Ipea, n. 1377, 2009.

MERTENS, Karel; RAVN, Morten O. **Empirical Evidence on The Aggregate Effects of Anticipated and Unanticipated US Tax Policy Shocks**. Center for Economic Policy Research Discussion Paper 737o, 2009.

MONACELLI, Tommaso; PEROTTI, Roberto; TRIGARI, Antonella. **Unemployment fiscal multipliers.** Journal of Monetary Economics, v. 57, n. 5, p. 531-553, 2010.

MOUNTFORD, Andrew; UHLIG, Harald. **What are the effects of fiscal policy shocks?** Journal of Applied Econometrics, v. 24, n. 6, p. 960-992, 2009.

OLIVEIRA, Vitor Kayo de. **Disaggregated fiscal multipliers and fiscal policy cyclicality: a DSGE approach for the Brazilian economy.** Cadernos de Finanças Públicas, v. 18, n. 1, 2018.

ORAIR, Rodrigo; SIQUEIRA, Fernando; GOBETTI, Sergio. **Fiscal Policy and the Economic Cycle: an analysis based on public spending multipliers.** XXI National Treasury Prize, 2nd place, 2016.

PAULINO, Felipe Segateli Kohle. **Fiscal policy and the fiscal multiplier in Brazil: theory and empirical evidence (1997-2019).** Belo Horizonte, 2021. Dissertation (Master's in Economic Sciences) - Graduate Program in Economic Sciences, Center for Development and Regional Planning, School of Economic Sciences, Federal University of Minas Gerais, 2021.

PERES, Marco Aurélio Ferreira; ELLERY JUNIOR, Roberto de Goes. **Dynamic effects of central government fiscal shocks on GDP in Brazil.** Pesquisa e Planejamento Econômico, v. 39, n. 2, p. 159- 206, 2009.

PIRES, Manoel Carlos de Castro. **Fiscal policy and economic cycles in Brazil.** Economia Aplicada, v. 18, n. 1, p. 69-90, 2014.

PIRES, Manoel Carlos de Castro. **Fiscal policy and economic cycles: theory and recent experience.** Rio de Janeiro: Elsevier; FGV, 2017.

RAMEY, Valerie A.; ZUBAIRY, Sarah. **Government spending multipliers in good times and in bad: evidence from US historical data.** Journal of Political Economy, v. 126, n. 2, p. 850- 901, 2018.

RAMEY, Valerie A. **Ten Years after the Financial Crisis: What Have We Learned from the Renaissance in Fiscal Research?** Journal of Economic Perspectives, v. 33, n. 2, p. 89-114, 2019.

RESENDE, Carolina Tavares; PIRES, Manoel. **The fiscal multiplier impulse: implementation and evidence for Brazil.** Estudos Econômicos, São Paulo, v. 51, n. 2, p. 213-243, 2021.

ROBINSON, Joan. **Disguised unemployment**. The Economic Journal, v. 46, n. 182, p. 225-237, 1936.

ROSENSTEIN-RODAN, Paul N. **Problems of industrialization of eastern and south-eastern Europe**. The economic journal, v. 53, n. 210-211, p. 202-211, 1943.

SPILIMBERGO, Antonio; SCHINDLER, Martin; SYMANSKY, Steven. **Fiscal Multipliers.** IMF Staff Position Note, n. 11, May 2009.

STREETEN, Paul. **Disguised unemployment and underemployment.** In: Joan Robinson and Modern Economic Theory. London: Palgrave Macmillan UK, . p. 723-726, 1989.

VIEIRA FILHO, J. E. R.; GASQUES, J. G.; RONSOM, S. Inovação e expansão agropecuária brasileira. In: VIEIRA FILHO, J. E. R.; GASQUES, J. G. (Org.). **A journey through the contrasts of Brazil: one hundred years of the Agricultural Census.** Brasília: Ipea, 2020. p. 121-134

WELLISZ, Stanislaw. **Dual economies, disguised unemployment and the unlimited supply labor.** Economica, v. 35, n. 137, p. 22-51, 1968.