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Evaluation of the informational capacity of accounting and fiscal statements in the secondary market for Brazilian government bonds

Avaliação da capacidade informacional das demonstrações contábeis e fiscais no mercado secundário de títulos públicos brasileiro

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Keywords

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Information capacity.
Public accounting.
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Palavras-chave

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Abstract

This study proposes to evaluate the informational capacity of accounting and fiscal statements based on the construction of models that make it possible to identify the relationship between a group of representative variables and the pricing of Brazilian government bonds. To accomplish this, we examined the historic series of interest rates in purchases of the main government bonds and 43 other accounting and fiscal variables from 2010 to 2018. After estimating the parameters using linear regression models, the results suggest that information in the Federal Balance Sheet (BGU), Treasury Transparency reports (TT), the Federal Fiscal Management Report (RGF), and information from the Brazilian Central Bank (BCB), has the capacity to predict, reflect, and/or confirm the expectations of investors in government bonds. The practical implications of these findings will contribute as references to improve the communication of government accounting and fiscal information to the main stakeholders, especially investors in government bonds. Moreover, this presents the potential of each of these reports, making it possible to use this complementary information to plan and accompany the federal government's asset and fiscal situation.

Resumo

Este estudo de propôs avaliar a capacidade informacional das demonstrações contábeis e fiscais, a partir da construção de modelos que permitam identificar a relação entre um conjunto de variáveis representativas e o apreamento dos títulos públicos do governo federal brasileiro. Para tanto, foram levantadas as séries históricas das taxas de juros de compra dos principais títulos públicos e mais 43 variáveis contábeis e fiscais, no período de 2010 a 2018. Após a estimação dos parâmetros através de modelos de regressão linear, os resultados sugerem que informações constantes no Balanço-Geral da União (BGU), Tesouro Transparente (TT), Relatório de Gestão Fiscal (RGF) e informações do Banco Central do Brasil (BCB), possuem capacidade predizer, refletir e/ou confirmar a expectativas dos investidores de títulos públicos. As implicações práticas desses achados contribuem como referências para melhorar a comunicação com os principais stakeholders das informações contábeis e fiscais do Governo Federal, em especial os investidores de títulos públicos. Ademais, permitem conhecer as potencialidades de cada relatório, possibilitando o uso complementar destas informações para fins de planejamento e acompanhamento da situação patrimonial e fiscal do Governo Federal.

Practical Implications

Our results contribute as references to improve the communication of accounting and fiscal information to the main stakeholders, especially investors in government bonds. Moreover, these findings make it possible to know the potential of each report, and this information can be used in a complementary manner for planning and accompanying the federal government's asset and fiscal situation.

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1 INTRODUCTION

The secondary market [in government bonds] promotes the evaluation of financial assets in a more efficient and transparent manner, and it also makes it possible to better manage risk, increasing liquidity and increasing the potential of the primary market. Increased liquidity makes the pricing process more efficient, enabling the national treasury to issue financial instruments at a lower cost, and as a result, there is less risk of refinancing (STN, 2019d).

On the other hand, credit rating agencies consider indicators extracted from public accounts to evaluate the capacity of governments to honor their commitments. Thus, the better the country rating, the less the risk to creditors of a default (Oliveira, Vazquez, & Wolf, 2018). Suzart (2014) points to the changes in the ratings issued by these agencies as being the events responsible for influencing the prices practiced in the debt securities market.

Considering that the price of assets adjusts according to all available information, as proposed by Fama (1970), to the extent that this information is known to all economic agents, the prices of assets will oscillate around an average. In this way, the velocity of these adjustments will be a function of how the market incorporates this information, or in other words, its efficiency.

Asymmetry of information occurs when an economic agent is in the possession of more information than other agents. A way to mitigate the risk of asymmetry of information is displaying accounting and financial information about the government's performance. Miller and Puthenpurackal (2002) studied the cost of 260 issues of American government debt and concluded that the publishing of this information increased the prices that investors paid for financial assets. Chan (2003) affirms that governmental accounting standards should provide information which is useful to its users, because if it is not, this informational content may be ineffective for the users of this information.

According to Platt Neto, Cruz, S. R. Ensslin and L. Ensslin (2009), the decision-making process supports the publishing of reliable and relevant information about public accounts which is of interest to users. Despite the importance of the accounting and fiscal statements mentioned by these authors, there is still some reluctance due to the technical consistency of the information or resistance to the concepts, terminology and presentation used by public accounting (Instituição Fiscal Independente [IFI], 2018).

Therefore, it has become important to understand and discuss the informational capacity of government accounting statements as a factor of open interest to the government, economic agents, accounting standards regulators, and society, especially investors. It should be noted that few studies have examined empirical evidence related to governmental accounting information and the government bond market (Suzart, 2013; Suzart 2014), and this work will seek to fill in this gap in academic research.

Considering all of the above, we propose the following research problem: to what extent can the informational capacity of accounting and fiscal statements influence the pricing of Brazilian government bonds from 2010 to 2018?

Seeking to obtain an answer to this question, the overall objective of this study is to evaluate the informational capacity of accounting and fiscal statements based on the construction of models which make it possible to identify the relationship between a group of representative accounting and fiscal variables and the pricing of Brazilian government bonds.

The accounting and fiscal statements of the Brazilian government consist of a group of asset, budgetary and financial information provided by government bodies and entities which are part of the fiscal budget and social security, as well as the legislative and judiciary branches, and the Ministry of Public Prosecutors and Public Defenders (STN, 2019a).

The development of this study integrates previous works and this is one of the contributions of this article (Brugni, Fávero, Flores, & Beiruth, 2015; Kim, 2001; Miller & Puthenpurackal, 2002; Schucknecht, Hagen, & Wolswijk, 2009; Summers, 2003; Suzart, 2013; Suzart, 2014; Valente & Fujino, 2016). The relationships between the representative variables is also hypothesized based on the literature in the form of analytical models, which may be considered a second contribution. A third contribution is that the results may be compared to other government bond markets in emerging economies, thus providing an empirical base for the proposed hypotheses.

Analyses of public debt take into consideration traditional indicators such as the Net Debt of the Public Sector (IFI, 2018) and the Financing Needs of the Public Sector (NFSP), as well as basic macroeconomic variables and the assumptions used to arrive at the target prime interest rate, projected inflation and the expectations for economic growth. However, to address the objective of this study, these indicators were not considered, which makes it possible to examine the specific effect of the informational capacity of accounting statements.

Thus, this study is justified by the need to understand the informational capacity of public accounting statements, as a factor which provides transparency in public accounts and mitigates the risks associated with investing in government bonds.

The practical implications of these findings contribute as references to improve the communication of government accounting and fiscal information to the main stakeholders, especially investors in government bonds. Moreover, this makes it possible to know the potential of each report, enabling the complementary use of this information in planning and accompanying the federal government's asset and fiscal situation.

2 THEORETICAL FUNDAMENTALS

2.1 The Efficient Market Hypothesis and the reciprocal influence between government bond prices and accounting information

It is argued, according to the Efficient Market Hypothesis proposed by Fama (1970), that asset prices adjust to all available information. A market which integrally reflects all available information is termed "efficient". The level of market efficiency, in turn, is determined by the capacity to reflect all available information, including private (or unpublished) information.

To Ross, Westerfield and Jaffe (2002), some types of information can affect bond pricing faster than other types. The efficient market hypothesis therefore can be explained in three forms, each according to a different type of information: weak, semi-strong and strong efficiency.

Weak efficiency is less demanding because it contains a type of information which is more accessible to all. Semi-strong efficiency represents when prices incorporate publicly available information, including past information and accounting statements. For the strong hypothesis, pricing is based on all available information, whether it is public or not (Fama, 1970).

However, in practice, assets are traded with transaction costs and there is an asymmetry of information between economic agents. Copeland, Weston, & Shastri (2005) suggest that markets are efficient only in their weak and semi-strong forms, but Fama (1991) emphasizes the strong form's importance as a benchmark to determine transaction costs.

In the government bond market, it is assumed that the future expectations of prices reflect financial information about the government's performance published by the government itself (Kim, 2001; Summers, 2003; Suzart, 2013; Suzart 2014).

In this sense, the government seeks to reduce problems due to increased asymmetry of information, increasing the amount of information available to investors in such a way that obeys the standards and rules of reliability and transparency (Mishkin, 2000).

Based on this, we can formulate the following hypothesis:

H₁: The expectations for government bond prices tend to adjust in an efficient manner to reflect information contained in the accounting and fiscal statements of the federal government at the time.

2.2 The influence of accounting information on the prices of government bonds

Admitting a certain efficiency in the capital markets, some studies consider accounting statements to be a source of important information for investors (Ball & Brown, 1968; Beaver, Clark, & Wright, 1979; Brugni et al, 2015; O'Hanlon, 1991).

According to Beaver, Kettler and Scholes (1970), as a way to mitigate the perception of risk on the part of investors, a group of accounting reports and indicators released by companies have become relevant to the predictive capacity of investors at the moment of their decision making.

Meurer (2014) affirms that expectations in relation to the capacity of a government's bond payments, reflected in government statements, is related, in general, to its fiscal capacity and the situation of its external accounts.

Moreover, analysts who accompany the situation of public accounts do not normally pay much attention to accounting statements, perhaps because they have doubts about the technical consistency of the information or are resistant to the concepts, terminology and presentation used in public accounting (IFI, 2018).

On the other hand, according to Pronouncement CPC 00 (R1), edited by the Accounting Pronouncement Committee, accounting-financial information as a predictive value may be used to compose the predictions of the users of accounting information. Its confirmatory value, according to Hendriksen and Van Breda (1999), makes it possible to confirm or correct previous expectations.

In this sense, taking into consideration the predictive value of accounting information, we formulate the second hypothesis:

H₂: The information contained in the federal government's accounting and financial statements has a significant influence on the expectations for government bond prices during subsequent periods.

2.3 The influence of government bond prices on accounting information

On the other hand, considering the limitations of accounting statements, some scholars have pursued a different evaluation perspective, combining accounting and non-accounting variables (Barth, Beaver, & Landsman, 2001; Burchell, Clube, Hopwood, Hughes, & Nahapiet, 1980; Cupertino & Lustosa, 2004; Holthausen & Watts, 2001; Ohlson, 1995; Valente & Fujino, 2016).

The main justification for this is that the purpose of accounting is to provide useful information to investors a priori and that they make decisions based on accounting information. However, as Burchell et al (1980) have pointed out, accounting information is not necessarily incorporated in investor decision-making models.

Valente and Fujino (2016) mention that in many cases accounting-financial reports have greater confirmational value considering the lag in time between the occurrence of a given economic fact or event and the public recognition and publication of this information.

Based on this, we formulate the following hypothesis:

H₃: The expectations for government bond prices anticipate variations which will only be reflected in accounting and fiscal statements during subsequent periods.

3 METHODOLOGY

3.1 Definition of the universe and the sample

The extracted information, for the most part, is available in the National Treasury Secretariat database (STN, 2019c). To achieve our proposed objectives, we have considered a historical series of the following government bonds: Treasury Bills (LTN), Series B Treasury Notes (NTN-B) and Series F Treasury Notes (NTN-F).

The motive for choosing these historical series is that each bond has distinct characteristics in terms of rate of return, indexation and expiration, which makes it possible to test the robustness of the study's proposed models. The interest rates were obtained from average rates for bonds negotiated during the analyzed period. Despite the oscillations of interest rate curves for each bond, the effects of the accounting and fiscal variables correspond to the average behavior for investor expectations in the short, medium and long term.

In relation to accounting and fiscal information, we considered data from the following sources: Federal Balance Sheet (BGU), Summary Report of the Federal Budget (RREO), Federal Fiscal Management Report (RGF), Treasury Transparency reports (TT), Bulletins published by the National Treasury Secretariat, such as the National Treasury Report (RTN), and the historical series published by the Brazilian Central Bank (BCB).

We have selected the period from January 2010 to December 2018 examined on a monthly frequency. The motive for our selection is that beginning in 2010, the accounting applied to the Brazilian public sector began a convergence process with international accounting standards which had a clear impact on the elaboration of accounting statements, according to Botelho and Lima (2015). This convergence process is still underway today.

3.2 Data collection and treatment

The historical series of government bonds is updated every workday. To obtain the values for the dependent variable, we considered the average monthly interest rate for buying traded bonds, determined for each workday, as a proxy of investor expectations in relation to the price behavior. Thus, the proposed model has 108 monthly observations for each bond.

For the independent variables, we considered 43 accounting and fiscal variables for 108 months, selected based on the literature (Brugni, Fávero, Flores, & Beiruth, 2015; Kim, 2001; Miller & Puthenpurackal, 2002; Schucknecht, Hagen, & Wolswijk, 2009; Summers, 2003; Suzart, 2013; Valente & Fujino, 2016). It should be noted that the reports have different frequencies of publication, for example: the BGU was published annually until 2013 and quarterly beginning in 2014; the RREO is published every two months and the RGF every four months. In this case, the data was determined by the use of arithmetic interpolations, considering the average of the current information and the last previously published figure.

Moreover, the monetary information was corrected by the average inflation according to the Broad Consumer Price Index – IPCA (IBGE), adjusted to the base period of December 2018. When it was not possible to recover certain pieces of quantitative information, we used arithmetic interpolation, based on the data collected from the historical series.

3.3 Measurement models

We used the Variance Inflation Factor (VIF) statistic in order to eliminate redundant variables which affect the analysis. In this study, we identified four variables with high levels of correlation with the other variables: “net worth”; “financial surplus”; “asset balance”; and “budget balance”. To resolve this problem, these variables were excluded from the analysis. Next, we analyzed the relationships between conceptually opposite, redundant or similar variables, excluding the least significant variables in terms of our analysis objectives.

After this initial adjustment, we applied the linear model of Ordinary Least Squares (OLS) to test our three hypotheses. Hair, Black, Babin, & Anderson (2005) state that the main reason for the popularity of linear regressions is their capacity to predict and explain metric variables.

The evaluation of the linear regression’s assumptions is an important step to avoid biased results. Thus, we analyzed the independence of the observations, the treatment of missing values, the normality of the residuals, the absence of multi-collinearity, and the absence of outliers, among other things. The results of these tests, however, did not suggest significant problems in the models.

In a complementary manner, the estimates obtained after the OLS estimate were submitted to a quantile regression in order to give the results robustness. Costa, Ferreira, Braga and Abrantes (2011) emphasize that the use of quantile regressions can minimize some inconveniences associated with the use of classic linear regressions, such as the assumption of normality and sensitivity to outliers, thus achieving more robust results.

Thus, the linear equations below represent additive models, in which independent variables are added together in the explanation of the dependent variable whose mathematical formula is as follows.

Hypothesis 1 (H₁):

$$Y_t = \beta_0 + \beta_i X_{(i,t)} + e_t$$

where:

Y_t = interest rate for buying government bonds during period t

β_0 = constant

β_i = estimated parameter of the accounting or fiscal variable $X_{(i,t)}$

$X_{(i,t)}$ = accounting or fiscal variable in period t

e_t = error term

The other models may be distinguished from the first in terms of the lag in the variables. Thus, we consider a lag window of n months more or n months less. In this study, we worked with a lag window of 12 months.

Hypothesis 2 (H₂):

$$Y_t = \beta_0 + \beta_i X_{(i,t-n)} + e_t$$

where:

Y_t = interest rate to buy government bonds in period t

β_0 = constant

β_i = estimated parameter for the accounting or fiscal variable $X_{(i,t-n)}$

$X_{(i,t-n)}$ = accounting or fiscal variable in period $t-n$

e_t = error term

Hypothesis 3 (H₃):

$$Y_{t-n} = \beta_0 + \beta_i X_{(i,t)} + e_t$$

where:

Y_{t-n} = interest rate to buy government bonds in period $t-n$

β_0 = constant

β_i = estimated parameter of accounting or fiscal variable $X_{(i,t)}$

$X_{(i,t)}$ = accounting or fiscal variable in period t

e_t = error term

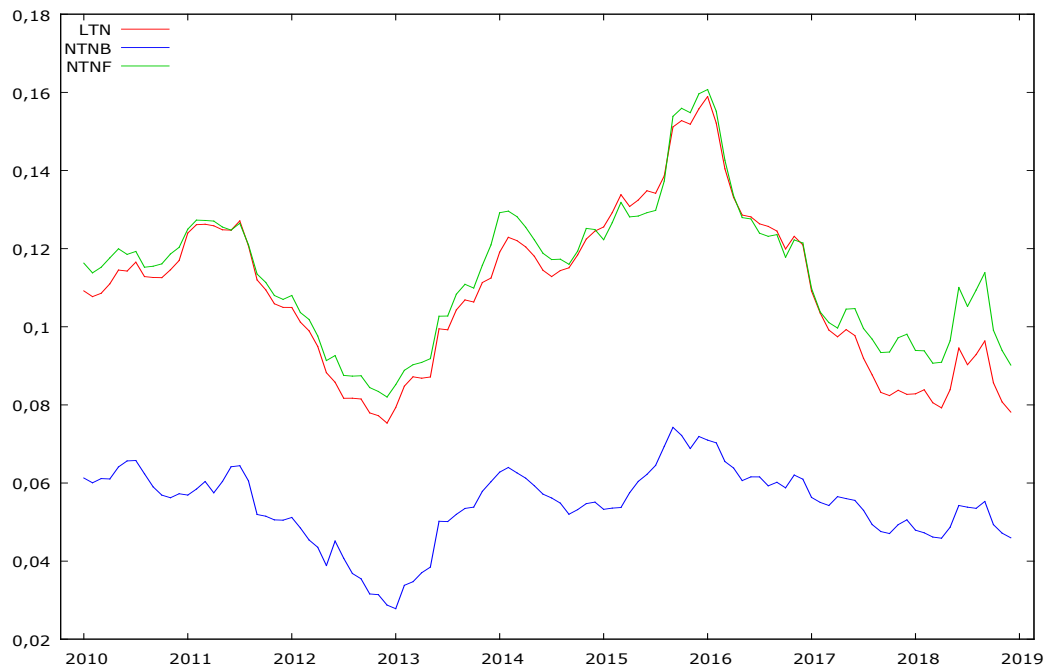
After applying the VIF statistic, another concept utilized was the selection technique for the variables, known as iteration. There are various strategies for the construction of a “better” model through interactions. The objective of the strategies is to reduce the group of significant variables to the minimum number possible to make the model more parsimonious. Hosmer and Lemeshow (1989) understand that the success of the modeling of a group of complex data is related to the area, the statistical methods and the researcher’s experience.

This work uses the backward method. This procedure begins by including all the candidate independent variables in the model. Then, one by one, the less significant variables (highest p-value, for example) are removed from the model and the parameters are estimated. With each exclusion we compare the deviations of the current model with the deviations of the models which result from the individual exclusion of each variable. The process ends when no variable can be excluded without harming the model’s fit. Considering the last model after n iterations, we estimate the parameters and obtain the statistics.

This method has advantages such as simplicity of operationalization (Anderson & Bro, 2010; Guyon & Elisseff, 2003), but it may lead to the arbitrary exclusion of variables resulting in a “suboptimal” model (Harrell, 2001). To overcome this problem, to gauge the final model’s fit we observed the following information criteria: R^2 and adjusted R^2 ; F statistic; Akaike Information Criterion (AIC); Schwarz’s Bayesian Criterion (BIC); Verisimilitude logarithm; and the Hannan-Quinn Information Criterion (HQC).

4 RESULTS

This section presents the statistical analysis procedures for the validation of the hypotheses, the interpretation of the results and the discussions. We may perceive that the values presented great variability during the studied period. The temporal progression of the market interest curve for the dependent variables (LTN, NTN-B and NTN-F) is presented in Graph 1 below.



Graph 1. Progression of the market interest curves for the dependent variables over time

Source: Research data, 2019.

The following table presents the results for each process, divided according to the research hypothesis and the government bond in question (LTN, NTN-B and NTN-F).

In relation to Models M2, M4, M5 and M6, Table 1 presents a group of significant variables and the signs obtained are consistent with the expected results, according to the literature.

In relation to Model M1, we obtained a good fit for the data, with values for R^2 and adjusted R^2 of 70% and 68% respectively. The signs obtained are consistent with the expected results in accordance with the literature with the exception of the variable Overall Government Gross Debt (coefficient $-5.59E-08$), whose expected sign would be positive. In theory, the greater the debt, the less capacity for the solvency and sustainability of the public debt, which should indicate higher interest rates. The obtained result could be influenced by the availability of data or by the methodological procedure adopted in this work, therefore the impact of this variable should be evaluated with parsimony.

In relation to Model M3, we obtained a tolerable fit for the data, with values for R^2 and adjusted R^2 of 39% and 36% respectively. The signs obtained are consistent with the expected results in accordance with the literature with the exception of the variable Margin of Personnel Expenses (coefficient -1.1380), whose expected sign would be positive. In theory, the greater the margin of personnel expenses, the further it is from violating the fiscal rule for this category of expenses, and therefore the healthier the fiscal situation is. Thus, the solvency and sustainability of the debt improve with a reduction in interest rates.

In relation to model M7, we obtained a good fit for the data, with values for R^2 and adjusted R^2 of 63% and 61% respectively. The signs obtained are consistent with the expected results in accordance with the literature with the exception of the variable Personnel Expenses (coefficient $-1.21E-06$), whose expected sign would be positive. In general, an increase in expenses, including personnel, worsens the fiscal position of the government, which results in an increase in interest rates.

Table 1. Regression results

Source	Variables	Hypothesis 1 (H ₁)			Hypothesis 2 (H ₂)			Hypothesis 3 (H ₃)		
		M1	M2	M3	M4	M5	M6	M7	M8	M9
		LTN	NTN-B	NTN-F	LTN	NTN-B	NTN-F	LTN	NTN-B	NTN-F
	Constant	0.3886***	0.2487***	0.4462***	1.0823***	0.5398***	0.8759***	0.5255***	0.2906***	0.4583***
BGU	Total Assets (TA)	-2.96E-09**	-9.12E-08***							
BGU	Variation in Total Assets (VTA)				-0.6629***	-0.3028***	-0.8999***			
BGU	Current Liabilities (CL)		1.20E-08***							
BGU	Variation in Current Liabilities (VCL)						0.4280***			
BGU	Financial Liabilities (FL)			3.26E-08**						
BGU	Variation in Financial Surplus (VFS)				-0.2363***	-0.1586***	-0.2222***			
BGU	Variation in Small Assets (VSA)			2.38E-08***						
TT	Margin of Commitment to the Golden Rule (MCGR)				-0.0012***	-0.0005***	-0.0010***			
TT	Balance of Commitment to the Golden Rule (CGR)	-7.49E-05***	-4.78E-05***	-9.45E-05***				-5.49E-05***	-2.84E-05**	-4.92E-05**
TT	Current Net Revenues (CNR)	-1.36E-07***	-2.31E-07***	-1.48E-07***				-2.05E-07***	-2.01E-07***	-1.84E-07***
RGF	Personnel Expenses (PE)							-1.21E-06***	-2.61E-07**	-9.48E-07***
RGF	Margin of Personnel Expenses (MPE)			-1.1380***						
RGF	Guarantees Conceded (GUAR)	3.94E-07***	8.67E-08***	2.40E-07***	9.47E-08***	8.22E-08***	5.40E-08**			
RGF	Margin of Guarantees Conceded (MGUAR)								-0.0626***	
RGF	Credit Operations (CO)							1.14E-08***	8.25E-09***	1.12E-08***
RGF	Margin of Credit Operations (MCO)	-0.0435***								
BCB	Overall Government Gross Debt (OGGD)	-5.59E-08***								

Table 1. Regression results (continued)

		Hypothesis 1 (H ₁)			Hypothesis 2 (H ₂)			Hypothesis 3 (H ₃)		
		M1	M2	M3	M4	M5	M6	M7	M8	M9
Source	Variables	LTN	NTN-B	NTN-F	LTN	NTN-B	NTN-F	LTN	NTN-B	NTN-F
	R-squared	0.698248	0.514510	0.391509	0.421447	0.556775	0.541041	0.626637	0.627399	0.584167
	Adjusted R-squared	0.680322	0.490712	0.355361	0.396016	0.537293	0.515544	0.610226	0.606698	0.565888
	F Statistic (p-value)	38.95***	21.62***	10.83***	16.57***	28.58***	21.22***	38.18***	30.31***	31.96***
	Logarithm of the Verisimilitude	332.3440	387.6521	309.9041	258,7713	346.6810	283.6701	289.0914	353.9077	293.7427
	Akaike Criterion (AIC)	−650.6880	−763.3041	−605.8082	−507.5426	−683.3620	−555.3402	−568.1827	−695.8153	−577.4854
	Schwarz Criterion (BIC)	−631.9130	−747.2113	−587.0333	−494.7209	−670.5403	−539.9541	−555.3610	−680.4292	−564.6637
	Hannan-Quinn Criterion (HQC)	−643.0754	−756.7791	−598.1956	−502.3599	−678.1792	−549.1209	−563.0000	−689.5960	−572.3026

Note: The symbols ** and *** correspond to 5% and 1% levels of significance respectively. The “E-” scientific notation corresponds to x times 10 to the power of y.

Source: Research data, 2019.

In relation to Model M8, we obtained a good fit for the data, with values for R^2 and adjusted R^2 of 63% and 61% respectively. Thus, as in the LTN Model for Hypothesis 3, the obtained signs are consistent with the expected results in accordance with the literature with the exception of the variable Personnel Expenses (coefficient -2.61E-07), whose expected sign would be positive. Therefore, this estimate should be interpreted with parsimony. Finally, for Model M9, we obtained a moderate fit for the data, with values for R^2 and adjusted R^2 of 58% and 57% respectively. Thus, as in the LTN Model for Hypothesis 3, the signs obtained are consistent with the expected results in accordance with the literature with the exception of the variable Personnel Expenses (coefficient -9.48E-07), whose expected sign would be positive.

The estimates found in the Ordinary Least Squares Model were similar to those found in the quantile regressions in terms of the coefficients and the signs. The exceptions were in Models (**, ***, at 5% and 1% levels of significance respectively):

- M1, where we obtained significance just for the variables Balance of the Commitment to the Golden Rule (coefficient -8.66E-05**), Guarantees Conceded (coefficient 3.89E07***) and Overall Government Gross Debt (coefficient -5.84E-08***);
- M7, where we obtained significance just for the variables Current Net Revenues (coefficient -2.30E-07***), Personnel Expenses (coefficient -1.01E-06***) and Credit Operations (coefficient 1.76E-08***); and
- M8, where we obtained significance just for the variables Balance of the Commitment to the Golden Rule (coefficient -3.47E-05**), Current Net Revenues (coefficient -1.68E-07***), Credit Operations (coefficient 9.69E-09***) and Margin of Guarantees Conceded (coefficient -0.0599***).

Even so, the variables Balance of the Commitment to the Golden Rule and Net Current Revenues were the most recurrent among the analyzed models. Even though they possess the same issuer (STN), the nature of bond remuneration and the underlying risks are distinct, suggesting preferences in the composition of accounting and fiscal variables to satisfy investment strategies for investors in line with the findings of Suzart (2013) and Suzart (2014).

According to Table 1, the information in the Federal Balance Sheet (BGU), the Treasury Transparency reports (TT), the Federal Fiscal Management Report (RGF) and the Brazilian Central Bank (BCB) have “efficient” informational capacity, or in other words, these reports manage to capture the expectations for bond prices for the same period in which they are released, confirming Hypothesis 1.

Also in accordance with Table 1, the information presented in the BGU, TT and RGF have predictive informational capacity, or in other words, these reports manage to anticipate the changes in bond prices in the following periods, exercising a significant influence which confirms Hypothesis 2.

Finally, the information presented in TT and RGF possess confirmatory informational capacity. In other words, these reports can confirm changes in bond prices which occur after the reference period, confirming Hypothesis 3.

Note that the information contained in the Summary Report of the Federal Budget (RREO) and the National Treasury Report (RTN) did not have significant variables in the models. This does not signify that these reports are insignificant. Possibly, the accounting and fiscal information that they contain are not necessarily incorporated in the investors’ decision-making models, but meet the needs of other stakeholders, such as credit rating agencies, the media, control bodies and society, for example.

These findings corroborate the studies of Oliveira, Vazquez, & Wolf (2018) and Suzart, (2014), to the extent to which economic agents can use the ratings issued by credit agencies in their decision-making models, and these agencies in turn issue ratings based on publicly available information, including accounting and fiscal statements to gauge the risk of default by public entities.

5 FINAL CONSIDERATIONS

This section presents this work’s final considerations. This study has sought to evaluate the informational capacity of accounting and fiscal statements based on the construction of models which enable us to identify the relationship between a group of representative variables and the pricing of Brazilian government bonds.

To accomplish this study’s objectives, we have considered 43 accounting and fiscal variables for 108 months, selected based on the literature from various reports: the Federal Balance Sheet (BGU); the Summary Report of the Federal Budget (RREO); the Federal Fiscal Management Report (RGF); the Treasury Transparency reports (TT); Bulletins published by the National Treasury Secretariat, such as the National Treasury Results (RTN); and historical series published by the Brazilian Central Bank (BCB).

Analyzing the values presented, information from the BGU, TT, RGF and BCB have “efficient” informational capacity, as presented above, confirming Hypothesis 1. Information presented in the BGU, TT and RGF also possess predictive informational capacity, confirming Hypothesis 2. Moreover, the variables present in the TT and RGF, possess confirmational informational capacity and, therefore, this confirms Hypothesis 3. Finally, it should be noted that the information contained in the RREO and RTN did not have significant variables in the models.

Certainly, the effect of other variables can be studied in order to give the model greater explanatory power. As a suggestion for future research, it is possible to gauge the combined effect of this study’s findings with aggregate macroeconomic data and prime interest rate assumptions, projected inflation and expectations for economic growth. It should be emphasized that the studied phenomenon deals with the influence of the variables during a specific time frame (2010-2018). This phenomenon, however, occurs continually over time, whose effects may or may not have been captured during the selected time window.

The presented methodology has limitations such as its treatment of data, the exclusion method for variables and the availability of data. The aspects related to endogeneity among the variables were not studied. In addition, the findings do not make it possible to know the real decision-making model of investors, and as a result, it is not possible to gauge the economic magnitude of the results found in the analyzed period.

Despite these limitations, the results contribute as references to improve the communication of accounting and fiscal information to the main stakeholders, especially investors in government bonds. Moreover, these findings make it possible to know the potential of each report, and this information can be used in a complementary manner for planning and accompanying the federal government’s asset and fiscal situation.

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